

**Reconsidering Middle-Income Country Approaches to a Global
Antimicrobial Resistance (AMR) Problem:
A Case Study of Sri Lanka**

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Abstract

Antimicrobial resistance (AMR) is a major public health threat, posing serious challenges to the effective management of infectious diseases within local, regional and international contexts. Studying multifaceted bases and the impact of AMR on healthcare in Sri Lanka from 1948 onwards, this study argues that the development and mitigation of AMR is a complex process, representing more than just a narrowly clinical issue. It claims that the problem has been underpinned by the socio-political determinants of antibiotic provision and use, in both Sri Lanka and the wider South Asian subcontinent. Adopting integrated critical historical and health policy approaches, this study is a detailed investigation of the evolution of antibiotics use and supply policies, their connections with the advocacy and politics of primary health care and universal health coverage, and interactions between the World Health Organization (WHO) headquarters, its regional office in South Asia and Sri Lankan administrations at all levels. This mixed methods thesis uses archival research and in-depth interviews to demonstrate how AMR be assessed in all its complexities, using techniques that can allow researchers to overcome several common constraints faced in studying this subject. This is also a study of how WHO structures around the world failed to pay sufficient attention to AMR in the face of rising evidence, from multiple national settings, of resistance to antibiotics in common bacterial strains. Studying the past in all its complexity, this thesis identifies contemporary health challenges in Sri Lanka in which disagreements and debates about policy, political and social pressures about expectations and rights, and economic difficulties and international aid flows helped to shape AMR-related health strategies and budgets on the ground. The thesis concludes by proposing that instead of the current approach of tackling AMR based on narrowly and technologically oriented frameworks proposed by the WHO, Sri Lanka should look for alternative views and actions, rooted in specific socio-political needs that are transparently studied for the greatest public benefit. I argue that only this can help administrative efforts to effectively contain AMR in the national setting. Understanding this recent history of international actions based on AMR will enable the adoption of more self-critical, historically accurate and policy-relevant concepts of antibiotic provision and use and AMR at all different levels of governance.

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Dedication

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Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as References.

Parts of this thesis have been delivered; elements of chapter 2 were presented at The UK-India Newton-Bhabha Fund Researcher Links Workshop on working at the chemistry-microbiology interface to develop new antibiotics for tackling antimicrobial resistance and resistant TB, Bengaluru, India, 14-18 December 2017; elements of chapter 2 and 4 were presented at the Global Health Histories Seminar 137: Anti-microbial Resistance in South Asia: Challenges & Possibilities, Delhi, India, 22 October 2019, the Global Health Histories Seminar on Antimicrobial Resistance (AMR) and Managerial Challenges, Colombo, Sri Lanka, 6 March 2020, and a Webinar of the Antimicrobial Resistance Centre, Centre for History in Public Health, London School of Hygiene & Tropical Medicine, 1 September 2020.

Chapter 1. Introduction

The long quest for a remedy that would kill pathogens without harming hosts started with Paul Ehrlich, a German physician and scientist who worked in the field of antimicrobial chemotherapy and was awarded a Nobel Prize in 1908 for his work. The hope was that “such substances would be able to exert their full action exclusively on the parasite harboured within the organism and would represent, so to speak, magic bullets, which seek the target of their own accord” (Gradmann, 2011, p. 310). Following the introduction of penicillin in the 1940s, an editorial in *The Times* newspaper in London proclaimed in 1942 that “a wonder drug that would cure infection without side effects [had] been developed by a British team” (Bud, 2009, p. 63). In 1944, *The Times of Ceylon* also wrote about antibiotics that “this wonderful drug... [that had been] already responsible for saving lives of thousands of soldiers... [would] be available for all mankind [soon]”.¹ However, Alexander Fleming, who had discovered penicillin in 1928, had already noted early on that several bacteria (pathogens) had not been inhibited by penicillin. In his 1945 Nobel lecture, Fleming warned about the dangers of penicillin misuse:

There may be a danger, though, in under dosage. It is not difficult to make microbes resistant to penicillin in the laboratory by exposing them to concentrations not sufficient to kill them, and the same thing has occasionally happened in the body. The time may come when penicillin can be bought by anyone in the shops. Then there is the danger that the ignorant man may easily underdose himself and by exposing his microbes to non-lethal quantities of the drug make them resistant (The Nobel Prize, 2020).

And indeed, widespread antibiotic (ab)use has given rise to resistant pathogens across the world - a problem commonly referred to as antimicrobial resistance (AMR).

AMR arises when microorganisms (bacteria, viruses, fungi and parasites) change over time and no longer respond to antimicrobial medicines (WHO, 2021). This causes infections to become harder to treat, and heightens the risk of disease spread, severe illness and death. AMR is today considered a global concern, necessitating simultaneous local and global approaches and actions (O’Neill, 2014; WHO, 2015; CDC, 2021). This is an issue of particular concern to epidemiologists, microbiologists, and physicians; and it is for health economists and public health officials to make progress on identifying the best ways to tackle the crisis, focusing on scientific, practical and pragmatic issues. Recently some scholars have started looking into health policy and historical aspects of AMR and, through the United Nations World Health Organization (WHO) and its regional offices, have attempted to disseminate universal norms for addressing AMR.² Moving away from the traditional method of assessing healthcare by investigating only the provision of services, such scholarship is built on the views of, and engagements with, stakeholders including the Government of Sri Lanka (GoSL), various UN organisations and health authorities in other countries.³

¹ The Wellcome Collection, London (hereafter WTA): *British Production of Penicillin; The Times of Ceylon* 11 November 1944, WF/TRC/02/347, Penicillin Advertisements and Propaganda, 1944.

² For a fuller explanation of the structure and hierarchy of WHO, see Lee (2008).

³ Sri Lanka was called Ceylon from the colonial period to 1972. This thesis uses the name Sri Lanka when referring to all time periods. This study also uses particular terminology to refer to specific international, national and regional locations; for the full list, see appendix 1.

This body of work also examines extensive collections of historical evidence over crucial time periods to suggest policy options. Locating itself in such interdisciplinarity, this doctoral thesis will address four areas connected to this scholarship that need further investigation. Firstly, although Europe and America pushed for wide-ranging and massive use of antibiotics after the Second World War, the relationship of this policy with UN agencies, regional offices and developing countries has not been analysed in detail. Secondly, despite Sri Lanka's health achievements, attitudes within the Sri Lankan government towards pharmaceutical provision from within primary healthcare (PHC) from 1948 onwards have not yet been examined in depth. Thirdly, how the Sri Lanka governments worked with WHO and its regional office has not been adequately researched. Finally, the current, often simplistic narratives of AMR, which are marked by an over-reliance on diplomatically oriented public statements released by UN representatives and their governmental counterparts, need to be critically examined. Against this backdrop, the research question of this PhD thesis is to understand the long-term and complex political, administrative, economic, social and health determinants underpinning AMR in middle-income country settings by taking Sri Lanka as a case study.

1.1 Sri Lanka's medical, social, and economic context before independence

Sri Lanka had some relatively advanced public health systems in the pre-colonial era. According to Uragoda (1987), this was due to a tradition of state activism in social and health provision, with Sri Lankan kings constructing public hospitals and nursing homes. Particular practices in medicine and surgery in Sri Lanka have been identified through the evaluation of hospital sites in the NCP.⁴ With its ruins dating from the ninth century CE, Sri Lanka's Mihintale hospital may perhaps be considered the oldest of any of the world's hospitals. It has the characteristic *Beheth Oruma* (stone treatment bath), a piece of equipment that is considered the hallmark of ancient hospitals in Sri Lanka. Additionally, the discovery of surgical instruments at this monastic hospital in North Central Province appears to validate historical accounts which report surgical operations taking place. The remains of major monastic complexes with ponds, wells, underground terracotta pipes, drains, toilets, and septic tanks attached to them indicate that Buddhist monks in major monasteries also enjoyed a relatively high level of sanitation.

Following colonisation by Western powers, medicine and medical services developed in response to the political and economic needs of the colonisers. Imperial medical networks developed in parallel with older strands, which the growing colonial powers sought to regulate. The Portuguese, Dutch and British ruled the coastal part of the country from 1505 to 1815, and their priority was to protect the health of their armies and the European civilian population living in Sri Lanka.⁵ Even before capturing the whole country in 1815, the British introduced a rudimentary public health system, based on concepts of Western medicine,

⁴This history of the pre-colonial period is based on the studies of S. Paranavitana (1953; 1970), G.C. Uragoda (1987), R.A.L.H. Gunawardena (1978; 1985), S.I. Siriweera (2003) and P.L. Prematilake (1995). For a map of Sri Lanka, see appendix 2.

⁵For the history of medicine in the colonial period, see (Uragoda, 1987; Schrikker and Letteren, 2006; Jones, 2004a). During this period, the Mannar, Jaffna and Colombo Hospitals were built.

to protect the health of their local administrative officials as well as those employed in the plantation sector.⁶ This laid the foundation for the development of a hospital structure in the country, but created medical “enclaves”, leading to the exclusion of local populations (Uragoda, 1987; Hewa, 2012, 2011; M Jones, 2009).

The establishment of the civil medical department (CMD) in 1859 and its successor, the department of medical and sanitary services, in 1915, led to the development of preventive and curative services in the country (Fernando, 2000, p. 14).⁷ The medical systems reflected Western medicine, through a “commanding share of the government resources [was] committed to health care” (M Jones, 2009), “the laissez-faire policy” of the colonial government enabled the British planters to ignore even the most basic sanitary requirements (such as latrines on the plantation sector families) to maximise profit (Hewa, 2012).⁸ An epidemic of hookworm infections on the plantations and in the neighbouring villages ensued, and as a result, in 1916 the International Health Board (IHB) of the Rockefeller Foundation (RF) came to Sri Lanka to set up a hookworm control campaign. In 1926, the RF embarked on establishing the “health unit” system in the country (figure 1.1). This formed the basis of a primary healthcare infrastructure based on the services of state-trained public health staff, which was subsequently expanded (Björkman, 1985). A “health unit” referred to a geographical area comprising up to 80,000 to 100,000 inhabitants, and the country was divided into approximately 63 health units. Health units came under the authority of the department of medical and sanitary services and collaborated with official and unofficial agencies as shown in figure 1.1. A population of 40,000 was designed to be staffed by one medical officer of health (MOH), three public health nurses, ten public health midwives and five sanitary inspectors (public health inspectors), each with their specific responsibilities (Hewa, 2011).⁹ Against this background, Sri Lanka’s mortality rate declined rapidly from 29.7 per cent of live births in 1920 to 11.2 in 1950 (table 1.2); additionally, life expectancy increased during the 1940s, coinciding with the introduction of government-led dichloro-diphenyl-trichloroethane (DDT) spraying to control mosquitoes (Langford and Storey, 1993).

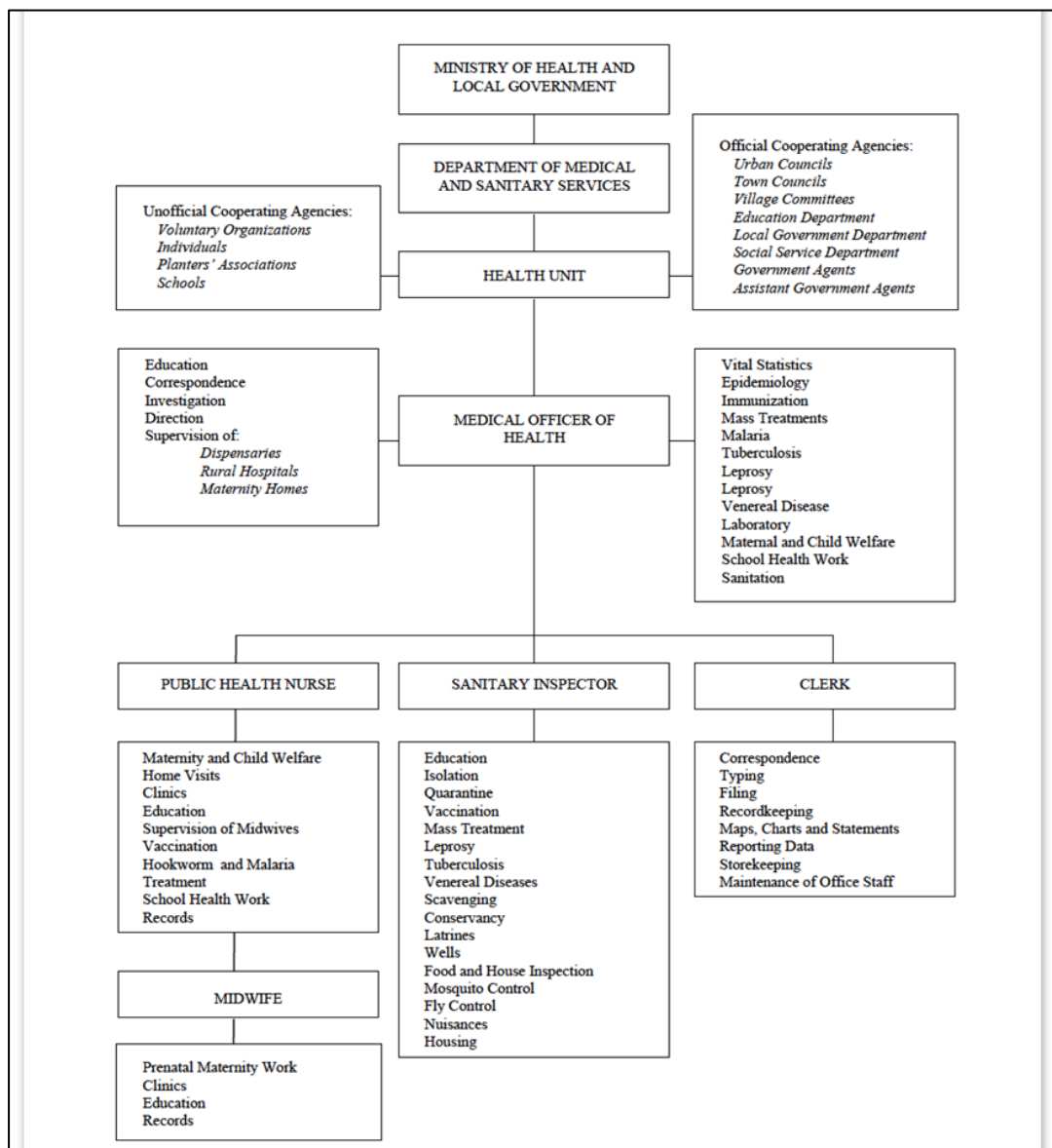
⁶ Labourers for the plantation sector were imported from Southern India as locals refused to work on the plantations.

⁷ The National Archives (Kew) (hereafter TNA): CO 882/4/7, Ceylon: “The Civil Medical Department of Ceylon”, 24 June 1876.

⁸ Principally Ayurveda and *bela wedakama* (a local system) for the Sinhalese, with Siddha and Unani medicine for the Tamils and Muslims.

⁹ Rockefeller Archives (RFA): *Health Unit at Kurunegala*, 462.K, Box 1: Ceylon (Sri Lanka) - Health Services, 1927.

Figure 1.1: Organisational structure of health unit 1926



Source: Soma Hewa (2011); Wellcome Collection, London (hereafter WTA): Chellappah, S.F. and W.P. Jacocks, *Guide to Health Unit Program*, Colombo, 1936, WA550.JS8 1937C51g.

Sri Lanka experienced profound economic and social changes during the British colonial period, with an increase in the production of export crops, wage labour and a cash economy. Social reforms initiated by the colonial regime in the 1830s tended to weaken the traditional feudal structure of society. The construction of roads and railways gradually broke down the isolation of villages and introduced new economic and cultural influences. Schools were built, and education spread, particularly in the southwest and north. The beginnings of urbanisation and the creation of a modern bureaucracy led to the development of urban clerical, professional and administrative occupations. The society was heterogeneous, composed of different social groups distinguished by language and religion. The Sinhalese, whose religion was Buddhism, represented about 70 per cent of the total population (table 1.1), and often

‘Sinhala-Buddhist’ served as a powerful symbol for native politicians. “British elites” were vertically ‘above’ the rest of society in terms of political power, with different native religious and ethnic communities divided horizontally (Jones, 2009). The riots of 1915 that erupted between Sinhalese Buddhists and one Muslim community “served as a catalyst for the growth in demand for Ceylonese self-government” (McFarland, 1915, p. 219).

Table 1.1: Vital statistics, Sri Lanka, 1900–1950

Year	Population (millions)	CBR	CDR	IMR	MMR	Life expectancy (male/female) years	Literacy rate Total (male/female) percentage
1880	2.8	27.0	27.1				
1890	3.0	31.5	28.6	158			
1900	3,5	38.9	28.2	173	15		25 (42/8)
1910	4,1	36.7	31.5	202	23		
1920	4,4	39.1	29.7	188	21	32.7/30.7	39 (56/21)
1930	5,3	37.9	22.7	165	20		
1940	6,6	38.2	18.9	126	18	46.8/44.7	57(70/44)
1950	8,1	38.6	11.2	74	6		

Source: Björkman, 1985; Bhalla and Glewwe, 1986; Jones, 2009; Abeyratne, 2004. Notes: Crude birth rate (CBR), crude death rate (CDR), infant mortality rate (IMR) and maternal mortality rate (MMR) were given for 1000 live births.

An important milestone in the progress towards self-government was the introduction of universal adult suffrage into Sri Lankan politics by the British in 1931, which made locally elected politicians responsible for the formulation and implementation of domestic policies (Jayasuriya, 2004; Jones, 2004a). This was enacted in a political environment devoid of a viable party system.¹⁰ A welfare state began in 1945 when a food subsidy scheme was promoted by the participatory politics of the British administration and Sri Lankan politicians as a means of ensuring that the poorest segments of the population obtained their basic food requirements at subsidised prices. Ravi Rannan-Eliya (2006) argues that health gains in Sri Lanka were accompanied and promoted by other social policies, including the provision of universal education and a basic nutritional floor through food subsidies, improvements in water and sanitation, and the social emancipation of women. As table 1.2 indicates, those moves increased literacy from rates of 8 per cent for women and 42 per cent for men in 1900 to 44 per cent and 70 per cent respectively in the late 1940s, which was considered the most successful improvement among developing countries during that time. Life expectancy also increased in women and men from 32.7 and 30.7 years in 1920 to 46.8 and 44.7 years respectively in 1940. Sri Lanka’s health gains after 1948 were influenced by both public policies and WHO with its regional office-led international health initiatives.

¹⁰ This universal franchise – sixteen years before India gained the same, and only two years after the United Kingdom itself extended the vote to women – provided the basis for competitive party politics.

Table 1.2: Population of Ceylon by community, 1901 and 1946¹¹

Community	Population in 1901		Population in 1946	
	Number	%	Number	%
Sinhalese	2,330,807	65.1	4,621,507	69.4
Ceylon Tamils	951,740	26.7	733,731	11.0
Indian Tamils			780,589	11.7
Moors & Malays	239,934	6.7	431,683	6.2
Burghers and Eurasians	23,482	0.7	41,926	0.6
Europeans and others	19,989	0.5	11,895	0.8
Total	3,565,954	100	6,658,339	100

Source: B.L. Panditaratne and S. Selvanayagam, “The Demography of Ceylon – An Introductory Survey”, in *History of Ceylon. Volume II*, I ed. K.M. de Silva (Peradeniya: University of Ceylon, 1973), 285-302, Table 9, 299.

1.2 Sri Lanka: a case study

Declaring health as a fundamental human right, WHO had pressured member governments into action and filled gaps in their health provision throughout the 20th century.¹² Accordingly, governments had a duty to provide health services. Wartime breakthroughs in disease control and new technology made it possible for WHO to disseminate new “universal norms” to combat disease through a “new generation of professional technocrats” (Amrith, 2006, p. 12). Most countries, including Sri Lanka, welcomed WHO’s initiatives, which also increased accountability for health in outgoing colonial administrations seeking to maintain their power in managed colonies. The attitudes of WHO headquarters (HQ) and the regional office towards Sri Lanka, and Britain’s reaction to WHO’s involvement (Sri Lanka had dominion status until 1972), have yet to be investigated.

Though there are a growing number of studies on the negotiations of WHO HQ and the regional offices with newly independent nations or colonies, very little research has been carried out in the Sri Lankan context.¹³ However, the historian Margaret Jones has attempted to examine WHO’s involvement in Sri Lankan health. She investigated the implementation of a WHO model of community-oriented tuberculosis control that sought to establish a horizontally structured programme through the integration of control into the general health services in the late 1960s (Jones, 2016). Jones’ paper argued that, despite the attempt at integration and some initial success, the WHO programme failed to supplant the existing structure of tuberculosis control already operating in Sri Lanka. In a subsequent study, Jones assessed how the WHO-UNICEF-directed Expanded Programme of Immunisation (EPI) and Health for All (HFA) concept were implemented in Sri Lanka in the 1970s and 1980s (Jones, 2020).¹⁴ The EPI programme in Sri Lanka in 1974 “gave a noticeable impetus to the already existing vaccination programme, which was

¹¹ The statistics used in this and subsequent tables, especially for the nineteenth and early twentieth centuries, cannot be taken as accurate. Registrar generals who oversaw their compilation constantly referred to their unreliability. However, even the early ones can be used to suggest trends.

¹² WHO International Repository of Information Share (hereafter IRIS): The first ten years of the WHO, 1958.

¹³ Little or no mention was made of Sri Lanka in Sunil Amrith (2006) and Monika Saavedra (2017).

¹⁴ Jones used WHO’s expert report and publications by Malinga Fernando and Tissa Cooray (1990). For health for all, see chapter 5.3.

subsequently expanded, structured effectively, and given added importance within the health services” (Jones, 2020, pp. 103–104). Jones’ book further argues that Sri Lanka, with limited resources, found raising general living standards the most difficult aspect of welfare governance, which was why the broad approach of HFA was “challenged almost immediately by contemporaries” (Jones, 2020, pp. 224–225). Investigating the social history of malaria control in Sri Lanka, Kalinga Tudor Silva (2014) emphasised the financial and technical support to the DDT and the Roll Back Malaria programme provided by WHO and the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), but did not highlight the work of international organisations such as UNICEF and the World Bank (WB).

These studies showed that the Sri Lankan government had been forced to address the new demands placed upon it by WHO, but that its responses had differed according to its political and economic circumstances. However, negotiations with the World Health Assembly (WHA), Executive Board (EB) and Regional Committee (RC) had been overlooked. In contrast, Monica Saavedra’s (2017) *Politics and Health at the WHO Regional Office for South-East Asia: The Case of Portuguese India, 1949-61* claimed that colonial officials had successfully engaged with the South-East Asia Regional Office (SEARO), though not about which health policies were implemented. Instead “SEARO [had become] an important locus for upholding international claims to Portugal’s boundaries in Asia” (Saavedra, 2017). An assessment of Sri Lanka’s relationship with WHO needs to inquire into the strategies employed in the creation of health policies at the national and regional levels. Therefore, this doctoral thesis will look at these relationships in international health from a different perspective; rather than just focusing on health diplomacy at the regional headquarters, it will also consider Sri Lanka’s negotiations at the level of the WHO HQ.

According to Jones (2015), decreasing mortality trends were related to the government’s acceptance in 1949 of the WHO’s concept of health as a fundamental human right and its expansion of the number of healthcare institutions and special health campaigns in the 1970s. The failure to reduce morbidity was attributed to structural problems of ill-health (poor housing, unsanitary conditions, the lack of a clean and safe water supply, and poverty) (Jones, 2015). The other causes of high morbidity were the existence of a wider range of determinants such as non-equal access to these services, the ad hoc establishment of medical institutions, and the poor delivery of healthcare services to the rural poor and estate workers (Rannan-Eliya and Sikurajapathy, 2009; Hewa, 2012). The factors contributing to ill-health, along with issues related to the structure and delivery of healthcare and the government’s commitment to healthcare provision, are fundamental causes of “excess versus access” antibiotic use in many countries, and it is important to explore those factors in the Sri Lankan context as well (Heyman et al., 2014).

Even though the British introduced some welfare state policies to Sri Lanka through constitutional reforms in 1932, the post-independence “benevolent welfare state” providing social services to its needy population was a topic that was much debated by many authors. Godfrey Gunatilleke (2005) attempted to demonstrate a relationship between the improvement in average life expectancy and access to healthcare, universal primary education and adequate nutrition in the first three decades after independence in Sri

Lanka. Those services were universally accessible, with every citizen having equal access regardless of social class and income. This enabled the lowest strata of the population to enjoy maximum opportunity to improve their health and living standards, which gave rise to improved life expectancy at birth. However, the World Bank (2014) recognised Sri Lanka's record of poverty reduction as a product of an inbuilt welfare system. This thesis attempts to assess the welfare system as a poverty reduction mechanism to increase the buying power of societies in addition to an ethical utilisation of the public purse to gain a fair degree of health and wellbeing for citizens.

The use of Sri Lanka as a case study is justified not because it can be considered “typical” of decolonisation in British colonial contexts, but because its particularities pose interesting questions about policy processes. Examining health policy in Sri Lanka also contributes to the historical scholarship of a region that has been neglected by historians focusing on the late British Empire. Negotiations with other countries and UN organisations were only part of efforts to ensure international political stability, a process that also included social, economic, and health service developments. Sri Lanka had a significant role in South Asia, not only because of its strategic location in the Indian Ocean but also because of its relationships with Cold War giants.¹⁵ On the one hand, the political leadership had to steer the country's development with the help of Western and Eastern Bloc creditors and allies and the UN. On the other hand, political stability was linked to the entangled problems of racial politics and state capacity. These different emphases were not necessarily incompatible but involved approaching the issue from different angles in ways that sometimes did not meet in the middle. Tensions created by divergent policy priorities exacerbated divergences of opinion and inclinations towards short-term political goals. Examining health policy exposes how deeply these tensions ran, extending beyond national – and international – politics. However, the historiography of Sri Lanka's political, economic and health encounters has largely not tackled how regional and international contexts intersected with political divisions within the country. Analysing health policy is an effective angle from which to address this gap, due to the involvement of UN agencies, other countries, and a range of Sri Lankan actors in the policy processes.

1.3 Development of antibiotics and AMR before 1948

The penicillin era began in 1928, when Fleming, working at St. Mary's Hospital in London, recognised a substance that killed or prevented the growth of some bacteria. He first reported the potential of penicillin to treat bacterial infections in 1929 (Bud, 2009).¹⁶ This important laboratory discovery was

¹⁵ Cold War, the open yet restricted rivalry that developed after WWII between the US and the Soviet Union and their respective allies. It was waged on political, economic, and propaganda fronts and had only limited recourse to weapons (Schlesinger, 1967; Leffler, 1999).

¹⁶ There are several stories about the discovery of the first antibiotics in the modern era. In the 1880s, Rudolf Emmerich, a professor of hygiene and bacteriology, and Oscar Low, both of the University of Munich, Germany, learnt that the “green bacteria” (*Pseudomonas aeruginosa*) isolated from injured patients' bandages inhibited the growth of other microbes in a test tube. This was transformed into a medication called *pyocyanase* (Jayaseelan et al., 2014), which was the first possible antibiotic drug used in hospitals but which showed mixed success. The instability and inherent toxicity of this compound in patients eventually proved that it had no safe clinical application, and thus its popularity eventually declined (Levy, 1992). As Gould (2016) argued, the modern era of chemotherapy against

converted into a medicine in 1940, after a group of scientists from Oxford University, including Howard Florey (a pharmacologist and pathologist), Ernst Chain (a biochemist), and Norman G. Heatley (a biologist and biochemist) published a paper describing a purification technique for penicillin (Neushul, 1993). They had noticed a promising outcome when penicillin was used to treat mice infected with a virulent strain of streptococci. Subsequently, in 1941, their first clinical tests with human patients were successful (Chain et al., 2005). As the British pharmaceutical industry showed no interest in penicillin production, in 1941 Florey and Heatley travelled to the United States to persuade American pharmaceutical companies to produce enough penicillin to continue their clinical tests (Neushul, 1993). With the primary impetus of providing effective treatments for combat wounds during WWII, the collective efforts of the US government and pharmaceutical producers such as Pfizer, Merck and Squibb translated a laboratory initiative into mass production in a very short period (Neushul, 1993, p. 385). In 1941, just before the introduction of penicillin, the mortality rate from staphylococcus aureus infections that had reached the bloodstream was reported to be 80 per cent (Skinner and Keefer, 1941). Penicillin successfully reduced mortality in a condition that was previously the leading cause of death (Lobanovska and Pilla, 2017). Penicillin was developed into a widely available medical product that provided quick and complete treatment of previously incurable bacterial illnesses, with a wider range of targets and fewer side effects than sulpha drugs (Bud, 2009).

It was impossible to prevent the emergence of resistant bacterial species that followed the introduction of penicillin in hospital settings. Several pieces of research were performed on the incidence of penicillin-resistant strains of staphylococcus in cases of infection even before the availability of penicillin to the public. Only a few such strains of pyogenic staphylococcus were identified before 1944. However, the incidence rate increased rapidly after that, particularly in hospitals, with many clinicians recording studies in which more than 10 per cent of all strains tested were found to be resistant to penicillin. Bacteriologists Mary Barber and Mary Rozwadowska-Dowzenko (1948) claimed that “in less than a year [from 1947] the incidence of penicillin-resistant strains of staphylococcus pyogenes giving rise to infection in this hospital had gone up from 14 to 38%. The work reported here shows that this increase is continuing”. Meanwhile, a new research pathway to develop new antibiotics gave rise to several new antibiotics, some of which made their way to patients’ bedsides. After this kick-start in the 1940s, the following 20 years were to be the “golden era” of discovery of classes of novel antibiotics, as no new classes have been discovered since then (Bud, 2009).

1.4 Context of AMR

Fleming’s original discovery, as well as the work of scientists, industry and international actors who spearheaded the antibiotic drive and AMR, have generated a large and sometimes controversial literature

bacteria began after Paul Ehrlich, a German doctor, and his team discovered *Salvarsan*, which was shown to be an effective treatment for syphilis. Ehrlich, once again with another German scientist (at Bayer, Germany), synthesised Sulphanilamide in 1908. Prontosil, an antibacterial drug of the sulphonamide group discovered during this process, was the first commercially used antibiotic produced by Bayer (Aminov, 2010).

(Slinn, 2009). Elaborating on the USA and industry contribution towards mass-scale penicillin production, Peter Neushul (1993) argued that most histories of penicillin development focus narrowly upon Fleming's discovery and the wartime research of Oxford scientists that produced just enough penicillin to conduct the first clinical tests. Histories of penicillin production highlight the achievement of large chemical corporations such as Pfizer, Squibb, and Merck. "Most either overlook entirely or at best minimize the important role played by scientists at the U.S. Department of Agriculture's Northern Regional Research Laboratory (NRRL), where mass production of penicillin first became a reality" (Neushul, 1993, p. 372). However, the industry's market-driven approach should not be forgotten either: in his analysis, Gradmann (2016) used the market strategy of German pharmaceutical company Bayer as an example of how research on antibiotic resistance has been a driving force in the development of new antibiotics. Meanwhile, Robert Bud (2009) conceptualised this analysis by contrasting the "triumph" of the conquering of infection with what he terms the "tragedy" of the excessive use of penicillin, which has led directly to the growth and spread of bacteria resistant to antibiotics. He highlighted the global spread of resistant bacteria as antibiotic use continues to rise in the context of social and cultural change across the world. Such studies make it clear that there was more to health strategies and budgets than investing in the development, production, promotion and utilisation of antimicrobials while tackling resistance issues; they also involved disagreements and debates about policy, political and social pressures about expectations and rights, and economic difficulties and international aid flow (Bud, 2009; Tyabji, 2004; Gradmann, 2016).

In addition to its biomedical interventions, WHO contributed to tackling the broad determinants of health (K. Lee, 2008) based on specialised opinions from core groups of experts or organisations, and it was the same for the field of AMR. A series of independent reviews of AMR by economist Jim O'Neill appeared to be one of the key expert assessments of the impact and cost implications of AMR for long-term development (WHO, 2016a, 2016b). Such findings influenced the current dialogue on AMR, and it is worthwhile to consider the behaviour and motives of such groups when seeking to gain an in-depth understanding of the mission of the UN agencies on AMR. The Review on AMR, chaired by O'Neill (2014), estimated that 10 million lives a year and a cumulative 100 trillion USD of economic output are at risk due to the rise of drug-resistant infections by 2050. A series of questions arise not only due to a partial estimate of the impact of AMR, caused by looking at only a subset of drug-resistant bacteria and public health issues, but also due to a lack of reliable data on bacterial infections (O'Neill, 2014, p. 7). De Kraker (De Kraker et al., 2016) queried whether "10 million people [will] die a year due to antimicrobial resistance by 2050", and identified the importance of more reliable AMR burden estimates. The report of O'Neill (2015) on antimicrobials in agriculture was also criticised for mentioning policy suggestions that were not based on the latest scientific evidence. Even his European counterparts rejected the suggestion that levels of antibiotic use should be reduced to Danish levels as not useful because it failed to recognise that conditions outside Denmark (or outside North-Western Europe) were very different (NOAH, 2015). Such studies revealed that the current dialogue on the AMR issue revolves mainly around the findings of US and Eurocentric studies and that attempts to generalise those results across the world without much attention

to considerable global variation in the patterns of AMR (with different countries often experiencing different serious problems) are problematic.

Some governments, however, endorsed a set of O’Neill’s recommendations that would require an investment of around 40 billion US dollars (Taylor and Smith, 2016). Brogan and Mossialos (2016) also described a framework for the evaluation of incentive mechanisms to critically appraise newly proposed strategies. This work additionally recognised that the proposed set of interventions would make little difference without “a global coalition for action on AMR”. That was backed up by Podolsky et al. (2015), who highlighted that the input of international organisations, in a nutshell, limited any emphasis on the contribution of the developing world, and it is a fact that neither a successful political mobilisation against antibiotic resistance nor a formal global mechanism for harmonising individual national efforts exists to this day. The internationalisation of antibiotic resistance discourse, which has been slow to develop, still bears the imprints of its state-centred origins, but it never analyses the national effect, nor the constraints and contributions from developing world perspectives. As a result, the existing studies have enabled me to identify in this thesis the complex political, administrative, and social and health determinants underpinning AMR from the perspective of a low and middle-income country (LMIC) setting, specifically Sri Lanka (Gradmann, 2016; Podolsky, 2018; Podolsky et al., 2015).

Sri Lankan scholarly work on AMR is narrowly focused on biomedical and health system evidence. This includes publications concerning healthcare workers’ and university students’ knowledge and perception of AMR (Menik et al., 2011; Sakeena et al., 2018), laboratory surveillance (Shah et al., 2017), and antibiotic susceptibility and resistance patterns (Luke et al., 2016; Jayaweera and Kumbukgolla, 2017; Fernando et al., 2017; Tissera et al., 2017). The Government, meanwhile, has launched the National Strategic Plan for Combating Antimicrobial Resistance in Sri Lanka (NSPSL) 2017–2022, which presents an integrated approach to tackling the root causes of AMR comprehensively and strategically.¹⁷ Analysing the international health regulations, a panel led by a WHO expert also noticed gaps in activities related to AMR (WHO, 2017a). According to a situational analysis of AMR in the South-East Asia (SEA) region for 2016 to 2018, Sri Lanka had made remarkable progress in implementing the National Strategic Plan of Sri Lanka (NSPSL) and came second only to Thailand in the region in 2018.¹⁸ Therefore, a critical analysis of Sri Lanka’s AMR situation, as well as of the health system from broader historical and policy perspectives, is necessary to understand the country’s strengths and weaknesses in tackling AMR effectively.

1.5 Research questions

A review of the existing literature on the interconnections between international and Sri Lankan health policies (and in particular those relating to the supply, use, distribution, and production of antibiotics as well as to AMR) led to the identification of several complementary gaps in the existing scholarship and

¹⁷ Ministry of Health records (hereafter MHR) Sri Lanka: NSPSL 2017–2022.

¹⁸ WHO Institutional Repository for Information Sharing (IRIS): Situational analysis of antimicrobial resistance in the SEA Region, 2018.

areas for further exploration. Recent studies of political, economic and health interactions between Sri Lanka and international organisations have not yet researched extensively either Sri Lanka's engagement with WHO HQ or how WHO's regional offices are formed. These are two of several gaps in our understanding of the role of the Sri Lankan government in terms of the provision of healthcare. This includes the provision and regulation of antibiotics in light of their overconsumption. The relatively thin literature available on Sri Lanka's health policy in relation to AMR is insufficient to understand the complexities of the health system and AMR in national, regional, and international contexts. Against this backdrop, this thesis intends to assess the global AMR problem by examining the Sri Lankan case study. Based on that aim the following research questions were designed.

1. Internationally, what have been the different economic, political, administrative, and social arguments on promoting or limiting antibiotic use? More specifically, how did international actors promote the use, research, production, and marketing of antibiotics in primary, secondary and tertiary healthcare settings from 1948 to 1977?

2. What can Sri Lanka's political and economic encounters and negotiations tell us about the dynamics of the relationships between the Sri Lankan government and UN organisations, international funding agencies and other countries, as well as about the different layers of national governance, for the period between 1948 and 1977?

3. What engagements were there between the Sri Lankan government and international organisations such as WHO, the Colombo Plan and UNICEF and other countries between 1948 and 1977 with regard to the expansion of healthcare? What different layers of national governance were involved?

4. What were the contexts, policymaker attitudes and issues relating to Sri Lanka's major health policies that had direct or indirect consequences for the management of antibiotics or AMR between 1977 and 2017?

5. With regard to tackling AMR, what were the dynamics of relationships between the different layers of Sri Lanka's health governance and with international and regional actors? More specifically, how can Sri Lanka overcome the weaknesses and threats in its management of AMR by using the strengths of the health system and the opportunities they provide?

By addressing these questions, this thesis will contribute to a growing number of studies seeking to tackle AMR by relating health policy to the political history of this period. It will demonstrate that health policy decisions reveal much about the dynamics of national governance and international health. It will contribute to wider histories of antibiotic production, use and supply by exploring the role of the regulator, supplier, prescriber, and user. By questioning the degree to which AMR was instrumentalised by the head offices and regional organs of international organisations, it will also question whether distinct lines between health and other political and development strategies can be drawn.

1.6 Structure of the thesis

Although elements of each chapter address several of the research questions, the thesis is ordered to focus roughly on each in turn. The first half of this thesis starts from 1948. This year is important to Sri Lanka because this was when it gained independence from Britain, and to the international health arena since the WHO came into official existence in 1948. This first half of the thesis ends in 1977 when the new government drastically changed the political, social and economic architecture of the country, introducing an executive president-led political system and liberalisation of the economy (Lakshman, 1987; Moore, 1990). Therefore, the first half of the thesis sets out the international, regional, and national policy environments in which political, economic and health decisions were made between 1948 and 1977.

Chapter two examines the production, supply, marketing, and use of antibiotics, and relates it to antibiotic resistance (ABR) internationally. It discusses how international organisations such as WHO and UNICEF influenced the use of antibiotics in international disease control programmes, and saw the rise of ABR. It examines how WHO struggled to set guidelines for testing antibiotic sensitivity against bacteria. It focuses on the demand for antibiotic supply and production, and how those demands were addressed by the pharmaceutical industry and the technical arms of the UN agencies. It considers how supplier-induced demand promoted the use of antibiotics. It weighs up how successful WHO was in achieving disease control programmes in the face of the failing efficacy of antibiotics.

Chapters three and four attempt to understand the complex interplay between the GoSL and UN organisations, international funding agencies and other countries, as well as the different layers of national governance involved in Sri Lanka's politico-economic and international health encounters. Chapter three focuses on how Britain, the USA and international funding agencies delivered their political and economic agenda at a time when British- and US-owned ventures were being nationalised by the nationalistic government of Sri Lanka. It analyses how Sri Lanka managed to sustain growing economic difficulties while maintaining the welfare state. In an examination of how diplomatic missions to the country by Britain and the USA reported growing political tension, it investigates how those countries reacted to Sri Lanka's economic and political needs. It studies why Sri Lanka did not have the relevant expertise, knowledge, skills, or monetary soundness to manage its national needs. While assessing how each government attempted to maintain the social welfare costs as far as possible to retain an undue advantage over rival parties, it sets out the background to gain a better understanding of how the economic constraints and policy failures of a country lead to the ill-health of its citizens.

Chapter four looks at the international, regional, and national contexts in which health policy decisions were made. It examines how Sri Lanka requested help from WHO HQ and its Regional Office in connection with the country's health needs, and how those organisations learned lessons from supporting health programmes in Sri Lanka. It describes several important health policy challenges faced by Sri Lanka, and the debates within Sri Lanka, the WHA, the EB and WHO's regional committees on how to address them. It further examines how the implementation of health initiatives was challenged by the country's

economic constraints. This section suggests ways political, economic and health debates in international and national contexts could have become entangled with the health policy aims of Sri Lanka, which the rest of the thesis then investigates.

Having considered the international, regional, and regional policy contexts in which health policies were negotiated, the next section of the thesis deals with health policy and AMR management from 1977 to the present day. It looks at what negotiations took place between people, between different layers of Sri Lankan governance, and with international actors over the formation and implementation of health policy on tackling AMR in Sri Lanka. The next two chapters set out how conflicting priorities at the international, regional and national levels have impacted the development of health policy since 1977. Those chapters explore whether WHO, its SEA regional office and Sri Lanka managed to work together effectively, despite the ideological differences highlighted in previous chapters. Chapter five examines how, as a part of economic liberalisation, the government encouraged the abolition of user fees and the booming of the private sector, which was to adversely impact on the public healthcare delivery system. It also investigates negotiations between Sri Lanka and international and regional actors, and takes a look at the country's governance systems and how these affected decentralisation under HFA. It shows how the different intellectual, institutional and political contexts in which they operated brought about disconnection in the health system, and even fomented mistrust between the national and provincial health authorities. Having considered the impact of such policies on the health system and AMR, chapter six explores the reforms to health that were attempted and the country's health strategies. It demonstrates how politically appointed Presidential Task Forces (PTFs) for Health negotiated health reforms with health bureaucrats so that policies could be implemented. These included the formulation of a national medicinal policy. It examines how national health strategies were put into practice despite limited health budgets in order to enhance the performance of the health system.

Considering the impact of the aforementioned health policies, reforms and strategies on the country's health system, chapter seven moves on to examine the dynamics of the relationships between the different layers of Sri Lanka's health governance, and between Sri Lanka and significant international and regional actors, and their effect on tackling AMR. It studies how national medicinal policies influenced the regulation, selection, supply and utilisation of antibiotics. This chapter demonstrates how pressure from the pharmaceutical industry and private sector influenced the way antibiotics were used as well as laboratory testing. Such actions prevented the implementation of the cabinet-approved National Laboratory Policy and delayed the introduction of a national medicinal policy. The chapter examines how the country's health sector capacity impacted on establishing national surveillance systems to track antibiotic use, bacterial sensitivity to antibiotics, and infection control practices. It also highlights that, because AMR initiatives were so wrapped up with the health, agriculture, veterinary, fisheries and environment sectors, the lines between what constituted the responsibilities of those sectors were fundamentally blurred. It finally examines how international, regional, and national policy initiatives sought to tackle AMR in the Sri Lankan context.

1.7 Sources and methods

1.7.1 Sources

This study aims to identify and fill existing gaps in evidence regarding the socio-politico-cultural drivers of AMR and to capture all the multifaceted aspects of the issue as it applies to the Sri Lankan context. For this, archival research was carried out to find underexplored and unexplored sources for historical analysis and to lead to a synthesis of evidence for critical discourse conditioned by temporal trends. According to the historical work prepared by Jones (2004a; 2009; 2020) and Uragoda (1987), Sri Lanka established an exemplary public healthcare delivery model, which was heavily influenced the Western model of healthcare during the colonial and post-independence eras. Because of the array of international and local organisations involved in the creation of health policy, the repositories of primary documents on this topic are widely dispersed. Different types of organisations also create different types of material that might constitute primary sources of data, such as correspondence files, confidential reports and personal communications. The selection of appropriate archives was made in various ways, for instance, assessing the methodology of similar historical work and searching through online catalogues of probable archives. After establishing effective communication with the archivists concerning access to online materials, reading room materials and catalogues, individual lists of materials were prepared according to the archives they were held in. The list of libraries, archives and online repositories are presented in table 1.3.

Table 1.3: List of physical and online libraries and archives, and abbreviations

Libraries and Archives	Online repositories
Bodleian Libraries, University of Oxford (Bodleian)	International Monetary Fund (IMF) eLibrary
Department of National Archives, Sri Lanka (SLNA)	Search Oxford Libraries Online (SOLO)
MetNed, WHO, Geneva (MED)	The Institutional Repository for Information Sharing (IRIS), WHO
Ministry of Health Sri Lanka, Records (MHR)	The World Bank Digital Archives (WBDA)
Rockefeller Archives, New York (RFA)	
Records of WHO's South-East Asia Regional Office, Delhi (RSEA)	
Sri Lanka Medical Library (SLML)	
The British Library (BL)	
The National Archives, Kew (TNA)	
The US National Archives and Records Administration at College Park, Maryland (NARA)	
The World Bank Group Archives, Washington DC (WBGA)	
Wellcome Collection, London (WTA)	
WHO Archives, Geneva (WHOAG)	

First, the Institutional Repository for Information Sharing (IRIS) was searched. This is the digital library containing all WHO material and technical information published since 1948. This WHO online repository provides descriptions (going right back to the very inception of WHO) of work carried out involving WHO HQ or RO and Sri Lanka as found in its accounts of the proceedings of the WHA, EB and RC meetings and also in the annual report of the Director-General (DG) and Regional Directors (RDs).

Records at the National Archives (Kew) provide a picture of the divergences and convergences between Foreign Office (FO) and Foreign and Commonwealth Office (FCO) opinion on political

movements and health projects in Sri Lanka. Similarly, they provide insight into the socio-political drivers in Sri Lanka in relation to international and regional politics, and the FO view of Sri Lanka's behaviour in the region. Consulting files on specific health and related social development projects allowed links to be made to projects on the ground, revealing regional and international influences on policymaking in Sri Lanka.

The FO and FCO files provide a useful but not comprehensive insight into the distinct pressures and motivations experienced by health policy decision-makers. To build up a better picture of these, a variety of other sources was consulted. The annual health report of the Health Department of Ceylon and health survey reports from various organisations were accessed from the Wellcome Collection, London (WTA), the British Library (BL) and the WHO archives in Geneva (WHOAG). Those revealed what information was collected by, and provided to, international agencies and other countries, indicating what they were interested in and what evidence was available to them on the basis of which they could make decisions. Confidential reports by experts who had been commissioned to assess Sri Lanka's health programmes also provide more of this type of information.

English-language newspapers in Sri Lanka such as the *Ceylon Daily News*, which was read by the higher and upper-middle classes as well as expatriates across the region, were consulted at the Department of National Archives of Sri Lanka (SLNA) to garner elite Ceylonese and European opinion on the reception and purpose of health programmes. Hansard reports provided insight from a political perspective into parliamentary debates on issues related to the provision of healthcare and related public demands. The available sources tended to spotlight periods of policy initiation or assessment. These points in time are important for explaining how institutional relationships influenced policymaking, as they were the times when the most intensive discussions between decision-makers took place. They also reveal the ideological underpinnings of the disease control programme, and if and how these changed during changes in government. Where possible, details of how policies were received by the public or how they were implemented have been included, but written records of such aspects proved somewhat elusive. There is an ample number of newspaper articles that captured disease trends, epidemics, government initiatives with regard to the healthcare delivery system, issues with the preventive and curative healthcare sectors, patients' expectations and demands, and success stories concerning government- or foreign-funded health and related projects. These articles also contained details of important local and international political, economic and social trends.

The archival materials of the Ministry of Health (MoH), Sri Lanka, are stored in a record room off the premises (MoH) and are not readily accessible to external researchers. Being an employee of the MoH, I was granted permission by the Director General of Health Services (DGHS) to access the location and content. Unfortunately, none of the relevant materials from before the 1990s was available. The files that were there were also not easily accessible due to lists of materials not being detailed enough to identify the

content. Material extracted from various units of the MoH provided insight into pharmaceuticals management, ministry dialogues with professional colleges, and internal ministry communications.

Clinicians' perspectives on healthcare delivery are also important for assessing health policy in Sri Lanka. For this, the Sri Lanka Medical Library (SLML) provides published literature such as journal articles on pharmaceuticals, antibiotics and antibiotic resistance (from as far back as the 1950s) and important trends in the health system as well. Speeches, newspaper headlines, opinion pieces and press releases written both in the English and Sinhala languages were also consulted. Relevant items in the Sinhala language were translated into English by an independent translator.

To understand WHO's involvement in policymaking in Sri Lanka, it is necessary to access the WHO archives in Delhi and Geneva. According to email communications with the librarian at the WHO SEARO, Delhi, all the old files have been moved to WHO HQ and are available online. However, a significant gap in evidence from the WHO SEARO was apparent in one online repository. Some of those important drafts or unpublished reports from the 1960s (which had never been opened for external use) were able to be accessed physically thanks to the researcher's official government affiliation. Those confidential WHO mission reports provided a detailed account of experts' opinions on pharmaceuticals, management, and TB and venereal disease control in Sri Lanka. It became apparent that important correspondence between the SEARO and Sri Lanka is available at the SEARO "Registry", which also needs a special strategy to access. Those materials gave an important insight into negotiations between foreign experts and different levels of national health governance management of TB and pharmaceuticals. For instance, this thesis was able to assess the work of a WHO specialist, Dr R.T. Neubauer, who worked as a foreign expert in Sri Lanka's anti-tuberculosis campaign between 1953 and 1958, which was not studied in previous literature (Jones, 2016, 2020).

Correspondence and unpublished materials at WHOAG highlight a hidden picture of the difficulties experienced by governments and UN agencies carrying out disease control, pharmaceutical and laboratory programmes. However, there was a substantial gap at the Geneva repository in important documents relating to essential medicines. Those records are kept at a different location outside the archives which is not open to external users. Once again, the researcher's official affiliation with the MoH, Sri Lanka, was helpful for accessing "hidden archives" within the HQ. The WTA and the Bodleian Library of the University of Oxford also provided insights into the attitudes shown by Britain, the US and WHO when dealing with the manufacture, supply and use of antibiotics from the 1940s to 1960s.

Records, including confidential correspondence between the UN, WHO, the WB and Sri Lanka, found in the World Bank archives (WBA) in Washington, DC explain some of the tensions involved in WB-assisted projects intended to benefit Sri Lanka's population in terms of health, family planning, nutrition and so on. Meanwhile, the Rockefeller Foundation Archives (RFA) in New York give inside-policy to grassroots-level information on the establishment of Sri Lanka's health unit programme and hookworm disease control in the 1920s to 1930s. These archives further provide MoH correspondence and

reports on population health, nutrition and funded healthcare projects. Selected US foreign assistance agency files from the US National Archives in College Park (NARA), Maryland, were used to assess how the US government handled Sri Lanka's political, economic and health affairs through the secret reports of the US diplomatic mission in Sri Lanka. Those records are useful for identifying British FO and FCO actions over Sri Lanka that are touched on in the Kew records.

While researching targeted materials and searching through physical archival catalogues, I identified an array of related materials within the archives that need further exploration. For instance, files related to aid from the US Agency for International Development (USAID) in the 1960s and the WB in the 1970s for health sector development in Sri Lanka; WHO reports on health assessments in Sri Lanka in the 1960s and 1970s, including L.A. Simeonov's *Better Health for Sri Lanka*; and public health demands from the 1960s. More materials are also available at the National Archives of Canada in Ottawa: for example, on health conditions in Sri Lanka in the 1950s; Canadian aid to Sri Lanka; and health and welfare in Sri Lanka's rural healthcare in the 1970s. Unfortunately, extended trips to the US, Canada, Sri Lanka and Switzerland (visits planned at the beginning of this study) had to be cancelled because of archive closures due to the current COVID-19 pandemic: the WHOAG, for example, remains closed to non-WHO researchers.

It must be recognised that the scope of this study is limited by the availability and accessibility of archival materials due to the closure of the archives and travel restrictions because of the current pandemic. To bridge the evidence gap, this thesis employs in-depth interviews exploring attempted contemporary policy initiatives that created or suppressed AMR in Sri Lanka. The work on how policy-level officials understood, adapted and experienced health policy and AMR – that is, the history of policy implementation – will rely on oral histories, like the informative work on post-penicillin antibiotics (Tansey and Reynolds, 2000) and the history of smoking and health and ethics in medical education in Britain (Reynolds and Tansey, 2007).¹⁹ The second half of the thesis, which discusses health policy and AMR after 1977, is enriched by data gathered from in-depth interviews with current and retired health officials and other resource personnel (such as WHO officials) so as to facilitate an understanding of the past in its own terms. Since this thesis is an interdisciplinary work that straddles history and health sciences, health science research techniques were employed to recruit participants for the study.²⁰ To conduct interviews, ethical approvals were obtained from both the Arts and Humanities Ethics Committee of the University of York and the Research Governance Committee of the Department of Health Sciences of the University of York. Permission to conduct this study in the MoH, Sri Lanka, was obtained from the DGHS.

1.7.2 Analytical frameworks for examining interview data

The content of the interviews was categorised according to two frameworks that were designed by the researcher with the principal objective of bringing out the policy implications of issues being examined

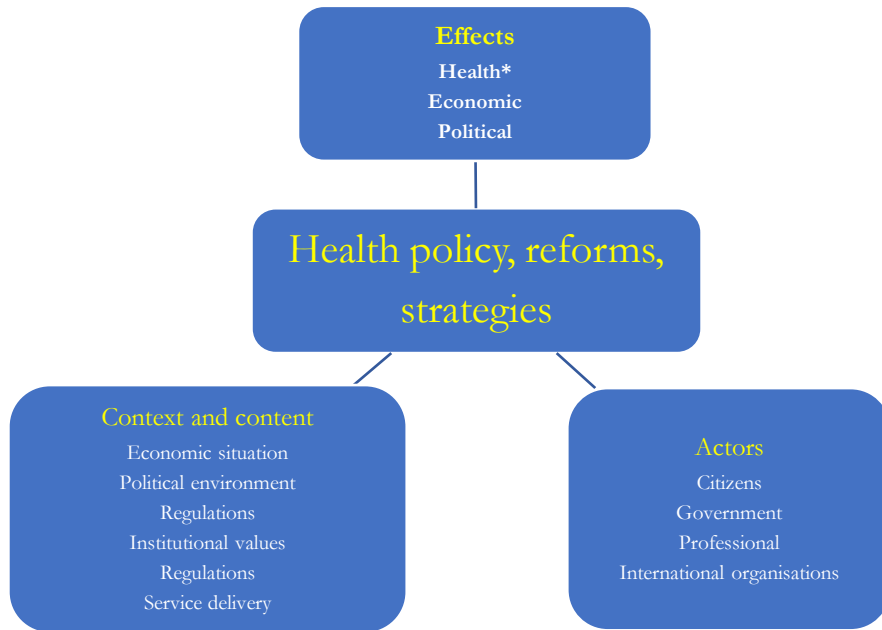
¹⁹ In-depth interviews with policy experts were used to collect evidence for the Internationalisation of Tobacco Control between 1950 and 2010 (Reubi and Berridge, 2016) and the origin of the black report (Berridge, 2002).

²⁰ Sampling techniques will be presented in subsection 1.7.3.

in the study: health policy and AMR in Sri Lanka. The first framework was designed to assess health policies, which was a challenge due to the nature of the policies, lack of information, ambiguity over the authorising body, and issues with adaptation and practice. This was a very difficult endeavour in Sri Lanka as the health system contains more implicit policies than explicit ones (Samarage, 2017). There are several widely used frameworks and theories for analysing the public policy process. Harold Laswell (1956), an American political scientist, described the policy process as a decision process that was categorised into seven elements: intelligence, promotion, prescription, invocation, application, termination and appraisal (Ronit and Porter, 2015). Agreeing with Lasswell (1956) and Brewer and deLeon (1983), Walt et al. (2008) stated that the best-known public policy framework is the “stages heuristic” one. That framework method splits the public policy process into four stages: agenda setting, formulation, implementation and evaluation. Subsequently, Walt and Gilson (1994) developed a policy analysis framework specifically for reforming the health sector in developing countries. They identified that health policy research focused largely on the content of policy, neglecting actors, context and processes. Their “policy triangle framework” is grounded in a political and economic perspective, and considers how different elements interact to shape policymaking. This framework has influenced health policy research in a diverse array of countries and has been used to investigate a large number of health issues, including child and adolescent mental health policy (Mokitimi et al., 2018), health sector reform (Etiaba et al., 2015) and multidrug-resistant tuberculosis (Voelz, 2021). However this framework is aimed mainly at the policy environment, and the present study recognises the importance of analysing the impact of specific public health policy interventions to establish not only the effectiveness of the policy (Frieden, 2014) but also its effects on health inequalities (Thomson et al., 2018).²¹ Therefore, in consideration of the requirements of the current study, I have developed a framework called the modified policy triangle framework (figure 1.4), adjusting the “policy triangle framework” of Walt and Gilson (1994) by adding the impact on health, and economic and political systems.

²¹ There are several definitions of health inequalities. In epidemiology, the most commonly accepted definition is variations in health that are systematic, socially produced (and therefore modifiable) and unfair (Whitehead and Dahlgren, 2006).

Figure 1.2: Modified policy triangle framework (MPTF)



* Health outcomes include the social distribution of health outcomes (i.e., health inequalities)

For the second framework, this study attempts to disentangle the complexity of identifying how global health actors frame the issue of AMR by examining earlier work. Anderson et al. (2019) developed a governance framework with three areas (policy design, implementation tool, monitoring and evaluation) and 18 domains to assess the national action plans on AMR. Wernli et al. (2017) used five variables (worldwide, history, actors, interventions and measurements) to map global policy discourse on AMR. The WHO SEARO developed a tool (and piloted it in several countries) with seven components to conduct a system-wide analysis of AMR containment programmes (Kakkar et al., 2017). The WHO (2015) Global Action Plan (GAP), which is the main policy instrument at the global level, proposed five strategic objectives against AMR (awareness, infection control, evidence, antibiotic use and economic module). This thesis identifies the previous frameworks such as these had placed little emphasis on laboratory services and the selection of antibiotics. Therefore, using critical elements of the GAP's strategic objectives on AMR (WHO, 2015) together with the constituents of the SEARO tool (Kakkar et al., 2017), I developed a novel framework for this thesis, the Antimicrobial resistance analysis framework (AAF), adding the main component relating to laboratory services to fit the Sri Lankan context. The main components of this framework were AMR policies; laboratory management; the management of antibiotics; infection prevention and control; and awareness and research (table 1.4). Subcategories were selected based on the previous frameworks and literature (WHO, 2015; Kakkar et al., 2017; Shah et al., 2017).

Table 1.4: Antimicrobial resistance analysis framework (AAF)

Main categories	Subcategories
AMR policies, guidelines	National AMR action plan (NAP) and surveillance system National AMR containment policy
Laboratory management	National laboratory policy Capacity strengthening of microbiology laboratories
Management of antibiotics	Regulation of antibiotics Selection of antibiotics Surveillance of use and sale of antimicrobials
Infection prevention and control (IPC)	IPC programme AMR stewardship programme Healthcare-associated infections (HAI) surveillance AMR surveillance
Awareness-raising and research	Antibiotic awareness campaign Professional education and training Proper environment for research and innovation

Notes: HAI is defined as infections that occur in a patient during the process of care in a hospital or any other healthcare facility which were not present or incubating at the time of admission (WHO, 2016).

In terms of a questionnaire for the study, Uwe Flick (2018) argued that interviews, based on a semi-structured topic guide, can be understood as a way to iteratively rebuild “subjective theories” about a set of themes, which is in line with the goals of this study. Therefore, for this study, I developed a semi-structured topic guide, with my PhD supervisor’s guidance, which was clustered around three broad themes, specifically: (1) key decisions made by the GoSL relating to antimicrobial policy in the national and international contexts; (2) major health policies of Sri Lanka that had direct or indirect consequences for the management of antibiotics or AMR from 1977 to 2017; (3) the key components of the strategy to tackle AMR in Sri Lanka.²² The topic guides served to ensure that areas identified as important based on the literature review and also components of the MPTF (figure 1.2) and the AAF (table 1.4) were explored. The first and second parts of the interview guide contained questions on actors and also on the content, context, and effects of a set of health policies in Sri Lanka. The third part of the guide contained questions related to the management of AMR in Sri Lanka such as AMR policies; laboratory management; the management of antibiotics; infection prevention and control; and awareness and research.

In this study, all the interviews were conducted by the principal investigator, and the interviewer added additional questions and explored topics further depending on interviewee responses. Therefore, the question wording was not standardised, nor was the format rigid. It was important to keep the “agenda flexible” so that any topics important to individuals were not overlooked, even if they were not outlined in the interview topic guide (Britten, 2006). It was anticipated that the data would show how interviewees perceived health policy, pharmaceuticals (including antibiotics) and AMR in Sri Lanka and what they believed the influence of WHO and other international organisations to be in those areas. To ensure reliability, the interviews were audio-recorded, transcribed and stored anonymously at a secure digital location (file store) at the University of York.

²² For the interviewer guide see appendix 3.

1.7.3 Sample

In terms of recruiting participants for interviews for health policy research, the purposive sampling technique (PST) and the snowball technique (ST) were used beforehand (Lavis et al., 2008; Clovis et al., 2012). The first technique, the PST, is a form of non-probability sampling in which researchers rely on their own judgement when choosing members of the population to participate in their surveys. Palinkas et al. (2015) argued that the essence of purposive sampling is to select information-rich cases for the most effective use of limited resources. However, it is also noted that the disadvantage of PST is the vulnerability to errors in the selection of participants by the researcher. The second technique, the ST, is a non-probability sampling method in which existing subjects provide referrals to recruit samples required for a research study. Johnson (2014) claimed that the ST is an efficient method for locating hidden populations. However, the main disadvantage is its reliance on the subjective judgements of informants. In terms of previous policy research, Morain et al. (2017) employed purposively selected institutional leaders from 25 healthcare systems and interviewed the main informant and another officer in the same institution together to identify policy innovations in the US health system. Lavis et al. (2008) also adopted a purposive sampling technique for interviewing directors of organisations that support the use of research evidence to create an evidence-informed health policy. Purposive sampling was also used by Gagliardi and Dobrow (2016) to recruit health service researchers, clinicians and managers to study the conditions needed for integrated knowledge translation in healthcare organisations. The ST was employed by Clovis et al. (2012) to identify key informants for constructing and disseminating knowledge about oral health policy in Canada.

The present study employs both methods, PST and ST. Firstly, a purposive sampling approach of maximum variation was adopted based on the participant's role (experts in health policy/pharmaceuticals/AMR) and country of origin. For this exercise, a list of current and former senior healthcare administrators and experts in pharmaceuticals and AMR based in Sri Lanka and at the WHO's Regional Office, India, was prepared systematically. To minimise errors in the selection of participants, two methods were used to identify the most suitable interviewees. First, the MoH online and physical databases were searched to select the most suitable contributors for the relevant policy formation and formulation process. Second, the WHO HQ and SEARO online databases were searched to find current and former officials whose professional designations were related to public health policies, pharmaceuticals and AMR. Third, previous publications were used to find contributors on relevant health policies, pharmaceuticals and AMR in Sri Lanka and the SEARO region. During this stage, 60 potential participants were individually identified, contacted by phone or email, and a reminder email was sent to them two weeks later. Nine emails were undeliverable due to expired email addresses, and the majority did not respond or declined the invitation. Using this method, 15 participants were recruited with a response rate of 25 per cent ($n = 15$). This study also embraced the ST to access possible interview partners as identified during the interview or recommended by the interviewees. To avoid subjective judgements of informants, a priority list was created for the ST sample based on thorough research into candidates' contributions and work in the relevant areas. Finally, it was planned to interview 30 participants. Using this method, it was possible to gain sufficient

interviews to reach thematic saturation, as recognised by the interviewer (PI), when no new information could be gained from interviews. According to Guest et al. (2020), thematic saturation in explorative interviews varies according to the objectives of the study and the size of the project. For instance, thematic saturation appears later and needs more participants in studies with broad objectives than studies with narrow objectives. Since this study has broad objectives and the participants were scattered across the world, it took a long time, and more participants had to be enrolled.

1.7.4 Interview techniques

For the interviews, prior appointments were made with the key informants to carry out personal interviews, and a mutually convenient time was selected to administer the questionnaire.²³ After a formal introduction, all documents pertaining to ethical and administrative clearance for the study from the relevant authorities were shown to each interviewee and a copy of the documents was provided for official use. A self-reflective analysis of the in-depth interviews was conducted by myself as a practising clinician, senior healthcare manager and historian. First, I conducted interviews, after contextualising the public healthcare system in Sri Lanka and briefly explaining the objectives of the project to the respondents. Then I reflect on how it brought with past healthcare perspectives during the interviews by deploying practices such as intent listening, deep exchange, self-reflection, being conscious about the researcher's position both as an insider and an outsider, considering issues related to provision and demand, learning from narrators, and sharing experiences while maintaining a professional atmosphere. In general, the post-interview analysis included how a particular event, issue or evidence gap was addressed by the interviewee as well as, finally, how such evidence was able to help shed light on the healthcare system in Sri Lanka. Most of the participants, especially those from WHO and current MoH officials, asked for their names and job titles to be omitted. Therefore, for the sake of consistency, this study has maintained the anonymity of all participants. This method also meant participants were more willing to disclose information of a sensitive nature. For instance, participants referred to political interference in the policy process during the discussion about the PTFs and the Health Master Plan.

All the interviews were conducted in English, and the duration of the interviews ranged from 60 to 110 minutes; however, interviewees whose interviews lasted longer than 60 minutes were given a break to ensure that the interviewee's interest was maintained. Some interviewees were interviewed again to clarify information received from subsequent participants. For instance, P01 and P16 were interviewed virtually for a second time to clarify information on the dual practice of doctors. To ensure reliability, the interviews were recorded, transcribed and stored anonymously at a secure digital location (file store) at the University of York. In total, 25 in-depth interviews were conducted between September 2018 and April 2021, allowing a satisfactory number of persons to be interviewed so that important aspects of the topics being investigated could be revealed. Most interviews (21) were conducted as face-to-face interviews within a year of the start date of the interviews. Four interviews, which were originally planned as face-to-face interviews in March

²³ Appendix 3.

2020, were affected by the COVID-19 pandemic and held as online interviews in April 2021, but five selected participants, who are in vulnerable groups for this infection, have not been interviewed as they either are not happy to conduct online interviews or lack the facilities to do so. In this group, three interviewee candidates held top positions (additional secretary, director-general and deputy director-general) in the MoH from the 1980s to 2000. Another one was a retired senior academic in pharmaceuticals and the fifth was a retired microbiologist.

1.7.5 Characteristics of the sample

Participants had a mix of expertise, such as health policy, pharmaceuticals, and AMR, and worked in the higher levels of their respective fields nationally and internationally. Table 1.4 shows an overview of the study participants, including their expertise and work location. Demographic characteristics such as age, gender and highest position attained during their career to date were deliberately not stated explicitly in order to maintain the anonymity of participants. The health policy experts from Sri Lanka had held (or were still holding) a senior-level post (director, deputy director-general, DGHS, additional secretary or secretary) at the MoH. The participants from WHO also worked (or were still working) at the policy level. Experts in pharmaceuticals or AMR had postgraduate qualifications in a relevant field (PhD, MD, or MSc) and/or worked (or had been working) in the same area at the policy level for at least five years. All health policy experts had also had plenty of exposure to the topic of AMR during their careers. For instance, either they

had contributed to higher-level policy work in relation to pharmaceuticals (in Sri Lanka or WHO settings), or part of their expertise (e.g., infection control or public health) related to AMR.

Table 1.5: Overview of study participants

No	Expertise	Work settings
P01	Policy, pharmaceuticals	Sri Lanka
P02	Policy, pharmaceuticals	Sri Lanka
P03	AMR	Sri Lanka
P04	Policy, pharmaceuticals	Sri Lanka, WHO
P05	Policy, Sri Lanka	Sri Lanka, WHO
P06	Policy, AMR	Sri Lanka
P07	Policy, pharmaceuticals	WHO
P08	Policy	Sri Lanka, WHO
P09	Policy, pharmaceuticals	WHO
P10	Policy, pharmaceuticals	Sri Lanka, WHO
P11	Policy, AMR	WHO
P12	Policy	WHO
P13	Policy	WHO
P14	Policy	WHO
P15	Policy	WHO
P16	Policy	Sri Lanka
P17	Policy, AMR, pharmaceuticals	WHO
P18	Policy	WHO
P19	Policy	Sri Lanka, WHO
P20	Policy, pharmaceuticals	Sri Lanka
P21	Policy	Sri Lanka, WHO
P22	Policy	Sri Lanka
P23	Policy, pharmaceuticals	Sri Lanka
P24	Policy	WHO
P25	AMR	Sri Lanka

1.7.6 Analysis

By carrying out content analysis in line with Philipp Mayring (2000), interviewees' responses to the questions could be revealed. For this, all interviews were read as a whole to gain an initial impression of the concepts. From this exercise, overarching themes and a more specific code list were derived. As Bradley et al. (2007) described for health system research, an integrated approach was used to develop the coding structure. The codes were drawn up using initial codes generated from the interview topic guide and the components of an MPTF (figure 1.2) and AAF (table 1.4). The principal investigator (PI) reviewed transcripts for accuracy and to identify subthemes. Subthemes were grouped within the main codes to develop a codebook, which was applied to transcripts using NVivo 12.1 software. Memos were written for each code, describing subthemes and their frequency, and presenting exemplifying quotations. The selected documents were also applied to NVivo 20.1 software and analysed under the same themes. A colleague of the PI (operating in the same capacity) reviewed memos. Differences of opinion were discussed and resolved through discussion and comparison with raw data. Findings were refined until they became distinct. An individual table was prepared for each health policy, and five tables were made covering management of AMR. Each table consisted of the main categories of the relevant frameworks (MPTF and AAF), subcategories, and findings. Those tables were included in the results. Against this background, this

wide range of data sources (including primary and secondary data) and interview findings (made accessible and retrievable for consultation) was utilised to build a complete picture of the health histories and health policies addressing AMR in international, regional and national contexts.

Chapter 2. Affinity and resistance to antibiotics and internationalisation

Antibiotics and human resistance have a complex relationship with access and excessive use. Although extensive work has been carried out on antibiotics production, supply and use in the post-war world, there is relatively little historical scholarship about the history of antibiotics resistance and its many drivers, including national, regional, and international settings and organisations. Robert Budd (2009) has assessed the uneasy implementation of penicillin production globally, but not much attention has been paid to the effects of the widespread use of other antibiotics across developing country contexts. Accounts of a range of issues encountered during the creation and running of penicillin plant projects in Poland and India were available in Slawomir Lotysz (2014) and Nasir Tyabji (2004) respectively, but those work did not assess the regulations for use and how these have contributed to overuse. Podolsky et al. (2015) examined the difficulties faced in stitching together global alliances to fight against AMR, but this work does not systematically or critically examine the factors driving the demand for – and supply of – antibiotics. Christoph Gradmann (2016, 2013) has provided two important studies about the identification of antibiotic resistance even as new products and diagnostic methods were being developed after the Second World War. However, this work gave more emphasis to industry and organisational perspectives in developed country contexts, rather than developing economies. Ronald W. Clark (2011) focused on E.B. Chain's role in the development of penicillin programme, but he failed to do justice to the complex international setting within which Chain was working.²⁴ Thus, contemporary historical accounts do not explain satisfactorily how the programme contributed to the dissemination of knowledge in global antibiotics production, nor do they explain how views on the problems involved in its implementation and the broad consequences of antibiotic resistance have changed and evolved over time, with perspectives varying from country to country. Against this backdrop, the main intention of this chapter is to analyse antibiotics use, sensitivity testing, supply, and production with regard to antibiotics resistance in the international context in chronological order from 1948 to 1977. A first step in gaining an understanding of the dynamics between the above factors is the studying the publicity surrounding antibiotics and the behaviour of the antibiotics market during the late 1940s and the early 1950s in the international context.

2.1 Publicity and market behaviour

As Bud (2009) stated, penicillin's image had been exaggerated and exploited by institutions, companies, organisations and nations during WWII. Their interest and ambitions framed the way its story was told, serving not only their own self-understanding but also the interpretation of drugs. The publicity for antibiotics began far before civilian use of the drugs became established. In 1944, *The Times of Ceylon* published an article that aimed to enhance enthusiasm for the British production of penicillin, implying that

²⁴ Ernst Boris Chain, a German-British biochemist, was a co-recipient of the 1945 Nobel Prize in Physiology or Medicine for his work on penicillin.

antibiotics would be made available for civilians immediately.²⁵ The Therapeutic Research Corporation of Great Britain Limited had a penicillin advertisement placed in the *British Medical Journal* in August 1944 “to meet the needs of various marketing sections of [their] member companies”.²⁶ The editorial committee of the *British Journal of Surgery* (BJS) published an additional issue in July 1944 that dealt exclusively with the new drug penicillin and was entitled “Penicillin in Warfare”.²⁷ The advertising manager of the *British Journal of Surgery*, Ernest A. Jackson, confirmed the editorial committee’s decision to accept a few approved advertisements from Glaxo Laboratories Ltd on 27 June 1944.²⁸ Publicity was only one factor impacting the antibiotics market, however – other factors included the costs of production and distribution, competition between different companies and countries, and exchange rates.

In the late 1940s, the resulting high production costs with a corresponding decrease in gross profit forced some distributors in the US to withdraw from the antibiotics market.²⁹ This was due to the sharp decline in the price of oral penicillin products and subsequent credit adjustments to over-distributors without the benefits of adjustments on the part of over-suppliers of penicillin.³⁰ No exceptions were made for injectable penicillin and streptomycin, which were introduced at \$16, but soon reduced in price by half.³¹ But even here, distributors found themselves in a tug-of-war between prime producers of antibiotics. By contrast, as mentioned by an officer of the Burroughs Wellcome and Company (BWC), New York,

...our list price of the “tabloid” penicillin calcium [compares] very favourably with competitive products, and a large number of retail druggists who purchased directly from manufacturers obtained better discounts than from the distributor. This was an important factor that influenced the choice of the brand since it was found that most physicians did not specify penicillin tablets by trade name. Their usual practice is to permit the pharmacists to use his own discretion in the brands he dispensed. This practice encourage[d] selling the product with the greatest profit margins. The sales of ‘tabloid’ penicillin calcium to hospitals had been small. Even though the use of oral preparations to replace or to supplement parenteral administration has been growing, doctors and hospitals continued to show a decided preference for the parenteral form.³²

Compared to the US, the prices of penicillin and streptomycin products did not deteriorate as sharply and as rapidly in Britain, as these antibiotics were released from control in the UK.³³ Meanwhile, M.G. Matthews of Wellcome Foundation Limited was anxious not to lose the company’s export business to countries needing penicillin. Mentioning the problem of foreign exchange, he claimed that “although dollars will be difficult to get by the other countries needing penicillin, they may prefer to use dollars for

²⁵ WTA: British production of penicillin, *The Times of Ceylon*, November 11, 1944, WF/TRC/02/347, Penicillin Advertisements and Propaganda, 1944.

²⁶ *Ibid.*, Letter from Therapeutic Research Corporation of Great Britain Limited to the London press exchange limited, August 21, 1944.

²⁷ *Ibid.*

²⁸ *Ibid.*

²⁹ WTA: PP/EBC/K.5, “Correspondence, Aschberg, O. and Aschberg, F.”, 1946.

³⁰ *Ibid.*

³¹ WTA, Memorandum of Burroughs Wellcome & Co. (USA) Inc. sent from New York to London, November 21, 1946, WF/M/P/16, “Penicillin files: Correspondence with overseas houses”, 1946.

³² *Ibid.* Parenteral: not delivered via the intestinal tract. For example, parenteral nutrition is food that is delivered intravenously.

³³ WTA: PP/EBC/K.5 Box 58, Memorandum of Burroughs Wellcome & Co. (USA) Inc., from J.K. Krizan (New York) to J.B. Dunnett (London), September 29, 1947.

the import drugs of that kind when they can show a saving in cost compared [with] London.”³⁴ Later, in 1949, the New York office of BWC showed decreasing interest in the sale of these products because of the competition from manufacturers in the US and New York export markets, and decided to discontinue domestic sales of all antibiotics but to continue submitting quotes in response to invitations to bid from the US institutions ordering in large quantities.³⁵ Subsequently, a drastic reduction in the price of penicillin noted by the WHO in 1952 was substantially maintained in both the US and Europe, where the market for drugs and other pharmaceuticals had become easier.³⁶ Further reductions in the price of penicillin were noted, and countries undertaking mass campaigns with this product were expected to benefit.³⁷

2.2 Antibiotics use and resistance

Though there was some geographical variation, during the inception of the World Health Organisation (WHO) in 1948, it was noted that as a result of World War II, many infectious diseases had increased spectacularly, with the potential to create a public health emergency needing intensified measures of control. Nevertheless, these disasters were averted, largely thanks to antibiotics (Bud, 2009, p. 75). The first Director-General (DG) of the WHO, Dr Brock Chisholm, declared in 1948 that rises in infectious diseases posed a threat to the world.

Tuberculosis having reached epidemic proportions in many war-stricken countries, it was early recognised that to combat the spread of the disease, international action was needed...the numbers suffering from venereal infections had greatly increased; intensified measures of control were required; penicillin recently introduced, had proved effective in the treatment of these diseases, especially syphilis and gonorrhoea.³⁸

Meantime, the expert committee on venereal disease (ECVD), in a meeting chaired by Dr Chisholm, also claimed that treatment for VD was making great progress thanks to newly invented penicillin and sulphur drugs. However, the chairman of the expert committee, John E. Mahoney of the US public health services, disagreed, arguing that “[t]here [was] no assurance that the new drug will continue to act in the same beneficent way in the years to come. Resistance may be created against them. We must hurry up to diminish the reservoir of VD infection while the new agent remains powerful”.³⁹ Nevertheless, most of the countries highlighted the potential of antibiotics at the Second World Health Assembly (WHA), including Dr Irène Domanska (a delegate of Poland), who claimed that

Since its discovery, penicillin has been an indispensable drug, the sole means of combating various contagious and infectious diseases, including venereal diseases, which had great social significance and were easily disseminated.⁴⁰

³⁴ Ibid., Memorandum of Wellcome Foundation Limited from L.G. Matthews to J.B. Dunnett, July 25, 1947.

³⁵ WTA: WF/M/P/16/05, Memo from L.G. Mathew to Bombay, Cape Town and Buenos Aires, October 25, 1949.

³⁶ Ibid.

³⁷ IRIS: WHO No 59, The work of WHO, 1954, 50.

³⁸ Institutional Repository for Information Sharing (IRIS) of the WHO: WHO No 16, Annual Report of the DG, 1948, 11, 13.

³⁹ WHO archives, Geneva (WHOAG): Press Release No 625, WHO1-465-7-1, VD expert committee sessions 1948 to 1949.

⁴⁰ IRIS: WHO No 21, Second World Health Assembly (WHA), Verbatim Records, 1949, 105.

Therefore, the WHO was convinced to embark on programmes to diminish the reservoir not only of VDs but also of other infectious diseases while the new drug remained strongly effective. For instance, the WHO undertook an extensive post-war collaborative activity with UNICEF to combat prenatal and infantile syphilis with recently introduced penicillin, as part of overall anti-venereal-disease programmes being carried out by governments.

The main strategies of the WHO to combat infectious diseases were fourfold: using long-acting penicillin, standard penicillin as a prophylactic treatment, broad-spectrum antibiotics, and mass treatment for the whole population. Recognising the important advantages of long-acting penicillins, like high potency and single-dose treatment, the WHO's DG, Dr Joseph E. Candau, stated in 1954 that "successful examples of methods that lend themselves to mass campaigns [included] the use of a single injection of penicillin aluminium monostearate (PAM) for the control of yaws in Haiti and of endemic syphilis in Bosnia".⁴¹ The WHO and UNICEF also utilised other forms of long-acting penicillins; in 1958, for instance, benzathine penicillin was used to treat congenitally syphilitic children in Taiwan.⁴² In terms of prophylactic use, penicillin was first introduced in 1950 for prophylactic treatment to prevent recurrences of rheumatic fever, a measure supported by the WHO. School children with rheumatic heart disease were put on a regular penicillin prophylaxis regimen in Barbados, Egypt, Iran, Nigeria and Senegal through WHO-assisted programmes in the late 1960s and 1970s.⁴³ The WHO assisted countries to use broad-spectrum antibiotics (which act against a wide range of bacteria) to control selected infectious diseases. For example, broad-spectrum sulphonamides were used as a rapid reliever for acute clinical manifestations of trachoma.⁴⁴ Further, the DG of the WHO declared in 1953 that "the introduction of antibiotics [had] made control possible by treatment on a mass scale".⁴⁵ Accordingly, the WHO spearheaded programmes that utilised antibiotics over a large number of populations globally, which reduced the prevalence rate of the diseases in question significantly. For instance, the epidemiological surveillance teams of the WHO had assisted countries in following up mass treatment campaigns against the endemic treponematoses, especially trachoma. Further, the WHO's DG, Dr H. Mahler, stated in 1975 that "in the past few years they [had]...treated 47 million people in 45 countries and clinical prevalence rates...[had] fallen from 6–10 % to less than 1 %".⁴⁶ However, the previous DG of the WHO, Dr Candau, was aware that the successful control of treponematoses was not due to antibiotics alone, as shown by the evidence in Sri Lanka.

Endemic treponematoses are "end of the road" infections. Social and economic betterment and improvement in hygiene and education will tend slowly to repress them, as shown in Ceylon, with a recession of yaws from hyper endemicity at the beginning of the century to near eradication even in the pre-penicillin era.⁴⁷

⁴¹ IRIS: WHO No 51, *The work of WHO*, 1953, 3, 134.

⁴² IRIS: WHO No 90, *The work of WHO*, 1958, 218.

⁴³ IRIS: WHO No 188, *The work of WHO*, 1970.

⁴⁴ IRIS: WHO No 16, *Annual Report of the DG*, 1948, 29.

⁴⁵ IRIS: WHO No 51, *The work of WHO*, 1953, 5.

⁴⁶ IRIS: WHO No 221, *The work of WHO*, 1974, 57.

⁴⁷ IRIS: EB34/11, *Review of the Organization's programme in endemic treponematoses and venereal infection*, May 1964, 9.

We thus see that the WHO assisted member states to use antibiotics extensively for disease control programmes. However, the adverse effects of high utilisation of antibiotics were flagged up by various experts, who suggested remedies as well.

Highlighting the widespread utilisation of antibiotics in the late 1940s, the ECVD of the WHO warned the DG that “there should be some system of control for the use of penicillin, which [was] at present being wastefully used for disease not responding to penicillin medication”.⁴⁸ The formulation of uniform guidelines for the use of antibiotics in venereal diseases by the ECVD had also been problematic, mainly due to three reasons.⁴⁹ First, the rapid development of antibiotics; second, the grossly inequitable distribution of treatment options across the world; and third and most important, the differing perspectives of venereology specialists and epidemiologists on the management of venereal diseases.⁵⁰ Nevertheless, this committee attempted to set a minimum penicillin therapy and simplified schedules, especially for “underdeveloped countries” where PAM was used for a better outcome.⁵¹ However, the ECVD had faced issues with developing treatment methods for gonorrhoea due to a lack of solid evidence concerning the efficacy of commercial penicillin over crystalline penicillin against gonorrhoea in women and the use of sulphonamide in gonococcal vulvovaginitis infections, for example.⁵²

The world-renowned scientists who worked on antibiotic development also advised the WHO on the overutilisation of antibiotics. In 1958, Professor Selman A. Waksman, who had been awarded the Nobel Prize for his discovery of streptomycin and was a former member of the expert committee on antibiotics (ECA), criticised the WHO not only for dismantling the expert committee but also for not addressing the important resolutions of the committee.⁵³ He further complained that the WHO had ignored the massive use of antibiotics in the international context.

It [was] now exactly nine years since I attended, in Geneva, a meeting of the first Antibiotics committee called together by the World Health Organisation [March 1950]. Certain resolutions were made at that meeting, which [was] later transmitted by the Director-General to the World Health Assembly for further action. Unfortunately, those recommendations were not generally accepted and only given partial consideration. The committee itself never met again, was soon disbanded as such.

During this period of time, namely between 1950 and 1959, various important problems have arisen, resulting directly from the extensive use of antibiotics. These problems are of a fundamental scientific nature, of clinical nature, and of a sociological nature. They should receive immediate consideration on an international basis...The WHO was the logical body to call such [a] committee together tighter.⁵⁴

⁴⁸ WHOAG: WHO1-465-7-1, The first meeting, January 12, 1948, 4.

⁴⁹ Ibid.,

⁵⁰ Ibid., IRIS: WHO No 21, Second WHA, 1949, 156.

⁵¹ WHOAG: 1950 WHO2-DC-VD-17-1, Use and application of penicillin, minimum penicillin therapy, 1950; WHO2-DC-VD-18, Treponemal disease control in underdeveloped countries, mass therapy 1952.

⁵² WHOAG: WHO1-465-7-1, The ECVD sessions 1948 to 1949.

⁵³ The chairman of the first ECA was Professor E.B. Chain and the committee consisted of five members. For the name list, see IRIS: WHO technical series No 26.

⁵⁴ WHOAG: Letter from Waksman to Sansonnens, March 11, 1959. WHO3-A10-522-2, Scientific group on the establishment of a repository for antibiotics, 18-22 JULY 1961-1964.

Though wide use of antibiotics was promoted, behind closed doors the WHO higher officials were aware of the possible danger of antibiotics resistance developing. It is thus important to assess the ways in which the different layers of the WHO governance had received information about antibiotic resistance (ABR) and how they reacted. Given the complexity of the evidence and the WHO's reactions to ABR, it is necessary to differentiate the analysis, investigating different time frames and contexts separately.

The first context of interest is the laboratory findings of the early antibiotic era up until 1960. Alexander Fleming (1929, p. 226), the inventor of penicillin, drew attention to several bacteria that had not been inhibited by penicillin. This was subsequently confirmed by A.P. Abraham and E.B. Chain (1940, p. 837), who demonstrated that an enzyme from a bacteria was "able to destroy penicillin". Though a greater number of pathogens could be attacked with antibiotics, a Finnish scholar, W. J. Kaipainen, argued "that the bacteria may grow resistant to them" which would be accompanied by a simultaneous increase in resistance to other antibiotics.⁵⁵ He further predicted that "the future will show [to] what extent the antibiotics used today will lose their importance because of the increased resistance of bacteria".⁵⁶ The WHO also reacted to ABR early as 1948 when the DG of WHO sought to convince its member governments of the desirability of guiding the medical profession and public to avoid or delay the creation of streptomycin resistance through laboratory testing for streptomycin sensitivity and adhering to treatment regimens.⁵⁷

In 1952, a manual of laboratory methods was developed by two WHO experts to train staff treating tuberculosis in the South-East Asia (SEA) Region. This manual highlighted the serious fact that tubercular bacilli growth was promoted by streptomycin rather than inhibited: "It [was] now recognised that 'streptomycin dependent strains' of tubercle bacilli may occur naturally or developed under exposure to the drug strains whose growth [was] increased by the presence of streptomycin".⁵⁸ In 1953, the DG of the WHO, Dr Candau, was aware of the possible development of bacterial resistance to penicillin based on the work of the International Treponematoses Laboratory Centre (ITLC) in Baltimore in the USA. According to Dr Candau, the ITLC had continuously investigated the pathological material of WHO-assisted field projects to identify "the possible development of penicillin resistance in treponemal strains".⁵⁹ Further, he was aware that "mycobacterial resistance and side effects imposed caution and discrimination in the use of antibiotics".⁶⁰ In the following year, Candau claimed that "it is possible that they [Treponema strains] may do so [become resistant], as penicillin is now being used (and misused) in very large amounts and on an

⁵⁵ British Library (BL): W. J. Kaipainen, *Does Induced Resistance of Bacteria to one Antibiotic result in Simultaneous Sensitivity Changes to other Antibiotics?* (Helsinki, Kirjapaino OyLiike, 1951), 9-10.

⁵⁶ Ibid.

⁵⁷ Ibid., Letter from B. Chisholm, DG, WHO, April 19, 1949.

⁵⁸ WHOAG: WHO2-DC-TB-SEARO, SEARO survey of TB control, Ceylon, 1950. Laboratory methods in use at the demonstration and training centres for tuberculosis control in SEA April 1952. As recommended by the expert committee on tuberculosis, the WHO with the assistance of regional offices established six training centres in the region: three in India, and one each in Sri Lanka, Thailand and Burma.

⁵⁹ IRIS: WHO No 51, The work of WHO, 1953, 4.

⁶⁰ Ibid.

increasingly wide scale throughout the world”. However, he attempted to research “the use and value of several other antibiotics” and did not propose any measures to curtail the misuse of antibiotics.⁶¹ Against this backdrop, it is important to inquire how the health administration received information about antibiotic resistance from the different layers of healthcare settings, and what their reaction to this information was.

Accordingly, the second context of interest here is the findings discovered in hospital settings. In 1957, Dr Mary Barber, a bacteriologist, while working at Hammersmith Hospital found that bacteria were becoming resistant to penicillin.⁶² Meanwhile, Professor R. Cruickshank, another bacteriologist at St. Mary’s Hospital, London, and an invited member of a Medical Research Council (MRC) working party that was examining the resistance of some strains of gonococcal bacteria to penicillin, informed the MRC about rising trends of gonorrhoea.⁶³ A senior venereologist of Saint Mary’s Hospital, Dr G.L.M. McElligott, had also been worried about increasing early relapses among cases of gonorrhoea.⁶⁴ As the standard dose of 300,000 units of PAM had been ineffective, he began to increase the dosage or switch to another antibiotic as per the WHO’s new strategy.⁶⁵ The dose was stepped up to 600,000 units PAM and the relapse rate was reduced, but when they switched to longer-acting penicillin (benzathine) in a dose of 600,000 units, the relapse rate increased quite markedly. Meantime, all the relapsed cases were given a short course of streptomycin.⁶⁶ Later in 1961, the MRC working party identified that “unlike resistance to penicillin, which was only relative, streptomycin resistance among gonococci was unusually absolute”, with such strains growing in concentrations of the antibiotic which cannot be achieved therapeutically.⁶⁷ However, the WHO’s DG spent three more years ascertaining “the rising clinical failure rates to penicillin and subsequently to streptomycin [that] began to be observed in 1958–1959 in gonorrhoea” through the expert committee on venereal diseases (ECVD).⁶⁸ Further, the WHO Expert Committee on Gonococcal Infections also stressed that the advent and wider use of ‘ideal’ antibiotics, “particularly penicillin and streptomycin”, had not made “an indent on the reservoir of gonococcal infections”.⁶⁹ A study of long-term trends undertaken by the WHO from 1957 to 1960 also showed that out of 111 countries and areas surveyed, 53 (47.7 per cent) showed a persistent increase in reported incidence after 1957 (table 2.1).⁷⁰

⁶¹ Ibid.

⁶² Dr Barber aimed to introduce an antibiotics policy that reduced or tried to eliminate the use of penicillin except in severe conditions (Tansey and Reynolds, 2000).

⁶³ TNA: Letter from Professor R. Cruickshank to Sir Harold Himsworth, (MRC), October 11, 1957. FD 7/427, Working Party on the Resistance of Gonococci to Penicillin: minutes of meetings and reports, 1959-1963.

⁶⁴ Ibid.

⁶⁵ IRIS: WHO No 90, The work of WHO, 1958, 6.

⁶⁶ TNA: FD 7/427 Letter from Professor R. Cruickshank (the Wright-Fleming Institute of Microbiology St. Mary’s Hospital, London) to Sir Harold Himsworth (Medical Research Council, London), October 11, 1957.

⁶⁷ Ibid., Second report of the MRC working party to examine the resistance of gonococci to penicillin, June, 1961.

⁶⁸ IRIS: EB34/11, Review of the Organization’s programme in endemic treponematoses and venereal infection, May 1964, 35.

⁶⁹ Ibid. 34.

⁷⁰ Ibid. 38.

Table 2.1: WHO survey of early syphilis and gonorrhoea trends in the regions: 1957–60

Region	Early syphilis			Gonorrhoea		
	Number of countries	Number with increased incidence	Percentage with increased incidence	Number of countries and areas	Number with increased incidence	Percentage with increased incidence
Africa	29	23	79.3	30	10	33.0
Americas	21	15	71.4	21	11	52.0
Eastern Mediterranean	19	6	50.0	10	2	20.0
Europe	20	19	95.0	20	17	80.0
South-East Asia & Western Pacific	23	13	56.5	30	13	43.3
Total	105	76	71.2	111	53	47.7

Source: IRIS: EB34/11, Review of the Organization's programme in endemic treponematoses and venereal infection, May 1964, 35.

The third context of interest is scientific symposiums organised by research organisations. For instance, the CIBA Foundation, a UK-based organisation, in 1957 published a book based on proceedings of the symposium on “Drug resistance in Micro-organisms” (Wolstenholme and O’Connor, 1957).⁷¹ Then, on February 2, 1962, another symposium on “resistance of bacteria to the penicillins” was organised, investigating the theoretical aspects of resistance of staphylococci to penicillin and recent attempts to find new penicillins that would obviate this problem of resistance.⁷² At the keynote address, Professor E.B. Chain argued that “the penicillinase-resistant penicillins provide, to a large measure, the answer to the clinical problem, and their effectiveness is not likely to be impaired very much in the future with extended clinical use”.⁷³ This meeting was attended by leading scientists and bacteriologists who worked on antibiotics, including Dr Mary Barber, who gave a presentation on “penicillin and methicillin resistant staphylococci”.⁷⁴ She highlighted two important findings of her laboratory research (Barber and Waterworth, 1962). Firstly, staphylococci showed “a slight resistance to methicillin”, however, those strains were seriously resistant to other antibiotics (table 2.2 & 2.3). In other words, the incidence of *methicillin-resistant staphylococcus aureus* (MRSA) was as low as 2.2% in the samples of the Department of Bacteriology, Postgraduate Medical School of London, in 1961. Secondly, some penicillins including oral ampicillin were still powerful agents against staphylococcus. Professor Chain concurred, stating: “I agreed very much with what Dr Barber [had] made. Naturally, it [was] essential to use drugs judiciously, but it should be clearly

⁷¹ The CIBA foundation worked to promote internal cooperation in medical and chemical research and attempted to address the issue of antibiotic resistance in various ways.

⁷² WTA: Study group on “Resistance of bacteria to the penicillins”, 16, July 1961, PPEBC/E.46, Invitation, programme, list of speakers and participants, abstract of Chain's paper, etc., 1961–62.

⁷³ WTA: PPEBC/E.46, Letter from E.B. Chain to A.V.S. de Reuck, 2 December 1961. The CIBA Foundation is an international scientific and educational charity. It was established in 1947 by the Swiss chemical and pharmaceutical company CIBA Limited (now CIBA-GEIGY Limited). The Foundation operates independently in London under English trust law.

⁷⁴ WTA: PPEBC/E.46, Letter from Mary Barber to E.B. Chain, June 16, 1961.

understood that in the case of severe staphylococcal infections, penicillins [were] the drug of choice”.⁷⁵ However, the CIBA expert group made the latter recommendation, without considering the growing serious bacterial resistance as noted by Dr Barber and Dr McElligott.

Table 2.2: Resistance of naturally occurring strains of staphylococcus aureus to methicillin

	Total	Resistance number	Resistance %
Strains of all sources	4017	89	2.2
All wards	1078	20	2.0
Surgical wards	334	10	3.0

Source: Barber and Waterworth, 1962, p. 1163

Table 2.3: Resistance of naturally occurring strains of staphylococcus aureus to methicillin

No. of strains	Penicilli n	Streptomyci n	Tetracycline	Chloramphenicol	Erythromyc in	Phage-type
71	R	R	R	R	S	53,75,77
3	R	R	R	R	S	47,53,75,77
1	R	R	R	S	S	53,54,75,77
1	R	R	R	S	S	7,53,54,77
12	R	R	R	S	S	83

Source: Barber and Waterworth, 1962, p. 1163; R=Resistant, S= Sensitive

Table 2.4: Order of antibacterial activity of benzyl-penicillin and five acid-resistant penicillins

	Benzyl penicillin	Phenoxy-methyl-penicillin	Phenethicillin	Propicillin	Phenbenicillin	Ampicillin
Staph. aureus	1	1	3	4	6	5
Staph. pyogenes	1	2	3	3	3	3
Dip. pneumonia	1	2	5	4	2	6
B. anthracts	1	1	3	NT	5	3
N. gonorrhoea	1	2	3	NT	5	3
N. meningitides	1	2	4	4	4	2
N. catarrhalis	1	2	NT	NT	2	1

Source: Barber and Waterworth, 1962, p. 1163; NT=Not tested

The fourth context of interest is the *WHO Bulletin*. The Head of the Chemotherapy Department at the National Institute of Public Health, Utrecht, the Netherlands, A. Manten, warned the WHO Expert Committee on the Public Health Aspects of the Use of Antibiotics about “the risk of prophylactic use of antibiotics causing resistance” in December 1962.⁷⁶ He argued that prophylactic use was found to induce bacterial resistance and that this was due to the use of dosages smaller than those required for therapeutic purposes and the prolonged administration of the drugs. He made this observation based on frequent past unfavourable experiences when thus using these drugs in soldiers and children, and advised that they be used only in well-defined indications. Manten further stressed the trend of wiping out the original stock of

⁷⁵ WTA: Draft discussion, 60. PPEBC/E. 47, Editorial correspondence transcript of discussion of Study Group sent to Chain for correction, 1961-62.

⁷⁶ IRIS: A. Manten, “The non-medical use of antibiotics and the risk of causing microbial drug-resistance”, *Bulletin of the World Health Organization*, 29 (3) (1963): 387-400.

antibiotics-susceptible staphylococci in the hospitals, leaving only the resistant types, which led hospital staff to become carriers of antibiotic-resistant staphylococci, posing a threat to patient management. He further identified that this issue was higher in technologically developed countries due to the high utilisation of antibiotics compared to less-developed countries where antibiotics were in short supply. Further, another two papers published in the *WHO Bulletin* by the Department of Bacteriology at the State Institute of Hygiene, Warsaw, Poland, also warned of rising trends of antibacterial resistance. In the first paper, Jeljaszewicz and Hawiger stressed a significant trend of ABR across the hospitals and communities in Poland. Over 90 per cent of hospital strains were penicillin resistant and resistance to tetracycline and chloramphenicol were also significant; comparatively, neomycin resistance was lower at 50 per cent.⁷⁷ In the community, staphylococci were nearly 80 per cent resistant against penicillin, whereas only one-quarter were erythromycin resistant. The second paper, written after performing a nationwide survey in Poland, highlighted that most of the common bacteria were resistant to antibiotics.⁷⁸ For instance, *Escherichia coli*, *Klebsiella* and *Pseudomonas aeruginosa* were completely resistant to penicillin. *Streptococcus faecalis*, *streptococcus viridans* and nearly 90 per cent of all *pseudomonades aeruginosa* strains were resistant to all the antibiotics.

Finally, ABR can be analysed according to disease categories in public health settings. Regarding gonorrhoea, DG Candau stressed in 1959 that “the growing incidence of gonorrhoea in fifteen out of twenty-two countries surveyed raises another problem, particularly in view of the increasing resistance of the gonococcus to penicillin”.⁷⁹ Therefore, the WHO embarked on a programme monitoring the changing susceptibility of gonococci to antibiotics, studying many strains from different areas in laboratories in Copenhagen, Paris and Atlanta in the early 1960s.⁸⁰ Those studies found a regional variation; while most of the strains from the WHO Western Pacific Region (WPRO) were resistant to penicillin, only 31.2 % of Danish strains were resistant to penicillin.⁸¹ Further, resistance to streptomycin was found in 24.6 % of strains in 1971 as compared with 20.3 % in 1968.⁸² Analysing treponematoses infections, the scientific group on treponematoses research in 1959 likewise emphasised establishing a WHO programme to inquire into the susceptibility of yaws and syphilis to penicillin and other antibiotics.⁸³ In 1970, after studying a 25-year retrospective international study coordinated by the WHO of syphilis treatment, Candau “confirmed

⁷⁷ IRIS: J. Jeljaszewicz & J. Hawiger, “The resistance to antibiotics of strains of *Staphylococcus aureus* isolated in Poland”, *Bulletin of the World Health Organization*, 35 (2) (1966).

⁷⁸ IRIS: J. Jeljaszewicz & J. Hawiger, “The resistance to antibiotics of strains of *Streptococcus viridans*, *Streptococcus faecalis*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Proteus* and *Klebsiella* isolated in Poland”, *Bulletin of the World Health Organization*, 35 (2) (1966): 243.

⁷⁹ IRIS: WHO No 98, The work of WHO, 1959, VII.

⁸⁰ IRIS: WHO No 147, The work of WHO 1964, 11.

⁸¹ IRIS: WHO No 205, The Work of WHO, 1972, 18.

⁸² Ibid. 19. These centres had also continued their systematic studies on the sensitivity of gonococci to sulphonamides, other commonly used antibiotics, and new antibiotics.

⁸³ IRIS: WHO No 98, The work of WHO, 1959, 10.

the fact that penicillin continues to be effective in this disease” despite sustained transmission and localised epidemics in some countries following a mass treatment campaign.⁸⁴

Concerning foodborne diseases, a survey on salmonella strains conducted in India throughout 1959–61, for example, showed resistance to all forms of antibiotics.⁸⁵ It prompted the WHO to assist studies to monitor the patterns of resistance of bacteria causing foodborne diseases such as cholera, salmonella, typhoid, and of Enterobacteriaceae (a large family of Gram-negative bacteria). These studies were initiated in Europe at the Institut Pasteur in Paris and multiple laboratories in Asia, for example in Dhaka, New Delhi, Bangkok, Rangoon, Tokyo, and Honolulu.⁸⁶ The WHO HQ continued to hear reports of increasing antibiotic resistance to foodborne bacteria. Two different 1970 WHO studies by the International Reference Centre for Enteric Phage-Typing, London, and the National Institute of Health, Tokyo, also revealed increasing multiple drug resistance of salmonella strains in Europe and shigella strains in the SEA and the Western Pacific Regions respectively.⁸⁷ Further, the resistance of typhoid bacilli to chloramphenicol and other previously active antibiotics was also found to be a serious worldwide problem according to a Vietnamese study carried in the early 1970s.⁸⁸

There is more evidence to show that the various echelons of the WHO overlooked the growing picture of ABR. In 1958, Professor Waksman complained that Dr R. Sansonnens, the Chief Medical Officer (MO) of the Health Laboratory Services of the WHO, had failed to include the important topic of the WHO’s role in the monitoring of antibiotics resistance in the agenda of a meeting of the ‘consultant group of the medical priorities of antibiotics’.⁸⁹ Flagging up this issue, he suggested including the development of resistant antibiotics, the problems involved and methods of overcoming such resistance in the agenda.⁹⁰ In a WHO memorandum, this was endorsed by Dr W.R.O. Goslings of the University Hospital in Leyden, the Netherlands, who emphasised: “Co-operation on an international level in the investigation of the origin and spread of microorganisms resistant to antibiotics must therefore be considered to be of extreme importance”.⁹¹ Once it finally acknowledged the problem of ABR, the WHO’s first step in its investigations into the issue was to find a universally acceptable method to analyse bacterial sensitivity to antibiotics. These attempts to develop antibiotic sensitivity testing will form the topic of the following subchapter.

⁸⁴ IRIS: WHO No 188, The work of WHO, 1970, XI, 14.

⁸⁵ IRIS: S.C. Agarwal, Chloramphenicol resistance of Salmonella species in India, 1959-61. *Bulletin of the World Health Organization*, 27 (3) (1962): 331-5.

⁸⁶ IRIS: WHO No 188, The work of WHO, 1970. During this time, Dhaka (before 1982, Dacca) was a part of East Pakistan and in the WHO’s Eastern Mediterranean Region (EMRO).

⁸⁷ IRIS: WHO No 197, The work of WHO, 1971.

⁸⁸ IRIS: WHO No 221, The work of WHO, 1974.

⁸⁹ WHOAG: Draft Agenda, ‘consultant group of the medical priorities of antibiotics’, December 8–12, 1958 (postponed to 1959), WHO3-A10-522-2, Scientific group on the establishment of a repository for antibiotics, 18-22 JULY 1961-1964.

⁹⁰ Ibid., Letter from Waksman to Sansonnens, March 11, 1959.

⁹¹ WHOAG: Memorandum on the advantages of international co-operation in the field of medical research on the application of antibiotics, May 1960. WHO3-A10-370-2, Gen, Plans for an intensified antibiotics research programme.

2.3 Antibiotic sensitivity testing

After ten years of long sleep, the ECA in its second report recommended undertaking a study for producing a standard antibiotics disc to ascertain the sensitivity of the bacteria.⁹² Accordingly, the laboratory division of the WHO sponsored 16 international collaborative laboratories to perform a “standardisation of methods for conducting microbe Sensitivity Test”.⁹³ The leadership of this project was given to Dr Hans Ericsson, Associate Professor of Clinical Bacteriology of the Karolinska Institute Stockholm, Sweden, and a member of the WHO’s ECA.⁹⁴ Ericsson received a WHO grant of \$6200 from the 1961 and 1962 budgets to find a universally accepted methodology for testing for antibiotics sensitivity and to recommend standard discs for testing.⁹⁵ After meeting Ericsson in August 1961, Sansonnens acknowledged “that preparation of a research programme concerning antibiotics discs [was] a difficult question, not only from the technical point of view but also because of commercial interests involved”.⁹⁶ Ericsson assured Sansonnens that “[he would] discuss the matter at the symposium on chemotherapy in Naples in September and [would] report to Geneva”.⁹⁷ Though the WHO’s DG Candau stated in 1964 that “the results [of the study had] now been statistically analysed”, Dr Ericsson informed Sansonnens that “more work [was] needed” to find a suitable method.⁹⁸ Accordingly, several meetings were arranged to find the evidence needed; however, Sansonnens, who was dissatisfied with the delay of this project (which was planned as an intensified project), also learned that a part of this study, a symposium in Berne, Indiana, US, “was of a very low standard”. To support Ericsson’s endeavour, another conference on antimicrobial agents and chemotherapy was planned in Washington by the Permanent Section of International Microbiological Societies (IAMS) for October 1965. Sansonnens was not happy about the delay to the study and issues of related meetings, and advised the Biological Standard division of the WHO that “The Permanent Section [of IAMS] be informed of WHO’s work, to avoid useless duplication – WHO should also be informed of their plans...[Further] methodology for control of antibiotics reagents should not be touched, because a lot of preliminary work is already being undertaken by the WHO”.⁹⁹

⁹² IRIS: WHO technical series number 210, second report of the Expert Committee on Antibiotics, Geneva, July 11–16, 1960; WHOAG: WHO3_A10_181_3, Testing of AB, Memorandum to DG, WHO, Priorities of Research Programme in Antibiotics, October 10, 1961. This committee, likely to focus on bacterial resistance as seven of its ten members were bacteriologists, was chaired by Dr Maurice Welsch, a Professor of Bacteriology from Belgium, whereas the 1950 committee included more world-renowned biochemists and was chaired by a biochemist, Professor E.B. Chain.

⁹³ WHOAG: Testing of antibiotics, WHO3-A10-181-3, Grant to the Karolinska Institute Stockholm for clinical testing of antibiotics (Dr Friberg), 1960; WHOAG: WHO3-A10-181-4, Grant to University Hospital Seattle: Standardization of antibiotic bacterial sensitivity testing methodology, 1967..

⁹⁴ WHOAG: WHO3-A10-181-3, Testing of antibiotics.

⁹⁵ WHOAG: WHO3-A10-181-3, letter from Sansonnens to Ericsson, October 18, 1961.

⁹⁶ WHOAG: Report of a visit to Stockholm 2–4 August 1961, 3, WHO3_A10_370_2A.

⁹⁷ Ibid.

⁹⁸ IRIS: WHO No 139, Work of WHO, 1964, 37; WHOAG: WHO3-A10-440-1, Seminars and symposia general, Memorandum from Chief, HLS, to Chief Biology Standard, Symposium of antibiotics, 1965.

⁹⁹ Ibid.

In 1966, Candau attempted to include a few more aspects in this study, such as “the choice of a suitable culture medium, the standardization of strains of known and stable sensitivity, and the influence of the type of paper used for the preparation of culture discs to test antibiotics”.¹⁰⁰ Meanwhile, in the same year, another arm of the same WHO study led by Professor John C. Sherria, a clinical pathologist of the University of Washington, with three American scientists published an article titled “Antibiotic susceptibility testing by a standardized single disk method” (Bauer et al., 1966). However, this work was not acknowledged by microbiologists due to a lack of sensitivity and performance issues in laboratories with low-resource settings. Ericsson and Sherria started working together, and the WHO continued to support them in the late 1960s as well.¹⁰¹ Even though the work had not progressed properly, Ericsson was offered \$1000 as “compensation not only for the coordinator of the study but also for [his] collaborative work”.¹⁰² Finally, in December 1969, Ericsson and Sherria submitted the draft of the main report to the member organisations for review, with the aim of publishing the final report in the *WHO Bulletin*.¹⁰³ Another outcome of the study was the commercially driven work of Ericsson, who “found himself embarking on a career as a commercial producer of those discs” (Gradmann, 2013, p. 555).

Gradmann is right in his claim that the delay of the Ericsson-led study created huge inconsistencies in testing bacterial sensitivity internationally due to the unavailability of a standardisation method (Gradmann, 2013). Ericsson and Sherria (1971), however, blamed the WHO for the study’s delay, citing a departure from the original intention of the study, which made for a more complex process.

The slow progress made may be attributed to another departure from the original intention at Geneva. This was understood to be that a relatively simple procedure for a disc test should be so defined as to eliminate the known common sources of serious error. That could have been done in far less time, and the adoption of such a method might already have enabled innumerable illnesses to be shortened and even have helped to save many lives. The procedure which has been studied is more elaborate, much more costly in materials, requires the most rigid standardization, particularly regarding the composition of the culture medium (another problem not yet finally settled), and its interpretation is still to some extent the subject of controversy. The kind of laboratory where most of the mistakes are made will have difficulty in practising it successfully.

2.4 Antibiotics supply

Even during the late 1940s, the availability of penicillin and sulpha drugs was considered a highly important and delicate problem. These antibiotics were in short supply in all countries, even in the US, where the largest manufacturing plants for these products existed.¹⁰⁴ In other parts of the world, there was a desperate need for medical supplies. In a conference organised by the WHO in November 1948 in

¹⁰⁰ IRIS: WHO No 56, Work of WHO, 1966, 54.

¹⁰¹ WHOAG: Memorandum from Chief, Biological Sciences, WHO, Geneva to Dr M. Payne, September 15, 1969, WHO3 A10-181-3 (A); Grant to the Karolinska Institute Stockholm studies on methodology of microbial sensitivity testing of antibiotics: Letter from Secretary, University of Washington to WHO, Geneva, 27 March 1967: WHOAG: WHO3-A10-181-4.

¹⁰² WHOAG: WHO3 A10-181-3 (A), Memorandum from Chief TP to Director ERS, WHO, Geneva, November 13, 1969.

¹⁰³ Ibid., Letter from Ericsson to Dr A.S. Outschoorn, Chief Biological Standardisation WHO, Geneva, December 8, 1969.

¹⁰⁴ WHOAG: WHO 1-465-7-1, Press Release No 629, 2.

Geneva, the representatives of 17 war-devastated countries in Europe demanded medical supplies of many types, including penicillin and streptomycin.¹⁰⁵ These countries continued to call for antibiotics at the 1949 WHA. Dr P. Tagaroff, the Bulgarian chief delegate, claimed that political pressure was preventing producers of important medical supplies from sending them to some countries.

...it should be the duty of the section to find a means of preventing such political methods from interfering with the supply of vital medical necessities. The question of regulation of production and distribution of chemical and biological productions, such as penicillin, streptomycin and other antibiotics was of extreme importance.¹⁰⁶

While debating the WHO's understanding of the medical supply situation, Dr Gonda, a Czechoslovakian representative, expressed disappointment that the composition of the ECA "was not sufficiently representative".¹⁰⁷ It consisted of experts rather than representatives of the member states. Dr Tagaroff also recommend including "an expert from the country concerned who would be aware of the special needs of that country for medical supply". The WHO's response to the issue of medical supply was twofold. First, it decided to double the financing for medical and equipment supply to member countries to one million dollars from 1954 to 1956 through its technical assistance programme.¹⁰⁸ Second, the WHO's finance section handled inquiries on behalf of governments concerning supply sources, availability, and prices of lists of supplies. To understand the real picture of such initiatives' effectiveness and the demand and supply of antibiotics, it is necessary to analyse the situation according to country.

In the early 1950s, a lack of antibiotic supplies was noted, for instance, India was suffering a severe shortage of penicillin due to short supply, which forced them to issue licences to the value of five million Indian rupees (equal to one million dollars) for the import of those products. This further led to severe restrictions being imposed on the supply of available stocks. For instance, the Government of Bombay had to freeze all stocks of penicillin in Bombay State and authorised only a limited number of approved chemists to distribute the drug.¹⁰⁹ The main cause of the penicillin shortage, according to P.D. Upadhyay, a prominent druggist, was

...the monopoly [on] importing penicillin [of] the UK, [which had] just started to produce the drug and was incapable of meeting the enormous demand of [India,] and [the] banning of imports from the US. Because of this most of the established dealers went without suppliers while comparatively small firms carried large stocks.¹¹⁰

¹⁰⁵ IRIS: WHO No.16 The work of WHO, 1948.

¹⁰⁶ IRIS: WHO No 21, Second WHA, Rome, 1949, 208. Almost as soon as their wartime alliance ended, the US and the Soviet Union found themselves locked in a Cold War. In a world of two great powers, each is bound to focus their fears on the other, to distrust the other's intentions, and to impute offensive intentions even to defensive measures. On the emerging structure of post-war international politics and foreign aid, see Lumsdaine and Risse-Kappen (1993); Waltz (1993).

¹⁰⁷ Ibid., 172, 208.

¹⁰⁸ IRIS: WHO No 75, The work of WHO, 1956, 50.

¹⁰⁹ WTA: Paper cutting received by Dunnett, July 5, 1950, WF/M/P/16/13: Box 28, "India – Penicillin", 1949.

¹¹⁰ Ibid., *Times of India*, May 23, 1950, WF/M/P/16/13: Box 28, "India – Penicillin", 1949

The market was expected to be replenished by a large air consignment sent to Bombay by Glaxo Laboratories Limited. Unfortunately, this was not adequate to meet Bombay's requirements, as a percentage of it was destined for Madras and Calcutta.¹¹¹ Not even the major suppliers such as DC(B)L were capable of supplying even one-fourth of the demand of two million units of penicillin to the Indian distributor, neither at once, nor in divided quantities in 12 months.¹¹² The situation was different in 1952 when the tenders "of private [suppliers] which had been accepted for penicillin had subsequently been cancelled under pressure from the drug controller in favour of penicillin to be supplied by the IPC".¹¹³ The Bombay government wanted to continue the Penicillin Control Order "until they [could] liquidate the stocks [of crystalline penicillin] at present held".¹¹⁴ Subsequently, the supplier agreed to swap it for another kind called procaine penicillin. Meanwhile, a government resolution had been issued that government institutions should obtain their supplies from IPC only.¹¹⁵ However, tenders given to companies of repute who had previously supplied penicillin to those institutions would not be substituted by IPC penicillin. Suppliers also observed that there was no future in the penicillin trade for importers of finished products because of the regulations in Bombay State, and hence Glaxo and IPC started to import bulk penicillin. The other issue for the suppliers was the reduction in the price of penicillin, which led to only a small profit margin.¹¹⁶ All these actions explain the dynamics of the demand and supply of penicillin, which ultimately impacted the citizens' health. The next subsection on antibiotics production in the developing world will inquire into how Indian penicillin plants helped to resolve the supply issue.

2.5 Antibiotics production (AP)

In the late 1940s, while AP was thriving within the developed world, the developing world faced a severe shortage of antibiotics that led the United Nations Relief and Rehabilitation Administration (UNRRA) to assist penicillin plant programmes in selected countries, subsequently supported by the WHO/UNICEF.¹¹⁷ Sri Lanka was one of the pioneer countries that continued to demand antibiotics plants at the various levels of the WHO governance, WHA, EB meetings and transnational companies (TCs) (chapter four will discuss Sri Lanka's negotiations further). Accordingly, it is important to discuss the function of the international community in the rehabilitation of health programmes and the collaborative role of small nations and their position concerning superpowers and global organisations.

Shortly before the establishment of the Interim Health Commission which set up the WHO, UNRRA, just before its demise, procured and donated equipment to set up small penicillin-producing

¹¹¹ Ibid., Memorandum, Penicillin, BWC, Bombay, May 27, 1950.

¹¹² Ibid., Confidential letter from D.J. Hayman, DC(B)L to BWC, London, May 20, 1950.

¹¹³ Ibid.

¹¹⁴ Ibid.

¹¹⁵ Ibid. The meaning of the abbreviation IPC is not explained in this letter or anywhere else. One guess is that it might stand for Indian Pharmaceutical Corporation.

¹¹⁶ Ibid., copy of the letter from Bombay House, March 26, 1952.

¹¹⁷ The UNRRA (1943–1947) was an international relief agency, dominated by the US but representing 44 nations, and became a part of the UN in 1945. The history of the UNRRA has been outlined by Jessica Reinisch (2008, 2011, 2013). On the politics and work of the UNRRA in the Soviet Union, see Harder (2012).

factories to several governments (Łotysz, 2014). The UNRRA endeavour was then encouraged to invest additional funding in the establishment of plants producing penicillin in several UNRRA-aided countries to ensure a sustainable supply for the international venereal diseases campaign.¹¹⁸ Six factories were promised by UNRRA: to Belarus, Czechoslovakia, Italy, Poland, Yugoslavia, and Ukraine, and of these the Italian factory had the most successful outcome (Łotysz, 2014, p. 71). In their anxiety to improve the penicillin-producing capacity of their countries, the recipient governments turned to the newly established WHO, seeking aid in the technology of penicillin production. In 1950, while assisting the already mentioned countries, the WHO and UNICEF either established, expanded or assisted Indian, Pakistani and Chilean antibiotics plants and three years later the WHO transferred all the duties to another UN agency.¹¹⁹ At the same time, various expert panels of the WHO were urging the parent body that the “know-how”, experts, training and literature, and equipment of penicillin manufacture should be made available to those countries where health programmes required large amounts of the new antibiotics.¹²⁰ However, it was a great challenge for the WHO to meet the demand for AP and the expectations of the recipient countries for several reasons, which will be explored and expounded here.

First, the scarcity of literature in AP was debated hotly at the 1949 WHA. Dr Irène Domanska, a Polish delegate, complained about long delays in publications on the chemistry of penicillin in which information also appeared to be outdated or of no interest.¹²¹ Further, the technical methods of the crystallization of penicillin were yet to be published, and only “extremely scanty” information had been made available on the chemical properties and composition of the new antibiotics aureomycin and chloromycetin. Owing to the political atmosphere in the US, American scientists were reluctant to receive holders of fellowships from the popular democracies, since their admission might be considered an anti-American activity. When these fellows were admitted, they encountered great difficulty in obtaining information, especially up-to-date information.¹²²

Second, the unavailability of equipment in UNRRA-aided plants was an issue. In 1949, the ECA recognised that the production of penicillin was hampered due to a lack of the right equipment in UNRRA-aided plants.¹²³ For example, the manufacturing of pure Crystalline Penicillin G Sodium Salt was not economically sound without quality Podbielniak extractors (PEs) that could only be obtained in the US, as recognised by the ECA in 1950.¹²⁴ At the 1949 WHA, J. Plojhar, Minister of Health and Chief Delegate of Czechoslovakia, was worried by the attitude adopted by the US, which was refusing to grant export licences

¹¹⁸ IRIS: Supplementary report of the Interim Commission to the first WHA, 1948, 39.

¹¹⁹ IRIS: WHO No 51, The work of WHO, 1953, 54.

¹²⁰ IRIS: EB6/39, Expert Committee on Antibiotics, 1950; EB6, Programme supplies to governments, 1950.

¹²¹ IRIS: WHO No 21, Second WHA, Rome, 1949, 105.

¹²² *Ibid.*, 106.

¹²³ IRIS: The WHA, 1950: The ECA, 1950.

¹²⁴ IRIS: EB3/20, UNRRA penicillin plants, Availability of medical supplies for Europe, Special Office for Europe, 1949; WHO technical series report no 23, Expert Committee on Antibiotics, report on the first session, 1950.

for Podbielniak extractors and other medical supplies to the Czechs; all efforts to obtain them had been to no avail.¹²⁵

We have here the spectacle of a great power that talks of aid whilst refusing to furnish machinery, apparatus, and other means of saving human life, of saving the lives of mothers, infants and children. On the one hand, this country refuses to come to the aid of children underfed as a result of the war. On the other hand, this same country is ready to help other States, not only by providing them with war material but also by imposing such aid on them by means of dangerous pacts.¹²⁶

Immediately, the allegation against the US government was denied by Dr L.A. Scheele, the chief delegate and Surgeon General of the US Public Health Service, who argued:

It was implied that this equipment [PE] is necessary in the production of penicillin. This is not the case. The highest-grade crystalline penicillin can be produced and is being produced commercially today in the United States without this equipment. A specific charge [had] been made, therefore, which cannot be substantiated...¹²⁷

This issue spread beyond the walls of the WHA. Professor E.B. Chain, who recommended PEs as important equipment for UNRRA-aided plants, was refused entry to the country by the US officials, who declined his visa application several times.¹²⁸ Justifying Chain's role within the WHO and stating that his task was a scientific mission to the US, the DG of the WHO, Dr Chisholm, in May 1951, claimed that the US Secretary of State (SS) was not acting under Public Law 291 to grant a visa to Chain as requested.¹²⁹ However, the US kept reasoning out that the rejection was due to his mission was to check the antibiotic states, and to his connection with Czechoslovakia, an anti-US country.¹³⁰ Professor Chain was to be a speaker at a dinner of a Nobel laureate for the discovery of streptomycin, Weizmann, and not even the well-connected sponsors of this event were strong enough to support Chain's visa.¹³¹ Failing all, in December 1951, the DG of the WHO again requested a visa, justifying that Chain had been assigned to Czechoslovakia by the WHO.¹³² Nevertheless, this correspondence was unable to change the US's attitude to Chain.¹³³ Not only did the US Department of State suspect a conflict of interest on Chain's part over PE, but the first WHO's DG and a Canadian, Chisholm, was also of the opinion that the PE "may have been oversold in [Western] Europe due to the favourable recommendation by Dr Chain, who is primarily a biochemist, not a production engineer. His views [were] colouring the thinking of other 'experts' due to

¹²⁵ WHO No 21, Second WHA, Rome, 1949, 97.

¹²⁶ Ibid.

¹²⁷ Ibid.

¹²⁸ WHOAG: Dr E.B. Chain (confidential file), request for visa for the US, 1950, WHO2-L-10-2- 3, 1950-1951 - DR. E.B. Chain (Confidential file) request for visa for the US. 1950-1951

¹²⁹ Ibid. This Law extends certain privileges, exemptions and immunities to international organisations and to their officials and employees.

¹³⁰ Ibid., Confidential letters from B. Chisholm, DG, WHO to Secretary of State, May 11 and June 8, 1951, and confidential letters from Roberto Rendueles to Joseph Handler, December 1 and 2, 1951. Subsequently, in June 1951, the WHO withdrew the request.

¹³¹ Ibid., Memorandum from Marbel. S. Ingalla to William Forrest, December 4, 1951. Weizmann won the Nobel Prize for his discovery of streptomycin.

¹³² Ibid., Confidential letter from B. Chisholm, DG, WHO to Secretary of State, January 23, 1952, and letter from S.S. Sokhey to E.B. Chain, January 25, 1952.

¹³³ Ibid., Confidential Memorandum from P. Dorolle, acting DG to Assistant DG WHO, March 1, 1952.

his pre-eminent position as one of the discoverers of penicillin” (Łotysz, 2014). This demonstrates that PE was beyond science or technology – it was a political good.

Third, the WHO’s training capacity was an issue. In 1950, the ECA recognised the difficulties experienced by governments in obtaining antibiotics, noting that countries’ requirements differed according to the magnitude of the health problems they were grappling with, the level of economic development and industrial activity and the ability to apply scientific discoveries.¹³⁴ Claiming that the UNRRA and the WHO initiatives had not entirely met these requirements, the committee recommended establishing training for scientific and technical personnel in methods of production and research on antibiotics in poorer countries.¹³⁵ Because of the difficulties involved in setting up satisfactory training facilities at the commercial firms, the International Research Centre for Chemical Microbiology in Rome at the Istituto Superiore di Sanita headed by E.B. Chain was utilised as a training hub on the design, installation, and initial operation of the plants.¹³⁶ However, this institute trained only a limited number of fellows from developing countries.

Fourth, the WHO’s technical capacity was a problem. At the same time as the WHO was making efforts to study the feasibility of furnishing technical guidance for penicillin production, UNICEF was contributing to local production of penicillin by procuring imported equipment. In 1950, the UNICEF/WHO Joint Health Policy Committee queried the strength of WHO’s technical capacity, expressing doubts that UNICEF supply funds would be sufficient to modernise existing AP for the production of streptomycin, crystalline penicillin, aureomycin and chloromycetin.¹³⁷ Though the WHO established a new section in September 1950 to cope with the work involved in increasing the activities of this section into a large-scale industrial undertaking, the entire section with all the technical work was transferred to the United Nations Technical Assistance Administration (UNTAA) in July 1953.¹³⁸

Besides the (lacking) capacities of the WHO, industry dynamics also had an impact on AP. By this time, the pharmaceutical industry had approached most of the developing countries with regard to the erection of antibiotics factories. The UK-based Distilleries Company (Biochemical) Limited (DCBL) had been successfully supplying penicillin to Pakistan through the locally based J.L. Morison’s and Sons Limited since 1950.¹³⁹ Since 1942, DCBL had operated a factory of the British Ministry of Supply, manufacturing

¹³⁴ IRIS: EB6/39, Expert Committee on Antibiotics, 1950; EB6, Programme supplies to governments, 1950. Difficulties in obtaining foreign exchange for the procurement of the much-needed drug and its high cost at the time naturally influenced health administrators and scientific personnel in the developing world to urge the local provision of production facilities.

¹³⁵ IRIS: WHO No 30, The work of WHO, 1950, 36.

¹³⁶ WTA: Draft letter from Chain to Dr Fang, Dr Mani and Aly Shousha, no date, and letter from S.S. Sokhey, Assistant DG, WHO to Chain September 12, 1950, PPEBC/E/223/230, Correspondence September–November 1950.

¹³⁷ IRIS: EB6/39, ECA, 1950.

¹³⁸ IRIS: WHO No 45, The work of WHO, 1952, 54; WHO No 51, The work of WHO, 1953, 53. The UNTAA experts assisted Sri Lanka in preparing a report on the administration and management survey of the health services in Sri Lanka in 1952 as requested by the WHO. Chapter four will discuss the UNTAA assistance to Sri Lanka’s malaria control programme.

¹³⁹ WTA: WF/M/P16/13., Letter – Pakistan import licence, January 14, 1953.

penicillin in Speke, Liverpool (Freeman, 2015).¹⁴⁰ The DCBL officer D.J. Hayman was secretly informed of a threat to their business there by J.B. Dunnett, Marketing Director of the BWC, UK, who wrote that “the Pakistan government [was] considering making an agreement for the local manufacture of both penicillin and streptomycin [with a US firm] Jamiesons and Heydens”.¹⁴¹ Rivalry among the competitors had already begun, and Hayman replied: “we should advise you confidentially that we [had] also been approached for technical assistance in the erection of penicillin plant in this market”.¹⁴² However, it appeared that DCBL was unsuccessful in this endeavour.¹⁴³

For the penicillin plants, while the Egyptian government accepted the offer from a Danish company, India struck an agreement with Merck.¹⁴⁴ This chapter will examine the India–Merck venture to explore the dynamics of AP in a country setting in detail. After assessing the Indian situation in 1950, E.B. Chain argued that “it was the firm conviction that the GOI [India] could undoubtedly succeed very well in the construction of an economically sound penicillin plant with the help of WHO which would...gain little advantage from a commercial arrangement with a private firm”.¹⁴⁵ As mentioned previously, the WHO was not equipped with most of the technological methods that had been developed by private commercial companies, who naturally were unwilling to reveal their methods and procedures or loan their skilled staff. Therefore, those companies wished to profit from their particular power in this field and tended to set stiff financial conditions for their services, usually requesting an engineering fee as well as a royalty payment.¹⁴⁶ In 1950, the Indian government, for instance, in 1950, was in negotiation with Merck, who demanded royalties amounting to at least \$ 175,000 per year for 15 years. This private partnership, as Tyabji (2004) stated, was strongly supported by the “Indian Penicillin Committee” which had been established to implement the proposed penicillin plant. The Chief of the Industrial Development Section of the UN, N.L. Macpherson, argued that such negotiations handicapped the plant’s work, causing a delay of three years.¹⁴⁷

¹⁴⁰ This plant was one of the first two factories in Europe to produce penicillin. After the Second World War, DCBL purchased the facility for approximately four million dollars. They were also responsible for the manufacture of the drug Thalidomide that was withdrawn from the market due to its severe toxicity.

¹⁴¹ WTA: WF/M/P16/13, Letter from Dunnett to Hayman, December 3, 1952: In 1880, the BWC was founded in London by two pharmaceutical salesmen from America, Silas Burroughs and Henry Wellcome. They used mass production and proactive marketing to sell medicines throughout the UK and territories colonised by the British, building the company’s reputation on scientific rigour. Henry Wellcome emerged as a prominent figure in the modern pharmaceutical industry. On the BWC and the British drug industry before the Second World War, see Tansey (2002).

¹⁴² Ibid., Letter from Hayman to Dunnett, November 5, 1952.

¹⁴³ This study was unable to assess further details – for instance, files related to the DCBL (e.g., file number PP/MLV/C/11/1/90 of the WTA, London) – due to archival closures and travel restrictions.

¹⁴⁴ World Bank Group Archives Holdings (WBA): Proposed penicillin plant for Egypt, 10 August 1949, 1578425, United Arab Republic – DDT and Penicillin Project – Correspondence, 1949.

¹⁴⁵ WTA: PPEBC/E/223/230, Letter from E.B. Chain to S.S. Sokhey, November 23, 1950, Correspondence September–November 1950.

¹⁴⁶ WTA: The story of the penicillin production in Yugoslavia, 1958. PPEBC/F/212/214, Letter from N.L. Macpherson (Chief, Industrial Development Section, U.N. Technical Assistance Administration), November 1958,

¹⁴⁷ Ibid., The story of the penicillin production in India.

Despite this delay, however, the Indian government succeeded in operating a small bottling factory in Bombay for the vialing of imported bulk material, which later was absorbed by the large factory scheme.¹⁴⁸

In the early 1950s, the WHO and then UNTAA were approached and requested to perform a feasibility study for local penicillin projects in many countries.¹⁴⁹ Therefore, it is useful to inquire into the dynamics of UN-assisted antibiotics plants in the SEA context in order to understand AP in the international and regional context that impacted Sri Lanka. The UNTAA assisted the erection of penicillin plants in several countries including Pakistan, India, and Chile and the expansion of the Yugoslavian plant in the early 1950s.¹⁵⁰ In terms of the Indian plant, the UNTAA performed a context-specific output analysis before the project was initiated. The target production spoken of was 4,800,000 mega units per year, which in those days was a fairly large proportion of the total quantity imported.¹⁵¹ The capital cost of the entire factory amounted to around \$3,750,000, while India's contribution was considerably higher than the minimum matching amount normally requested by UNICEF, which allocated a sum of \$875,000 in its projects.¹⁵² These factories were not normally so-called turnkey factories, where external groups design, build, erect, and start operating a factory, handing the key over to the ultimate owners.¹⁵³ On the contrary, one of the major features of the entire project was its inclusive planning, which permitted the fullest participation of local personnel.

As the process needed to be accelerated due to the prevailing demand for antibiotics, all the plants were completed in a short time; for example, the Indian plant started production within four years after the foundation stone was laid in 1952.¹⁵⁴ During the construction phase, India adopted measures to discourage imports; in 1952, the Indian import policy did not permit the importing of penicillin in vials or penicillin products unless the manufacturer developed a facility to produce within the country.¹⁵⁵ As techniques for producing and increasing the yield of penicillin were constantly improving during this period, it was a great challenge to bridge the inputs to match the production. This affected the original planning, which needed to include sufficient elasticity for the higher anticipated output; for example, it was soon evident that over 7,000,000 mega units could easily be produced from the Indian plant.¹⁵⁶ This output was not a major challenge compared to the Yugoslavian plant, where production was greater than originally forecast

¹⁴⁸ Ibid., The story of the penicillin production in India.

¹⁴⁹ Ibid., The story of the penicillin production in India. Chapter four will discuss Sri Lanka's negotiations at the WHA and the EB.

¹⁵⁰ WTA: PPEBC/F/212/214. The Yugoslavia plant, donated by UNRRA, was meant to be capable of producing 50,000 mega units of amorphous penicillin per month, which was hardly possible due to lack of equipment. The US treated different nations and different regions differently. The US Department of Agriculture trained a group of staff of the Instituto Bacteriologico de Chile on the new techniques of penicillin production in 1944. This group started the Chilean penicillin production; however, Chile was able to produce only 10 per cent of its national consumption of 150,000 mega units.

¹⁵¹ Ibid., The story of the penicillin production in India.

¹⁵² Ibid.

¹⁵³ Ibid.

¹⁵⁴ Ibid.

¹⁵⁵ WTA: WF/M/P16/13, Memorandums from BWCL, Bombay to BWC, London. July 26 and 30, 1952.

¹⁵⁶ Ibid., The story of the penicillin production in India.

according to the WHO's DG Candau.¹⁵⁷ Two years later, in 1955, the Hindustan Antibiotics Plant in Pimpri also started to manufacture PAM with an aim to supply the estimated target amounts required to treat India's cases of venereal disease.¹⁵⁸ The Chilean and Pakistani plants were also commissioned in the latter part of the 1950s.¹⁵⁹ According to N.L. Macpherson, the chief of the projects, the production achieved revealed a highly satisfactory and useful commercial operation in all the UNTTA-assisted factories.¹⁶⁰ For the Indian plant, the profit for 1957–58 represented a net profit on capital investment of somewhere between 15 to 20 per cent after payment of all capital charges, depreciation and so forth. Macpherson argued that the price of Indian bulk penicillin “was slightly higher than...competitive world market, and...had the profit been applied to [the] reduction of prices to the bulk consumers.”¹⁶¹ He further emphasised a direct saving of foreign exchange costs to India of around 1.75 million dollars on this production basis.¹⁶²

2.6 Discussion

This chapter has explored a variety of factors that contributed to the development of AMR in the international context. Previous historiographies have assessed AMR with regard to the international response (Podolsky, 2018) and the WHO's involvement in antibiotic testing (Gradmann, 2013). Antibiotic production has also been examined in a range of national contexts such as the US (Neushul, 1993), India (Tyabji, 2004), and Poland (Łotysz, 2014). The discovery of penicillin and AMR was studied by Bud (2009), Tansey and Reynolds (2000), and Lobanovska and Pilla (2017). Bud argued that “The [WHO], the most influential body in this field, had shown some interest in antibiotic resistance since the early 1980s when its principal concern was with surveillance of antibiotics resistance among bacteria” (p. 208). The findings of this chapter tally with those of Bud, as it became evident that the WHO's interest in ABR was minimal during the period investigated by this study, 1948–1977. Although the various echelons of the WHO governance were fully conscious of rising ABR trends thanks to various sources of information, they neither started surveillance of ABR nor took steps to reduce the widespread use of antibiotics in public health programmes. Mary Barber already pioneered the testing and reporting of ABR in the late 1940s, as mentioned by Tansy and Reynolds (2000). Many other clinicians and scientists like Dr G.L.M. McElligott (UK), S.C. Agarwal (India), Jeljaszewicz and Hawiger (Poland) and A. Manten (Netherlands) also contributed to this endeavour, reporting to the WHO and research bodies like MRC. However, their warnings went largely unheeded. This dismissive attitude of the WHO's higher officials over the tackling of ABR meant, for instance, that the WHO's Head of Laboratory failed to include ABR in the agenda of

¹⁵⁷ IRIS: WHO No 59, The work of WHO, 1954, 90.

¹⁵⁸ IRIS: Eighth annual report of the RD to the RC for SEA, July 1955–July 1956, 6, SEA/RC9/2.

¹⁵⁹ WTA: PPEBC/F/212/214. It is important to assess the antibiotic production and supply data of the UNTAA-assisted factories to understand the country-specific factors. This study was unable to access the WHOAG data due to closure of the archives.

¹⁶⁰ WTA: PPEBC/F/212/214, Letter from N.L. Macpherson, November 1958.

¹⁶¹ *Ibid.*, 6.

¹⁶² *Ibid.*

WHO's meeting on antibiotics in 1961. It is clear that the WHO's goal of controlling infections in the interest of public health led it to consciously ignore the rising trends in ABR. The importance of rational and controlled use of antibiotics in controlling infections in the interest of public health did not receive any attention by WHO officials, as revealed above.

Regarding AP, although Macpherson (head of technical division, UNTAA) attempted to attribute the blame for delays to the Indian plant to the long negotiations between the government and Merck, in fact, the poor negotiations of WHO experts with the government also accounted for the slow progress, as pointed out by Tyabj (2004). This chapter claims that the delay of local AP led to a severe crisis in India's penicillin supply for which citizens paid the price. Further, this chapter argues that even once the project's original aim of ensuring a local antibiotics supply was achieved, the Indian factory continued to produce penicillin types without any regard to patterns of developing resistance – essentially, producing antibiotics that no longer were effective against leading diseases. This chapter also agrees with Łoysz (2014), who found that the WHO's higher officials secretly saw E.B. Chain as biased in recommending PEs to penicillin plants for the purification of penicillin. But not only this: this chapter finds further that the WHO not only openly facilitated the negotiations over PE at the WHA and EB meetings but also supported Chain's applications for visas to the US that were refused on the basis of his alleged affiliation with anti-US states. Regarding testing, this chapter agrees with Gradman's (2013) argument that Ericsson's inconsistent work created a huge delay in the development of a standardised system for testing ABR, meaning that the problem of ABR was exacerbated. This chapter, however, argues that the delay of this project for a decade could not be solely attributed to Ericson and his allies, but also was due to the laboratory division of the WHO, which kept haphazardly changing the original objective of the project. Accordingly, it is evident that multiple and often conflicting political and economic interests were at play not only in the WHO's attempts to promote the production of antibiotics but also in antibiotic sensitivity testing.

The former WHO DG, Candau, and various scholars attempted to justify the WHO's reliance on the penicillins used in disease control programmes such as the programmes combatting syphilis and yaws, claiming that these antibiotics were still effective against particular pathogens like treponemas (spirochetes) (Asiedu et al., 2014; Chen, 2019). One tempting explanation is that spirochetes are incapable of developing penicillin resistance; however, studies have shown that this is not true. For example, *brachyspira pilosicoli*, an intestinal spirochete, has shown penicillin resistance (Mortimer-Jones et al., 2008). Further, in most of the resistance cases, the infection was cured by increasing the dose or duration of therapy of penicillin or with another beta-lactam antibiotic or another beta-lactam antibiotic, showing that resistance had indeed developed and was becoming a problem (Nitrini et al., 1984; Cnossen et al., 1995).

Understanding the prospect of a world without effective antibiotics is a daunting one. This chapter also finds that tackling AMR needs a stronger collective international movement, as stated by Podolsky et al. (2015) and the economist Jim O'Neill (Taylor and Smith, 2016). This chapter has shown that the problem of ABR was long ignored, and that even in bodies aiming to enhance the common good such as the WHO,

political and economic interests often played a crucial role in decisions. Moreover, national interests interfered with both antibiotics supply and production, exacerbating the problem of AMR. Accordingly, this chapter agrees that tackling AMR needs a stronger collective movement.

2.7 Conclusion

Contemporary explanations of this historical period generally attribute dynamics of the efficacy and resistance of antibiotics to the impact of growing political and economic hostility on the demand, production and supplies of antibiotics. Demand for antibiotics went up when the WHO promoted mass campaigns against yaws, endemic syphilis, leprosy, and trachoma and helped control a major cholera pandemic in Asia and the Western Pacific (McCarthy, 2002). The newly independent and war-stricken countries had been falling slowly but inevitably into the grip of antibiotics producers from large countries – in most cases through fraud or deception. Further international leadership on the control of infectious disease was vested in the UN agencies, who tried to offer support and guidance concerning the use, supply, and production of antibiotics (Asiedu et al., 2014). The major strategic importance of antibiotics led this field to become an important part of international health diplomacy, with the WHO struggling to coordinate activities related to antibiotics, as well as to foresee and react to the danger posed by their main adverse effect, AMR.

In any event, the emergence of antibiotics as an essential commodity in general life went hand in hand with market considerations. The industry was successful in growing the enthusiasm for antibiotics among physicians even before they were readily available for civilian use, creating a huge demand for them in clinical settings. Accordingly, the supply was driven to a dangerous extent by the market forces led by the pharmaceutical industry. The national governments understood that supply and demand could not be harmonised only through enforcing strict regulations, but that foreign reserves were also required to purchase antibiotics on the international market. The industry that had the technical know-how secretly approached the major countries with a large market (India, Pakistan and Egypt), seeking to negotiate the erection of antibiotic plants. The US, the biggest producer, shared the technology of AP with its allies but was not willing to disseminate it beyond the Iron Curtain. Such actions led to the marginalisation of small nations and Eastern European countries in both the supply and production of antibiotics.

The WHO's major challenge when taking the helm of international health in 1948 was combatting the rising infectious disease burden while addressing the health demands of its member states. The WHO and other UN agencies embarked on antibiotic-led mass campaigns against infections with eyes only for the positive impacts of antibiotics. Their assessments were skewed more towards affinity than resistance, and more towards demand than supply. Growing tensions at the various levels of the WHO meant that concerns regarding not only the supply but also the self-sufficient production of antibiotics were not addressed. The WHO also failed to provide up-to-date scientific literature, machinery, technology and the capacity to develop staff. It compounded these problems by hiring inappropriate experts for the production process, such as E.B. Chain. While the WHO attempted to attribute slow progress in the initiation of

antibiotic plants to the work of industry groups solely, it also contributed to this issue itself, taking a number of years to recognise its own incapacity and transfer the work of its technical division to UNTAA. Because of this delay, many countries faced a serious shortage in the supply of antibiotics – India, as shown above, was unable to rectify this shortage in the late 1940s and early 1950s even with strict regulations. All such actions led to reduced access to antibiotics by citizens, creating not only an adverse impact on morbidity and mortality rates but also an increase in the demand for antibiotics.

Various levels of international and national health governance were aware of ABR, having been informed of the problem not only by a plethora of notifications from clinical settings, scientific forums, and WHO-assisted public health laboratories but also by publications in the *WHO Bulletin* from the beginning of the modern antibiotic era. However, while there was apparently enough blame to go around, there was little coordinated effort to tackle ABR on anything more than a local scale. A WHO small-scale expert meeting on antibiotics in 1959 failed to include ABR in the agenda, but it did lead to an understanding of the importance of international coordination to combat ABR, as rightly flagged up by Professor Selman Waksman. Except for some isolated work, the WHO limited ABR to a laboratory definition of “resistance” and refrained from taking on an international role concerning surveillance or appropriate use until the early 1980s. Even the laboratory definition of ABR and antibiotic sensitivity testing were not finalised by the WHO until the early 1970s. In other words, the WHO failed to provide a universally accepted method to test the sensitivity of bacteria to antibiotics, which is a major part of the surveillance of ABR. Further queries arose concerning the WHO’s attitude to the selection of experts (one of them even started producing antibiotics discs commercially) and its multiple changes to the original goal of the testing methods, which were responsible for the long delay.

This chapter has found that inadequate supply and production, a delay in deploying appropriate testing of antibiotics, their mass utilisation, and short-sightedness regarding growing resistance to them during the first three decades of the WHO led directly to the current situation of AMR. This situation could have been managed effectively by the international health bodies had they utilised the available shreds of evidence and effectively coordinated their activities. Despite ideological, technical and logistic support for the use of antibiotics for disease control activities by the various layers of UN organisations, the member states were increasingly drawn into becoming the principal providers of healthcare, including disease control and antibiotics, in their national contexts. Some of the reasons for national activities have been examined here, but perhaps the most significant factors for AMR that propelled this development were healthcare problems created by the respective country’s underlying political and economic situation. In order to understand national-level efforts to tackle AMR against this background, it is necessary to assess the complex interplay between UN agencies, donor countries and various levels of national governance and its impact on political and economic encounters. This thesis will use Sri Lanka as a case study, and this case study will form the subject of chapters three and four.

Chapter 3. Meeting Sri Lanka's political and economic needs

Although often considered only a medical problem, antimicrobial resistance (AMR) is in fact an evolutionary challenge accelerated by international political and economic factors that lead to the misuse, overuse and abuse of life-saving antimicrobial medicines. In the international context, multiple and often conflicting political and economic interests were at play, and not only in the provision and testing of antibiotics and in tackling AMR, as identified in the previous chapter. In order to dig more deeply into these issues, a closer look at individual countries, particularly LMICs, is instructive. An analysis of not just international, but also national political and economic contexts is needed to understand national healthcare delivery systems, the national provision of antibiotics and national trends in AMR. Accordingly, this chapter examines the complex interplay of political and economic encounters between the Government of Sri Lanka (GoSL) and funding agencies, donor countries and layers of national governance between 1948 and 1977. Previous scholarship (Kodikara, 1982; Kelegama, 2000) divided this period according to political regimes, and this chapter also discusses those contributions under each political regime.

Previous studies have focused on Sri Lanka's political (Kodikara, 1982; Nissanka, 1984; Mendis, 1992; Silva, 2017; Madanayaka, 2016) and economic situation (Samaraweera, 1981; Baughn and Yaprak, 1996; Gibson, 1982) from a national perspective. Building on these studies, this chapter will examine the interactions between foreign nations and organisations and Sri Lanka, and the attitudes involved using files from the British Foreign Office and Foreign and Commonwealth Office, the US Department of State, and the World Bank. While nationalism and party politics have been examined by several authors, these studies failed to identify the impact of politics on the country's economic development. The present study's intention was to assess this impact by examining Sri Lanka's Central Bank data as well as newspaper articles, parliamentary debates and gazette notifications. However, data collection was affected by the closure of the archives and libraries due to the current COVID-19 pandemic. For instance, it was not possible to access the newspaper and parliamentary debate repository from 1958 onwards in the Department of National Archives of Sri Lanka. However, it proved possible to bridge those gaps using published articles and existing primary data.

3.1 The quest for new political and economic pathways: the United National Party (UNP) regimes (1948–1956)

As Sri Lankan economist S.A.K. Madanayaka (2016, p. 220) argued, Sri Lanka did not receive complete independence from Britain in 1948, as "the constitution of Sri Lanka accepted the British Crown as the head of the state and entered into the Defence Agreement with the UK[, which did not] present a positive image of Sri Lanka" in the communist countries.¹⁶³ Accordingly, Britain remained an important

¹⁶³As part of the defence agreement concluded on November 11, 1947, the obligations accepted by the UK included provision for the security of Sri Lankan territory, essential communications, and the training and development of the Sri Lankan armed forces. Sri Lanka was required to provide facilities such as naval and air bases, ports and military establishments and the use of telecommunications facilities (Murthy, 2000). The Eastern Bloc (countries),

factor in Sri Lankan politics as the Governor-General represented the King and was vested with the power to appoint half of the Senate (30 members) and nominate six of one hundred and one members to the House of Representatives (HOR) (hereafter simply referred to as Parliament).¹⁶⁴ In light of this continued influence of the UK, it is important to examine how the GoSL navigated the Cold War rivalry between East and West, recognising the country's geostrategic importance and also its vulnerability. Sri Lanka's Prime Minister (PM), Don Stephan Senanayake of the ruling United National Party (UNP), preferred to maintain the status as a dominion, stating: "we [did not] have a reason to leave the Commonwealth,...as we [did not] have issues with Britain".¹⁶⁵ The Premier initially preferentially built trade relations with Western countries rather than communist states, but refused to join the American-led Southeast Asia Treaty Organization (SEATO), mentioning that there was "nothing to prevent a close and intimate association with any communist country".¹⁶⁶

Sri Lanka inherited a surplus economy when it gained its independence. The main objective of D.S. Senanayake's government was to stabilise the economy by moving away from the country's precarious dependence upon exports of tea, rubber and coconut and the imports of food, on which most of its revenue was being spent.¹⁶⁷ Proposing to diversify the economy by increasing food production and creating employment in the industry, the government warned that failure to do this would "involve grave social and political consequences".¹⁶⁸ The first official attempt at national planning was made by the Minister of Finance, J.R. Jayewardene, in his July 1948 budget speech, describing it as a "national plan for economic and social development for six years".¹⁶⁹ Referring to this plan as the "magnum opus" of the government, the *Ceylon Daily News*, a national newspaper, made the following criticism:

The six-year plan of the minister is not a plan that can deliver the goods. There is no planning for balanced production, optimum investment, full employment, matching of needs against resources, and finally to hope for co-ordinated action in the financial and economic sphere is to expect the impossible. But the Minister's national plan is already outworn really because it has given way to

also known as the communist bloc, the socialist bloc and the Soviet bloc, was the group of socialist states under the influence of the Soviet Union and/or its ideology (communism) that existed during the Cold War (1947–1991) in opposition to the capitalist Western Bloc or West. The main Eastern Bloc countries were Russia, China, and the Eastern European countries. The main Western Bloc countries were the US, UK, Canada, Australia, and the Western European countries (Schlesinger, 1967; Nehring, 2012).

¹⁶⁴ The World Bank Digital Archives (Hereafter WBDA): 1849871, President Eugene Black Round the World Trip – Correspondence – Volume 1, (confidential) 1952 – Ceylon, India, Pakistan. In Sri Lanka's parliament (modelled on that of the United Kingdom), the Senate had only 'revisory' powers, and real power rested with the House of representative.

¹⁶⁵ Sri Lanka National Archives (SLNA): "No issues with commonwealth" (all the extracts of this paper were translated to English), *Lankadeepa*, April 20, 1950, 1.

¹⁶⁶ TNA: A booklet SEATO vis-a-vis SEANO, p. 4, FO 371/111889, Five Power staff talks on military and political aspects of South East Asia defence: US-UK study group; meetings of SEATO, 1954: SEATO was created by the Southeast Asia Collective Defence Treaty, or Manila Pact, signed in September 1954. For a critical assessment of SEATO see (1968).

¹⁶⁷ TNA: The Colombo Plan for operating economic development in South and Southeast Asia, London, October 1950, 28, T 230/199, Copy of Colombo Plan for Economic Development in S and SE Asia: contributions from India, Pakistan and Ceylon for the annual report

¹⁶⁸ Ibid.

¹⁶⁹ SLNA: "A search for economic policy, by a staff correspondent", *Ceylon Daily News*, 19 February 1951.6

something more ambitious and comprehensive: namely, the Colombo Plan. Whether the Colombo Plan is an improvement on the Minister's plan is another story that must be told separately.¹⁷⁰

In June 1950, tension and the anti-government sentiment was growing, as the cost-of-living index had risen significantly from 222 in 1946 to 261 in 1951. The government attempted to reduce this cost in a range of ways, including an extended food drive.¹⁷¹ As a result of inter-party rivalry, the left-wing opposition resorted to boycotting Parliament on important occasions as a protest against the government. In June 1950, Sir John Kotelawala, the Minister of Commerce, stated the government view that “[w]e have to fight the Opposition not as an Opposition but as enemies of the State”, and the government displayed “considerable reluctance to do business with the left-wing opposition”.¹⁷²

In response to the opposition critics, J.R. Jayewardene argued in Parliament that Sri Lanka had recorded its highest balance of trade in 1950 at Rs 393 million (compared with Rs 32 million in 1949 and Rs 16 million in 1948), and the "government ha[d] fulfilled its task" in relation to the six-year plan.¹⁷³ This was not just general political rhetoric, as the WB's documents show. Accordingly, Sri Lanka's exports were higher than its imports in 1950 (Table 3.1). Further, in the 1950s, Sri Lanka's strong budgetary surplus and government loans were sufficient to fund £68 million of the county's six-year development programme (total £109 million), which included major irrigation, hydropower and health projects.¹⁷⁴ However, what was the GoSL approach to obtaining the remaining £41 million for its development programme?

Table 3.1: Trade dependence: imports and exports as a percentage of GDP

Year	Ratios to GDP		
	Imports	Exports	Imports & exports
1950	31.8	38.3	70.1
1955	35.7	35.2	71.2
1960	31.5	28.2	59.7
1965	25.6	25.5	51.1
1970	17.6	15.3	32.9
1975	20.7	15.2	35.9
1977	18.1	19.1	37.2

Source: WBDA: 13550, Premachandra Athukorala and Sisira Jayasuriya, “Macroeconomic Policies, Crises, and Growth in Sri Lanka 1969–90”, Washington DC, The International Bank for Reconstruction and Development / The World Bank Washington, (1994). Note – Exports and imports include both goods and non-factory services. Ratios are estimated using current price data.

¹⁷⁰ Ibid.

¹⁷¹ SLNA: “Food drive extends to rubber estate”, *Ceylon Daily News*, 3 July 1951, 1. The government even extended the food drive into a rubber estate, ordering a suitable portion of the estate to be converted into paddy cultivation under the provision of the Food Production (Estate) Ordinance: Exchange control may be relaxed, *Ceylon Daily News*, 5 July 1951, 1. A relaxation of exchange control and the lifting of import control was recommended by the Central Bank of Ceylon in its annual report after considering the situation of the country's balance of payment.

¹⁷² SLNA: *Ceylon Daily News*, 12 June 1950. This article was also quoted by Wilson (1969, p. 56).

¹⁷³ SLNA: “1950 recorded the highest balance of trade”, *Ceylon Daily News*, 9 February 1951, 1; the progress of Ceylon's six-year plan, July 19, 1951. Jayewardene further mentioned that the government had invested huge amounts of money in the development of industries, and that work on the construction of a large number of factories such as cement, DDT, caustic soda, glass etc. had been progressing well.

¹⁷⁴ TNA: T 230/199, the Colombo Plan for operating economic development in South and Southeast Asia, London, October 1950, 28.

In January 1950, J.R. Jayewardene requested that the International Bank for Reconstruction and Development (IBRD) send an "overall mission to Ceylon" to survey the country's potential for development at a meeting of the Commonwealth in Colombo. This formed the basis of the Colombo Plan (CP).¹⁷⁵ After a comprehensive survey, this mission, led by Sir Sydney Caine, UK alternate Executive Director of the IBRD, identified increasing agricultural production as the key aim for IBRD support in its aid programme.¹⁷⁶ Another confidential report of the CP voiced concern about Sri Lanka's development programmes against the country's growing population and the economic position, citing fluctuations in the global price of its main exports – tea, rubber and coconut – and higher expenditure on food.¹⁷⁷ Sri Lanka pleaded for aid not only from the IBRD but also from the CP, which "proposed to diversify the economy by increasing food production and creation of employment" and warned that "failure to do this would involve grave social and political consequences".¹⁷⁸

These loans were not granted in the amount expected, and accordingly, tensions rose in the political and administrative circles of the government. This inadequate foreign assistance seriously impacted Sri Lanka's economic situation. R. Coomaraswamy, a Sri Lankan delegate, stated to a US Embassy representative at the consultative committee meeting for the Economic Development of South and SEA in Pakistan in March 1952 that "if this money [i.e. the loans] was not possible, the development programme [would] have to be drastically cut at the economic, social and political risk consequential to such action".¹⁷⁹ The alternative Coomaraswamy suggested that "the sterling balance should be drawn down as required regardless of the risk to the sterling area itself", which would lead to the depletion of the country's foreign reserves.¹⁸⁰ Moreover, Sri Lanka was becoming increasingly unable to make its own contribution to projects. Understanding this, the first Secretary of the US Embassy in Colombo, Myron L. Black, informed the Department of State in Washington that "the dangers inherent in either of these situations cannot be exaggerated" as "Ceylon has committed itself [to] \$ 400,000 for the work to be done by the Council of

¹⁷⁵ The World Bank Global Archives, Washington DC, (hereafter WBGA): Letters from J.R. Jayewardene, Finance Minister, to Eugene R. Black, President of the IBRD, May 9, 1951, and August 14, 1951, 1554091, Ceylon – General Survey Mission – 01, 1951. The IBRD was founded in 1944 with the goal of helping war-torn European countries rebuild their economies and subsequently broadened its mandate to increasing global economic growth and eliminating poverty. It is one of the two major institutions that make up the World Bank, the other being the International Development Association (IDA). For the functions of the WB and issues, see Ravallion (2016). The CP was launched on 1 July 1951 as a cooperative venture for the economic and social advancement of the peoples of South and Southeast Asia. For the history of the CP, see Oakman (2010).

¹⁷⁶ Ibid.

¹⁷⁷ TNA: T 230/199, the Colombo plan for operating economic development in South and Southeast Asia, London, October 1950, 28.

¹⁷⁸ Ibid.

¹⁷⁹ US National Archives, College Park, Maryland, (hereafter NARA): confidential letter from M.L. Black, First Secretary, US Embassy, Colombo, to Department of State, Washington, March 6, 1952. RG469 UD 854 B1, Records of U.S. Foreign Assistance Agencies, 1942 - 1963, Records Relating to Ceylon, 1951 – 1953.

¹⁸⁰ Ibid.

Technical Cooperation in South and SEA apart from economic aid contribution to [the Colombo Plan]”.¹⁸¹ The lack of adequate foreign assistance meant that Sri Lanka's economy started to deteriorate, leading not only to the depletion of its foreign reserves but also to the underfunding of development projects.

In the end, Sri Lanka successfully secured \$10 million in aid under President Truman's “Point Four” programme, but this support came at a price. Firstly, Sri Lanka had to join the US-convened San Francisco Conference in 1951 (in contrast to India, for example, who boycotted it on grounds of neutrality) and signed the Draft Treaty of Peace with Japan (Silva and Wriggins, 1988, p. 272). J.R. Jayewardene defended Japan at a time when many Western nations were demanding reparations for damages caused during World War II (Keerthisinghe, 2013). Secondly, Sri Lanka was required to let the radio station Voice of America (VOA; this station was considered as a propaganda tool of the US) share broadcasting facilities with Radio Ceylon.¹⁸²

Much of the aid received was spent on social services. In 1951, nearly 40 per cent of government revenue was spent on social services, with the second-largest appropriation being for health (Rs 107 million), followed by education (Rs 90 million) and then food (Rs 50 million) – the government paid more than half the cost of the rice subsidy.¹⁸³ Offering tax relief to the middle class and reducing duties on essential imports in his 1952 budget speech, J.R. Jayewardene stated that “the appropriation bill [103 million Sri Lankan rupees] which I present, together with the loan fund expenditure and loan account, amounts to thirteen times that [bill] sum and I can still say that financial stability of the country has been maintained”.¹⁸⁴ On the same day, S.W.R.D. Bandaranaike, Minister of Health and the leader of the house, resigned from the cabinet as a “sequel to UNP *Maha Sabha* [party led by him] disagreement” and, on 2 September 1951, formed the Sri Lanka Freedom Party (SLFP), a new, nationalistic political party.¹⁸⁵ The government majority was reduced further as six MPs crossed over to the opposition with Bandaranaike. As Sir William Ivor Jennings, the vice-chancellor of the University of Cambridge and the University of Ceylon, said, “[t]he fundamental weakness of Ceylon politics was the absence of a democratic opposition capable of forming ‘Her Majesty’s alternative Government’, but the materials for such an opposition (now) exist.”¹⁸⁶ However,

¹⁸¹ Ibid., and confidential letter from M.L. Black, first Secretary, US Embassy, Colombo, to Department of State, Washington, 2 August 1952.

¹⁸² For the history of the “Point Four” programme, see (Paterson, 1972).

¹⁸³ SLNA: “How the revenue goes”, *Ceylon Daily News*, 11 July 1951, 6

¹⁸⁴ SLNA: “Higher-income to pay more” and “Country’s finance stability maintained”, *Ceylon Daily News*, 13 July 1951, 1.

¹⁸⁵ SLNA: “Health Minister resigns”, *Ceylon Daily News*, 13 July 1951, 1: As S.W.R.D. Bandaranaike stated in his resignation speech, “then came freedom, but how did freedom come? It came not after a fight upon definite principled policies and programmes, but it really came in the normal course of events... There was no fight for that freedom which involved a fight for principles, policies and programmes which could not be carried out unless that freedom was obtained. No, it just came overnight. We just woke up one day and we are told, ‘You are a dominion now.’”

¹⁸⁶ The SLFP was recognised as aggressively nationalist and aggressively Buddhist. In language policy it was anti-English; in religion it was anti-Christian; in foreign policy, it was anti-Western; and in economic policy, it was both anti-capitalist and anti-socialist. Socially, it might have been described as anti-Colombo, because it consisted primarily of English-educated young men from the provinces, the sons of small cultivators, minor officials, shopkeepers, and the lower-middle-class groups generally.

the present subsection argues that while the formation of strong opposition created the opportunity for greater democracy, in actual fact the endless political rivalry between the two main political parties risked the country's political and economic stability, as will be discussed in the rest of this chapter.

In March 1952, just before the general election, D.S. Senanayake, the Prime Minister, was thrown from his horse and died. His son, Dudley Senanayake, was forthwith commissioned to form a government and succeeded, despite two members whose claims to leadership had long been thought better than his own (Jennings, 1954). Though the UNP government had been slowly losing popularity since 1948, Dudley Senanayake was able to capitalise on the mass emotional upsurge caused by the passing away of the 'Father of the Nation', gaining victory in the 1952 general election (Wilson, 1969, p. 59). Dudley's government soon ran into two economic problems: rubber and other exports fetching lower prices on the world market, and the continuing need to spend earnings on food products, especially rice, under the welfare programme.

The situation became worse when the US refused both to purchase Sri Lankan rubber at the price it was fetching at Colombo and to supply rice to Sri Lanka. This forced Dudley Senanayake to break the status quo (of working only with Western counties) to enter the Sri Lanka-China Rice-Rubber pact, which provided a stable price for Sri Lankan rubber and a constant supply of rice for five years (Kodikara, 1982, pp. 62–63). Finance Minister J.R. Jayewardene unsuccessfully opposed this agreement, voicing concerns that the pact gave China a monopoly over Sri Lanka's rubber and also would affect the country's relationship with the UN. According to Kumar (1986, pp. 15–22), this pact also resulted in the US withdrawing economic aid on the grounds that the pact contravened the UN embargo on the export of strategic material to China following its military intervention in North Korea (Kumar, 1986, pp. 15–22). However, Sri Lanka continued to enjoy funds under the Colombo Plan, for instance receiving 1,785,000 Canadian dollars from Canada.¹⁸⁷

This chapter further argues that despite the withdrawal of economic aid, the British and the US governments continue to help Sri Lanka in various ways. During a shortage of rice in Sri Lanka, a piece of confidential security information sent as a telegram from London to the Secretary of State in Washington on 11 June 1952 stated:

Ceylon in a precarious position regarding rice and unless additional supplies obtained present small ration...cause unfavourable repercussions as stocks...be exhausted by end of July, and an immediate crisis...foreseen". The FONOFF and Ceylonese convinced US only possible source. and Brit prepared with...expenditure of \$25 million for purchases in US.¹⁸⁸

¹⁸⁷ NARA: B1, Letter from acting High Commissioner for Canada in Ceylon to Minister of External Affairs, Ceylon, July 17, 1953, RG 469, 132A, B1, Records of U.S. Foreign Assistance Agencies, 1942 - 1963, Near East Central Files: Ceylon. 1953-1954.

¹⁸⁸ Ibid. For FONOFF, this subsection suggests Foreign Office,

The FONOFF reiterated:

...urgent need...these supplies. If the department concurs above evaluation and sees no (rpt no) obstacles [would] appear desirable for furtherance goodwill in Asia to supply rice and wheat flour to Ceylon, especially if ship...be rerouted in recognition...this emergency.¹⁸⁹

However, “welcoming the recent arrival of rice from the US”, *Virakesari*, a Tamil language newspaper, on June 30, 1952, highlighted the higher “transportation costs” and shipment time, and was doubtful about “a steady supply of US rice, so long as Ceylon continues to ship rubber to China”.¹⁹⁰ This shows that Sri Lanka's food shortage was underpinned by complex international issues that impacted the national politics adversely as the government was unable to subsidise rice adequately.

Sri Lanka suffered an economic crisis as rubber and tea exports fell sharply, and Finance Minister J.R. Jayewardene stated that the government would need to remove the food subsidy because it could not find the money to finance the country's development program (Gunadasa, 2020). This led not only to the price of rice rising threefold but also to increased prices for essential commodities. Consequently, this had a significant "economic impact [on] the urban working class, and pro-Marxist organised large scale demonstrations eventually led to the resignation of Senanayake from the post of the premiership in October 1953” (Jennings, 1954). The Governor-General Lord Soulbury was opposed to “Mr Senanayake's quite definitely expressed intention to recommend that the Queen's visit should be cancelled”.¹⁹¹ N.E. Costar, acting British High Commissioner in Colombo, claimed: "it [the diplomatic mission] had come to realise that it was no longer in the interest of Ceylon or the [UNP] that the prime ministership should be in such weak hands".¹⁹² He was glad to “welcome the prospect of a ‘strong man’ government”.¹⁹³ Accordingly, it is evident that the Governor-General was more focused on the Queen's visit than on managing the crisis, and the diplomats likewise had little interest in calming the situation as they were hoping for a strong government.

Sir John Kotelawala, “one of the strongest men in the post-independence government”, became the PM of the country after defeating J.R. Jayewardene in internal party politics.¹⁹⁴ While renewing the Rice-Rubber pact with China, he endeavoured to develop friendly ties to secure trade relations with the US and the British Commonwealth. In 1954, Kotelawala allowed Britain to maintain naval and air bases according to a 1947 agreement, and also permitted the US to use Sri Lankan airport facilities for transporting French troops to Indo-China (Silva, 2017)). In response, the US increased its grant to \$7 million from \$5 million, and Kotelawala's successor, Bandaranaike, enjoyed this benefit in 1956 (Kodikara, 1982). However, the US did not show itself sympathetic to Sri Oliver Goonetillake, Finance Minister, “in his visit to discuss the

¹⁸⁹ NARA: Telegram from London to Secretary of State, Washington, 11th July 1952, RG469 UD 854 B1.

¹⁹⁰ Ibid., Restricted letter, Embassy Colombo to the Department of State, Washington, 9 July 1952

¹⁹¹ TNA: Garner to Foster, 26 September 1953, DO 35/5361, Resignation of Dudley Senanayake as Prime Minister of Ceylon, Sir John Kotelawala appointed new Prime Minister, 1953.

¹⁹² Ibid., Secret letter from Costar to the Commonwealth Relation Office (CRO), 9 October 1953.

¹⁹³ Ibid., confidential memo, Costar to FCO, 28 October 1953.

¹⁹⁴ Ibid., a confidential biographical note of the BHC.

IBRD loan application for a hydro-power project” in December 1953.¹⁹⁵ The US Department of State confidentially instructed to offer him a "moderate play too hard stories, avoiding any speculation on the possibility of US aid".¹⁹⁶ Not only the US but also the British diplomatic mission in Colombo secretly monitored Kotelawala and his conduct. For instance, based on Kotelawala’s calculations, the so-called Colombo Conference was held between April 28 and May 2, 1954, in Sri Lanka. The British diplomatic missions secretly followed up the proceedings and outcomes to assess the strengths of developing nations and the future challenges these nations posed to British interests.¹⁹⁷ Even the British High Commission in Colombo unsuccessfully endeavoured to control Kotelawala's position on international affairs "through his officials in keeping him on the 'right track'" during the Bandung Conference of Asian and African countries in 1955.¹⁹⁸ Another last-minute attempt was also made by the Commissioner-General of Singapore to "influence Kotelawala on the eve of the conference".¹⁹⁹ At the conference, Kotelawala bluntly criticised the Cold War leaders for failing to establish peace and vehemently opposed colonialism in all its forms.²⁰⁰ Despite the US’s behaviour in 1954, Kotelawala still wanted to join the SEATO but was strongly opposed both by leaders within his own party and by the opposition.²⁰¹ Thus, this chapter argues that although Sri Lanka received funding support from the Western countries, the US and Britain were in fact not supportive behind closed doors and unsuccessfully attempted to use Kotelawala as their mouthpiece in Asia.

Sir Ivor Jennings (1954) argued that "the period from 1947 to 1952 was [therefore] a period of easy money. Large sums were spent not only on development projects – irrigation schemes and pilot factories – but also on social services”. Agreeing with Jennings, this chapter also finds a positive economic development up until 1956, as the UNP government enhanced its liquidity (196 to 236 million US dollars), increased social expenditure gradually (5.2 to 8.2 per cent) and kept the unemployment level below 9 per cent (figures 3.1 & 3.2, and table 3.2). However, the growing signs of economic deterioration should not be overlooked. As mentioned by Eugene Black, the World Bank President, during a tour in 1952,

¹⁹⁵ NARA: Confidential Circular from Department of State, December 16, 1953, RG 469 P 132A B1.

¹⁹⁶ *Ibid.*

¹⁹⁷ This meeting was attended by the PMs of India, Pakistan, Indonesia and Burma to discuss problems of common interest. At the inaugural session, each of these five countries stressed different issues. Pakistan laid emphasis on the Kashmir issue, while Sri Lanka laid emphasis on the danger of communism and asked for mutual cooperation regarding this point. Burma stressed the economic field. India put emphasis on bringing harmony to its relationship with China. Indonesia requested an Afro-Asian conference. For the British Diplomatic Mission’s secret report on the conference see TNA: FO 371/111889, FO 371/111878 and FO 371/111893.

¹⁹⁸ TNA: Confidential Telegram, BHC, Ceylon to Commissioner-General Singapore, “Afro-Asian Conference”, 9 April, 1955, FO 371//116980, Reports and minutes of meetings of Asian prime ministers in Ceylon: proposed Afro-Asian Conference in Djakarta, later held in Bandung, 1955: In April 1955, representatives from twenty-nine governments of Asian and African nations gathered in Bandung, Indonesia, to discuss peace and the role of the developing world in the Cold War, economic development, and decolonisation. On the Bandung Conference and Asian internationalisation, see Amrith (2005); on international diplomacy, see Shimazu (2014).

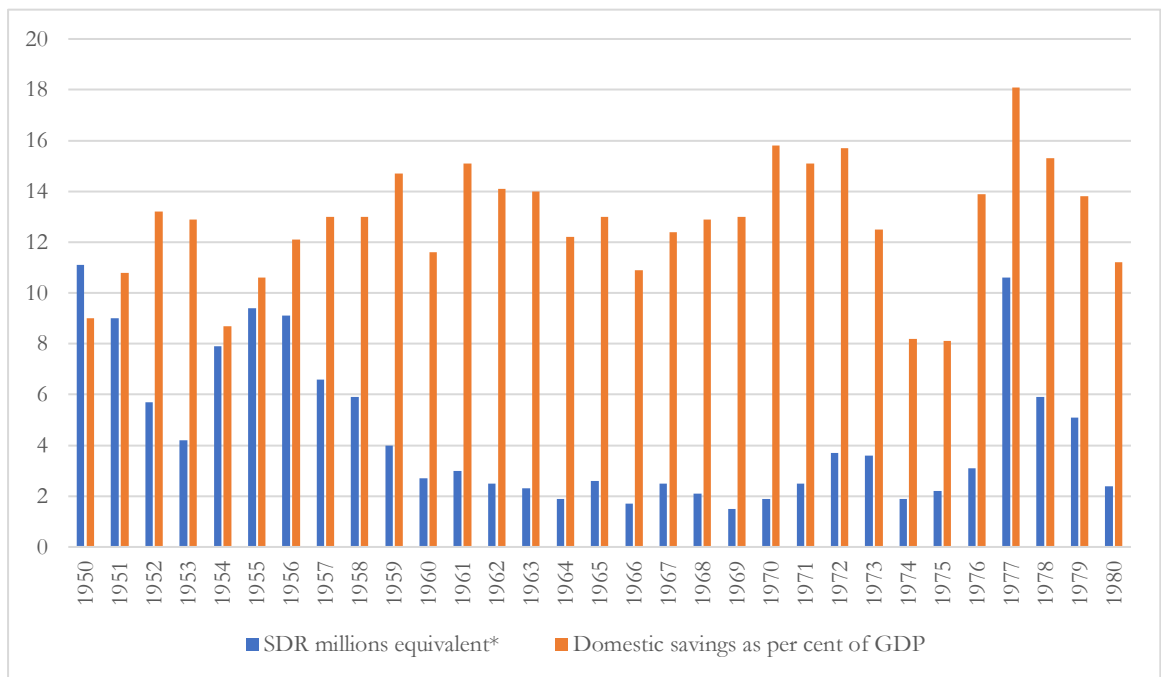
¹⁹⁹ *Ibid.*, Confidential Telegram, BHC, Ceylon to Commissioner-General Singapore, "Afro-Asian Conference", 9 April 1955.

²⁰⁰ For confidential reports of the UK High Commissioner (BHC), Colombo, on Kotelawala’s movements and discussions, see TNA: FO 371/116980.

²⁰¹ TNA: FO 371/111889, 12.

Most new industrial ventures had been under direct government auspices and management. Their record [was] almost uniformly bad. The prospects for private industrial enterprise, left to its own devices, [were] not encouraging and it [was] suggested financing and promoting institution with Government, Central Bank and commercial bank participation [should be developed]. Strong support exist[ed] within the Government and outside to replace foreign employees in private business with Ceylonese and to reserve certain business opportunities for Ceylonese. The rapid prosecution of this policy involved loss of effort, efficiency and experience.²⁰²

Figure 3.1: End-of-year foreign reserves and domestic savings, 1950–90



Sources: Kelagama (2000) and WBDA: 13550, Premachandra Athukorala and Sisira Jayasuriya, “Macroeconomic Policies, Crises, and Growth in Sri Lanka 1969–90”, Washington DC, The International Bank for Reconstruction and Development / The World Bank Washington, (1994). Note: *Estimated by dividing end-of-year reserves by the average monthly import requirement during the year. Domestic saving consists of the savings of the household sector, private corporate sector and public sector.

In terms of national politics, as Wilson (1969) stated, Sir John Kotelawala attempted to establish better relations with the opposition to solve nationally important matters. In August 1954, he acknowledged in Parliament that the leader of the opposition had provided advice on which his government could act as part of a pact regarding the position of Indian estate workers.²⁰³ The Prime Minister intended to get Bandaranaike to commit himself to a solution that could not be turned on later and criticised by the

²⁰² Ibid., 17.

²⁰³ WBDA: Ceylon, 1849871, Leonard B. Rist – President Eugene Black Round the World Trip – Correspondence – Volume 1, 1952 – Ceylon, India, Pakistan. There was a large community of so-called Ceylon Tamils – people of South Indian descent – that had been established in Ceylon for many generations. In addition, there were large numbers of Indian Tamils, i.e., immigrants of the last generation or so, brought in very largely for work on the tea and rubber estates. During a tour in 1952, Eugene Black, the World Bank president, also noted the growing issue of Indians in Ceylon. The “government [had] made it difficult for the Indians to become Ceylonese citizens, and the policies of Ceylonisation of employment [were] directed more against Indians than toward Europeans. These matters cause international friction with India.”

opposition. However, Bandaranaike was “astute enough not to let himself be roped in like this” and said that “if they could not, they should get out and let him solve it” (Wilson, 1969, pp. 61–62). During the 1956 election campaign, Bandaranaike declared that the Sinhala language should be Sri Lanka’s only official language, which caused an immediate reaction among the Tamil communities. As Kearney (1964) stated, Kotelawala was by training and personal habits the westernised “Colombo-wallah” that the *Swabasha* nationalists most distrusted, and he could not afford to ignore a movement which gave his party the support in the villages which he personally could not obtain compared to Bandaranaike.²⁰⁴ However, the UNP abruptly reversed this stance in 1956 as the language controversy mounted, and called for elections to seek a mandate for their policy change. Not only did the UNP lose the Tamil votes, but the majority of the Sinhalese-Buddhist community also rejected them at the polls (Kearney, 1964).²⁰⁵

Table 3.2: Social expenditure as a percentage of GNP, 1950/1–1977

Year	Education	Health	Food	Other	Total
1950	2.5	1.5		0.3	
1951	3.0	1.9	5.3	0.4	5.5
1952	3.1	2.0	2.8	0.5	8.4
1953	2.9	1.9	0.3	0.4	5.7
1954	2.7	1.8	0.8	0.4	5.7
1955	3.2	2.0	1.5	0.5	7.2
1956	3.5	2.1	2.1	0.5	8.2
1957	3.8	2.2	2.2	0.6	8.8
1958	4.1	2.4	2.6	0.6	9.7
1959	3.8	2.2	3.1	0.6	9.7
1960	4.7	2.5	3.9	0.7	11.8
1961	4.7	2.2	3.5	0.7	11.1
1962	4.7	2.2	5.1	0.6	11.0
1963	4.8	2.0	5.1	0.6	12.5
1964	4.9	2.1	3.6	0.6	11.2
1965	4.7	2.1	3.6	0.6	11.0
1966	4.6	2.2	2.4	0.6	9.8
1967	4.1	2.0	3.0	0.5	9.6
1968	4.3	2.1	3.1	0.4	9.9
1969	4.6	2.1	2.8	0.4	9.9
1970	4.3	2.1	4.5	0.4	11.3
1971	4.4	2.6	4.1	0.5	11.6
1972	N/A	N/A	N/A	N/A	N/A
1973	3.5	1.5	3.8	0.3	9.1
1974	2.8	1.3	4.0	0.2	9.3
1975	2.8	1.4	4.8	0.4	9.4
1976	3.1	1.6	3.4	0.8	8.9
1977	2.7	1.4	4.1	0.5	8.7

Source: (Kelegama, 2000, p. 1481).

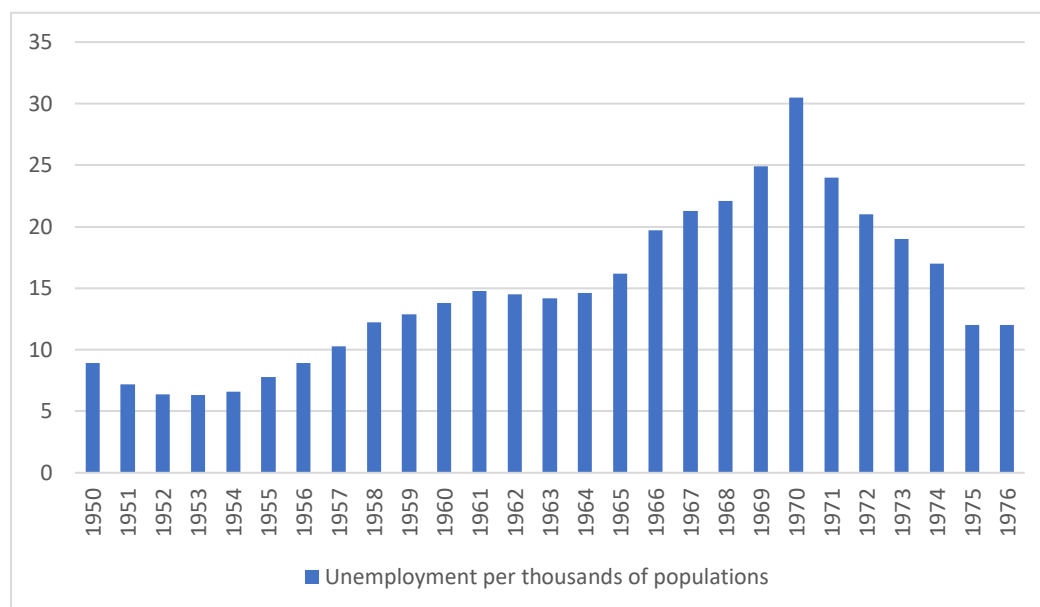
²⁰⁴ *Swabasha* nationalism, a popular Sinhalese nationalism, was largely generated by two explosive political issues: the official language issue and Buddhist discontent.

²⁰⁵ The SLFP was able to mobilise the rural masses on issues such as Buddhism and the Sinhala language under the local leadership of the guru, Veda, sangha (teacher, ayurvedic physician and monk) during the 1956 election period.

3.2 Shifting away from the West towards a controlled economy: the SLFP regimes (1956–1965)

S.W.R.D. Bandaranaike led the SLFP front (the People's United Front, or MEP), consisting of the LSSP, the Communist Party and two smaller parties, and won a landslide victory with 51 seats, while the UNP, hitherto a force to reckon with, was able to muster only eight seats. The new Sinhalese nationalist elements, which had remained dominant in Sri Lanka during the Bandaranaike premiership, had no special regard for the West, unlike the UNP regime, and Bandaranaike's election thus marked a significant milestone in Sri Lanka's foreign and economic policy. He began negotiating the ownership of Sri Lanka's naval and air bases, arguing that "people who have been colonised can never feel free in their hearts so long as they can see the uniforms of the colonisers on their soil".²⁰⁶

Figure 3.2: Unemployment in Sri Lanka (1950-1976)



Source: Olson (1977, p. 215).

It is important to assess how Britain and its allies reacted to Bandaranaike's demand that the defence bases be turned over to Sri Lankan control. At first, PM Bandaranaike was offered an honorary degree from the University of Oxford.²⁰⁷ During a meeting in Sri Lanka in May 1956, Bandaranaike told Admiral Lord Mountbatten, first sea lord and representative of the British government, that "nothing had given me greater pleasure than to receive a telegram from the Oxford Union congratulating [me] for

²⁰⁶ TNA: New Faces in Ceylon – 1956; *The Economist*, August 6, 1956, and a secret report of the Commonwealth Relations Office on "Ceylon: Mr Bandaranaike Report", October 23, 1956, DO 35/5363, New Ceylon Government under Solomon Bandaranaike, 1955-1956

²⁰⁷ During his Oxford career, he held various positions including secretary of the Oxford Union (Rambukwella, 2018).

winning the election".²⁰⁸ Recognising the fact, Mountbatten suggested, "the conferral on Bandaranayke of an Honorary Degree by the university" to make Bandaranaike more positively disposed towards the UK.²⁰⁹ As a second strategy, he recommended offering free use of British wireless facilities for the Sri Lankan government and naval bases. The British High Commissioner to Sri Lanka predicted that a rapid handover of the bases "would substantially increase unemployment...Implications of the terms of trade to move against Ceylon may cause a deterioration of economic position".²¹⁰ Further, the Commissioner expected to see a power change in the parliament as "the Government appears to have suffered a decline in popularity in the country".²¹¹ The US strategy was different, as, in April 1956, the US Ambassador in Colombo secretly advised the Secretary of State (SOS) to continue the aid offers as "withdrawal would cause harm to US position in Ceylon and Asia and would establish Soviet bloc".²¹² Previous scholarship (Fretty, 1969; de Silva, 1975; Wilson, 1979) studied the issue of defence bases from Sri Lanka's point of view, but this subsection finds that various layers of the British diplomacy unsuccessfully attempted to secure the defence bases by offering various perks to PM Bandaranaike. The US support also aimed to establish the US's position in Asia. Both powers were seeking to maintain or extend their influence in the region, using Sri Lanka as a means to this end.

In 1957, overcoming resistance, Bandaranaike took over all the defence bases and declared: "today our independence is complete" (Sinha, 1992). Bandaranaike was also determined to seek allies beyond the West; as Sri Lankan economist S.A.K. Madanayaka (2016, p. 224) argues, "even though there was a political controversy, SLFP regimes were determined to strengthen the economic relations with other countries". For instance, Bandaranaike established diplomatic relations with the communist world, which enabled him to obtain credit amounting to 142.8 million Sri Lankan rupees from Russia (Kodikara, 1982, p. 62). Strikingly, these issues with the bases and the relationship with Russia did not affect the economic aid Sri Lanka received from the US. In fact, the US modified its policy of the Battle Act to offer \$ 5 million without any strings attached. In April 1958, the US Ambassador, on behalf of the International Cooperation Administration, under the United States Operation Mission (USOM), handed over a flood rehabilitation loan of Rs 50 million to Sri Lanka.²¹³

However, although the US had extended a supporting hand, they monitored the country's behaviour in a range of ways that have not been examined adequately by previous scholarship on Sri Lankan

²⁰⁸ Ibid., Secret letter from W.H.A. Bishop on May 17, 1956. Lord Mountbatten was a British statesman, naval leader, and the last viceroy of India.

²⁰⁹ Ibid.

²¹⁰ Ibid., Political Situation, Confidential Telegram from BHC, Ceylon to CRO, December 11, 1956.

²¹¹ Ibid.

²¹² Ibid. The US Embassy in Colombo further highlighted that the intention of the previous governments, according to Kotelawala, with regard to defence pacts was to gain "military assistance against external aggression... [because of] fear of the threat of Indian domination". James Espy, Charge d'Affaires, US Embassy, Colombo obtained from the Ministry of Defence and External Affairs a copy of the article published in the 4 April 1955, issue of the fortnightly British journal *New Commonwealth*, "Ceylon as Switzerland-in-Asia".

²¹³ NARA: 1956, Telegram from US Embassy, Colombo to the SOS Washington, April 3, 1958. RG 469 UD 854 B1,

national security (Mendis, 1992) and foreign policy (Prasad, 1972; Madanayaka, 2016). This chapter argues that various activities of some US organisations attempted to destabilise the Bandaranaike government. The government and societal activities were closely monitored by the US Information Agency (USIA) in Colombo to make the 'country plan' on March 13, 1958.²¹⁴ A highly confidential security report of USIA identified that

GOC [Government of Ceylon] pledged to socialism and neutrality but opposed to totalitarianism...Ministers range from moderate conservatives to extreme Marxists. If the government falls...Marxists would take over. The demand for a national language creates some ill-will toward English...A potential danger of communal strife exists over the language issue.²¹⁵

This report further revealed that the US's main objectives in Sri Lanka were the "continuance of a non-communist government...maintain the US military in the area...unmask hostile attempts to frustrate (their) objectives and policies and publicise US aid programmes".²¹⁶ To achieve these objectives, an array of entities and programmes were developed by the United States Information Agency including the commissioning of United States Information Centres (USIC), creating multi-ethnic societies, and so forth.²¹⁷ Meanwhile, the activities of the Asia Foundation, a US organisation, also aroused suspicion in the Sri Lankan government, as it assisted some private individuals even though its mission was to create youth and farmer councils.²¹⁸

Regarding national politics, immediately after the MEP acceded to power, the "Sinhala only" bill was introduced, which sparked fear among Tamils not only that their language and culture were under threat, but also that they would be pushed into an economically marginal position (de Silva, 1975). The Tamil representation in Parliament, the Federal Party, bitterly opposed the bill and advocated a federal constitution with a separate Tamil state, which could not be conceded (Kearney, 1964, p. 131). However, extensive racial disturbances occurred when the Act was passed, and island-wide riots erupted in 1958, which met with a strong government response, with the imposition of a strict curfew and emergency measures, including censorship of the press. The language riots were also perceived as a US conspiracy to topple the government, based on allegations that the United States Information Center (USIC) at Jaffna was involved in activities that were injecting communal feeling among the Tamils (Sinha, 1992, p. 57).

When Bandaranaike attempted to solve the language issue with the help of the Tamil Federal Party in July 1957, "the UNP [opposition] seized on this pact to tell the Sinhalese people that they had been 'betrayed'. They organized a 'pilgrimage' from Colombo to the Temple of the Sacred Tooth in Kandy to

²¹⁴ NARA: Box 10, Confidential letter from USIA in Colombo to USIA, Washington, on March 13, 1958, RG 469, P 132A, B10, NARA 1956-58 Records of U.S. Foreign Assistance Agencies, 1942 - 1963, Near East Central Files: Ceylon : For a critical history of US Information Agency, see Cull, 2013.

²¹⁵ Ibid.

²¹⁶ Ibid.

²¹⁷ Ibid.

²¹⁸ According to the writer North-Besr (2017), the Asia Foundation is, on the surface, a private non-profit that contributes to the development of Asia, including donating millions of books. In reality, since it was created by Central Intelligence Agency in 1951, it has engaged in a decade-long campaign to misrepresent its origins, purpose, and funding.

force the Prime Minister to repudiate his pact by rousing the feelings of the Sinhalese people” (Wilson 1969, p. 66). Dudley Senanayake, the UNP leader, warned that the “government [was] becoming dictatorial” as it was obstructing peaceful opposition protests.²¹⁹ Montego Jayawickrama, an opposition MP, also warned about a “trend to totalitarianism”, as “the prime minister himself interfered in the incident involving an assault on an official” in Colombo Port.²²⁰ However, M.E.P. Gunawardena, the Minister of Labour, said, “We are on road to socialism”, referring to the “nationalisation of bus services”.²²¹

Popular but economically unfeasible schemes promoted by the Bandaranaike government included restrictions on foreign investment, the nationalisation of critical industries, and land reform measures that nationalised plantations and redistributed land to peasants. For instance, it was noted that industry, whose “output [was] hampered by the scarcity of imported raw materials”, was forced to plead for “capital aid” from the government.²²² However, the government actively expanded the public sector and broadened domestic welfare programmes including pension plans, medical care, nutrition programmes, and food and fuel subsidies. This social agenda threatened to drain the nation’s treasury. However, this chapter finds that although this period recorded higher social expenditure than the previous UNP regimes (table 3.3), Sri Lanka’s per capita income (1960 prices and exchange rates) of \$152 was more than twice that of its neighbour India (\$68), 50 per cent more than Thailand (\$97), and equal to that of Korea (\$154).²²³

For the March 1960 general election held after Mr Bandaranaike's death, both the UNP and the SLFP made popular promises concerning the highest place for Buddhism and the vigorous implementation of Sinhala communal politics. However, neither party gained a majority in Parliament, which led to political instability.²²⁴ “The Federal Party, the principal political mouthpiece of the Ceylon Tamils, helped the SLFP overturn the short-lived UNP government, believing that an understanding had been reached with the SLFP concerning language and communal issues” (Kearney, 1962, p. 21). An emotional wave generated by Bandaranaike’s assassination meant that Sirimavo Bandaranaike, the widow of S.W.R.D. Bandaranaike, succeeded her husband, and under her leadership, the front (MEP) won the July 1960 election.²²⁵ Mrs Bandaranaike’s government led to significant changes in the cultural and economic spheres. She advocated Buddhist extremism and a “Sinhala only” programme, with measures to enforce Sinhala as the only official language in all government departments throughout the island. The Tamils opposed this with a *satyagraha* (non-violent protest), but the government did not soften its attitude. She followed the foreign policy of S.W.R.D. Bandaranaike and further extended political relationships with communist countries, placing at risk the foreign aid received from Western countries (Madanayaka, 2016; Prasad, 1972). Nevertheless,

²¹⁹ SLNA: “Government is becoming dictatorial”, *Ceylon Daily News*, January 21, 1958.

²²⁰ Ibid., Trend to totalitarianism.

²²¹ Ibid., January 27, 1958.

²²² SLNA: “Capital aid for private industries”, *Ceylon Daily News*, 31 January 1959.

²²³ WBDA: S.S Bhalla and P. Glewwe, P, “Growth and Equity in Developing Countries: A Reinterpretation of the Sri Lankan Experience” *World Bank Econ. Rev.* 1 [1986]. 35–63.

²²⁴ The UNP and the SLFP (the principal rivals) won 50 and 46 seats respectively.

²²⁵ The popular verdict was clearly in favour of the SLFP, which captured 75 seats, followed by the UNP, with 30. Mrs Bandaranaike was the first woman in the world to hold office as prime minister.

despite Sri Lanka's affinity was towards such countries, West Germany, a US ally, offered \$ 162 million in "untied credits" for economic development.²²⁶ To counter this, in January 1961, East Germany likewise proposed a trade pact with "no political strings", mentioning that "East Germany had made vast strides in economic development, while West Germany depended on the US".²²⁷

According to Richard Stuart Olson (1977, p. 205), a significant turning point in Sri Lanka's economy came in January 1961, when the parliament of Sri Lanka passed a bill for the expropriation of the American and British companies that had been the sole suppliers of petroleum products under the nationalisation policy. The Western diplomatic missions protested against this bill, but the GoSL justified this manoeuvre by stating that it needed to purchase the cheapest oil to save its dwindling foreign exchange reserves.²²⁸ Olson (1977, p. 221) further argues: "as the expropriations dispute heated up, the US aid authorisations decreased even further, reaching an all-time low of \$3.5 million in 1964 due to the Hickenlooper Amendment; the suspension of foreign aid as expropriating American property without compensation". Table 3.4 demonstrates that the US economic aid initiated in 1956 rapidly increased over the next three years but was reduced significantly due to the internal unrest in Sri Lanka in 1959–60 and the subsequent leftward drift and the expropriations. Aid from the UN agencies, however, was unaffected by the expropriations and increased by a small amount over this period.²²⁹

²²⁶ Ibid., Extract from *Ceylon Daily News*, February 2, 1961.

²²⁷ TNA: Confidential letter from the UK High Commissioner, Ceylon to CRO on January 26, 1961; extract from the *Ceylon Daily News* and *Times of Ceylon* on January 21, 1961, FO 371.161129, Political relations: Ceylon, 1961

²²⁸ However, this move appeared to be backed by the Soviet Union, which offered oil at an attractive price on six months' credit and accepted a soft currency, and "provided a badly needed market for Ceylonese agricultural exports".

²²⁹ Since the British investments were largely in commerce and plantations, but not in oil, the British government maintained a relatively low public profile until the Sri Lankan parliament in 1964 passed a law restricting the profit remittances of overseas companies doing business in Sri Lanka.

Table 3.3: Authorisations for assistance to Sri Lanka by selected donors, 1953–72 (millions of USD)

Year	US (Economic)	IBRD	IDA	ADB	UN Agencies
1953	0.0	0.0	--	--	0.5
1954	0.0	0.0	--	--	0.6
1955	0.1	16.5	--	--	0.3
1956	5.1	0.0	--	--	0.6
1957	11.4	0.0	--	--	0.8
1958	20.9	0.0	--	--	0.5
1959	17.7	7.4	--	--	0.5
1960	9.5	0.0	--	--	0.5
1961	9.8	15.0	0.0	--	0.6
1962	5.8	0.0	0.0	--	1.5
1963	7.1	0.0	0.0	--	1.2
1964	3.5	0.0	0.0	--	1.8
1965	3.9	0.0	0.0	--	2.7
1966	14.0	0.0	0.0	--	1.6
1967	10.4	0.0	0.0	--	1.9
1968	23.5	2.2	2.0	0.0	4.7
1969	26.0	0.0	0.6	2.0	2.0
1970	4.5	34.0	17.0	11.2	2.8
1971	18.0	0.0	0.0	3.5	1.5
1972	17.2	0.0	0.0	7.8	3.1

Source: Adapted from various issues of Central Bank of Sri Lanka (CBSL) Balance of Payments Yearbook (IBRD) and Olson (1977). Overall, this is a rich data source, but it often takes a year or more for the specific numerical entries to "settle down". For this reason, multiple and overlapping volumes are used. Note: Figures in columns A-E were converted from Ceylon rupees at 4.8 to the dollar for 1959-66 and 5.95 to the dollar for 1967-70. IDA: International Development Association, ADB: Asian Development Bank.

Nonetheless, the increased amounts of aid from the USSR and China could not fully compensate for the withdrawal of aid from Western nations and the IBRD (table 3.5). Moreover, the Western countries attempted to sabotage the work of Russian-sponsored initiatives. For instance, the Colombo Plan rejected the GoSL's request for subsidiary aid in the form of experts and training for two projects, a shoe factory of Czech origin, and Ceylon Steel, which was being financed by a Russian.²³⁰ However, G.D. Anderson, the UK High Commissioner in Colombo, observed adverse effects for the British, too, namely losing both businesses with the GoSL and the opportunity of controlling management through key figures "who have been trained in Britain and who are British oriented".²³¹ Anderson further identified that the more direct political effects of the deepening economic crisis were becoming increasingly evident, as by 1964 "foreign reserves were sufficient only for forty-five days' worth of normal imports". The country was suffering from a "continual political decline which has culminated in a sense of instability pervading the entire national atmosphere".²³² In the face of this, attempts to retreat on the expropriation-compensation issue were not successful, and hence it is necessary to study the national political trends to identify the economic impact.

²³⁰ TNA: Confidential letter from the BHC, Colombo to CRO, March 27, 1964, DO 189/638, Colombo Plan aid to communist sponsored projects: It stated, "Ceylon requests for an expert technician to help run the shoe factory of Czech origin, and Ceylon Steel is being financed by a Russian loan".

²³¹ Ibid.

²³² Ibid., 216.

Table 3.4: Net long-term loans received by GoSL from selected donors (in millions of USD)

Year	US	UK	IBRD	Germany	Japan	Total	USSR	China	Total
1959	2.5	-5.0	0.8	0.0	0.0	-1.7	0.4	2.9	3.3
1960	3.5	0.0	1.3	0.0	0.0	4.8	0.2	-0.6	-0.4
1961	1.0	0.0	2.9	0.0	0.0	3.9	0.2	0.0	0.2
1962	0.8	1.9	5.0	0.2	0.0	7.9	1.0	-0.2	0.8
1963	0.4	1.7	4.0	2.3	0.0	8.4	3.5	2.7	6.2
1964	0.0	-11.7	2.1	1.3	0.0	-8.3	6.9	2.7	9.6
1965	-0.2	-5.8	1.0	1.5	0.0	-3.5	4.8	2.1	6.9
1966	5.0	5.6	0.0	10.0	4.8	25.4	1.7	1.0	2.7
1967	8.6	8.1	-0.7	5.9	3.4	25.3	-1.7	-0.8	-2.5
1968	20.5	8.6	-1.3	4.0	3.4	35.2	-1.5	-0.8	-2.3
1969	20.5	6.7	-1.3	6.0	2.5	34.4	-1.5	-0.8	-2.3
1970	6.9	4.4	-0.7	1.0	2.5	14.1	-1.7	-7.4	-9.1

Sources: Olson (1977). Note: Figures in columns were converted from Ceylon rupees at 4.8 to the dollar for 1959-66 and 5.95 to the dollar for 1967-70. Western Bloc: the US, UK, IBRD, Germany and Japan; Communist Bloc: USSR and China.

Following S.W.R.D. Bandaranaike's nationalisation measures, the Ceylonese-owned Bank of Ceylon was nationalised, and the People's Bank was established to assist a local enterprise in a more liberal way than in the past. The country's economic problems remained unsolved amid communal and social conflicts, however. This period has been noted for its extremely bad economic performance (as per figure 3.1, international liquidity dropped by 78 per cent and unemployment jumped by 64 per cent) because of the weakening of Anglo-US ties. Despite rising expenses in connection with social services and consumer subsidies, the government continued to spend more than 10 per cent of the annual budget on social services and attempted to use its resources to reduce social inequality by increasing the taxation of high-income groups and increasing the social welfare system (Wilson, 1969). When the government attempted to nationalise the press in 1964, the UNP alleged that Mrs Bandaranaike's government was seeking to establish a dictatorship, and mobilised the public, including the Buddhist clergy, against this move (Wilson, 1969, p. 68). This was followed by a UNP-led crossing over of members from the government to the opposition, which brought down the government in December 1964. The following sections will analyse the next government's politico-economic strategies to overcome the major issues faced by the SLFP.

3.3 Back to the West and economic liberalisation: the UNP regime (1965–1970)

As Dudley Senanayake's government included diverse groups, including the Tamil Federal Party, it was called a "National Government", where the SLFP-led opposition was also a 'coalition' with the LSSP and the Communist Party. The opposition coalition launched and later had sustained a movement stressing language and other ethnic issues and "charging the government with the betrayal of the Sinhalese majority by allegedly excessive sensitivity to minority interests" (Kearney, 1967). The government faced the controversial question of Sinhalese language policy, and the opposition criticised the government for the rising cost of living and "for its secret arrangements with the Ceylon Tamil and Indian Tamil leaders" (Wilson, 1969, p. 68). Dudley Senanayake was committed to meeting the demands of the Tamils "as the price of support by the Tamils' Federal Party" within the government; however, he was anxious to avoid

aggravating Sinhalese opinion on preserving Sinhalese as the only official language (Kearney, 1967). In January, regulations were announced and approved by Parliament providing for the use of the Tamil language for government communication and records in the Tamil-speaking Northern and Eastern Provinces. The regulations were completed under a statute that was enacted in 1958 but never executed.²³³ The language regulations were immediately condemned by the opposition as a betrayal of “Sinhalese only”, and a general strike and demonstration to protest against the regulations erupted into rioting in Colombo, causing one death and leading to the declaration of an emergency. Due to the pressure of the opposition, the Senanayake government again failed to proceed with the 1968 “District Councils (DC) Bill which had formed part of his undertakings to the Federal Party, in exchange for their support of his government”.²³⁴ J.R. Jayewardene, who was a minister in Senanayake's cabinet, later stated: “Dudley was made to feel that he would lose the elections if he passed it” (Matthews, 1982, p. 1129).

Premier Senanayake claimed that the country had been on the verge of economic catastrophe when he assumed office, necessitating emergency measures to contain inflationary pressures and secure foreign exchange for essential imports; therefore, his government was focused on confronting economic problems (Kearney, 1967; Olson, 1977). These were closely connected with the non-availability of foreign aid, which was cut off in 1963 due to the expropriation of the previous government. Western aid was reinstated in 1966 with the signing of an agreement protecting private investors against expropriation, creating ‘the Aid Ceylon Club’, where the World Bank served as the coordinator of US and UK aid without committing funds of its own (Olson, 1977, p. 212).²³⁵ The Senanayake government’s strategy was to secure the most foreign aid possible while balancing Sri Lanka’s trade deals. Firstly, the government shifted back towards the West and de-emphasised the socialist countries, while renewing the Rice-Rubber pact with China.²³⁶ Secondly, PM Senanayake, during his 1967 visit to Tunku Abdul Rahman, Malaysia's head of government, was also cautious to “associate with members of the ASEAN [Association of Southeast Asian Nations] for its ‘anti-Peking’ nature as Ceylonese feared loosening the integrity of their non-aligned posture”, as

²³³ The regulations contained a declaration that the provisions for Tamil were to be “without prejudice to the operation of the Official Language Act No. 33 of 1956, which declared the Sinhala [Sinhalese] language to be the one official language of Ceylon”.

²³⁴ The aim of establishing the district councils (DCs) was to decentralise power to the districts. The 1977 government established the DCs, and chapter five will examine the district health committees, a central component of the DC.

²³⁵ Dudley Senanayake’s approach to development contrasted with his predecessor’s, even though he came to office pledging to maintain a socialist form of society and to preserve the public operation of existing nationalised enterprises. Instead, greater emphasis was placed on private economic activities, with the provision of tax and other incentives, and “scarce foreign exchange was made available to previously starved private firms for the import of materials and supplies necessary for production” (Kearney, 1967, p. 115). Tourism was promoted as a source of foreign exchange. Dudley Senanayake had extended his focus to the possibilities of agricultural as well as industrial development. Calming issues relating to the implementation of the plans of the previous regime, U.B. Wanninayake, Minister of Finance, stated in his 1966–67 budget speech that the new planning machinery possessed “the necessary authority to intervene effectively in the formation of Government policy” (Kearney, 1967, p. 115). For this, a new Ministry of Planning and Economic Affairs and a cabinet-level policy coordinating committee was created.

²³⁶ TNA: Rubber-Rice Pact Between Ceylon and Mainland China, Extracts from the *Ceylon Daily News*, Colombo, November 19, 1967, OD 27/154, Ceylon, 1967-68.

observed by the British diplomats in Malaysia.²³⁷ A third major foreign policy issue was the British response to a proposal called "tea takeover" put forward by "the Ceylonese tea companies" to create legislation for the takeover of the British-owned tea plantations. The Commonwealth Relation Officer (CRO) ordered the British High Commissioner (BHC) in Colombo to pressurise the government to reject the proposal to safeguard British business, claiming, "unfortunately, legislation and regulation [of Sri Lanka] applying to overseas investment simply [did] not provide any more ammunition".²³⁸ Meantime, S. Tomlinson, of BHC, Colombo, advised CRO to handle this issue by making a British show of strength to J.R. Jayewardene, then Finance Minister, when he visited the UK: "Jayewardene...is likely to be unreceptive if you try to raise the tea takeover problem with him. My advice...it should be raised briefly but firmly, and high level, as an example of how developing countries seeking help and sympathy should not (repeat not) behave".²³⁹ Accordingly, it is clear that PM Senanayake faced a hard time in decision-making while maintaining friendly ties with the West and China, and supporting the national economy.

In 1967, a World Bank survey examined whether the government's conduct of the country's economic and financial affairs justified the IBRD prerequisites for funding. Before handing over the report to Sri Lanka's Minister of Planning, the information was leaked to the press, and P.J. George of BHC in Colombo secretly reported the World Bank observations to the Ministry of Overseas Development in London.

We were very interested to see the sort of criticisms that were levelled against the Ceylon Government and in particular, the one referring [to] government pricing policies. It seemed to us very fair comment that the politics [were] considered as unrealistic. However, there [was] one other comment which makes us ponder on the future of some the proposals at present on the stocks and we wonder whether these [would] over by launched. The World Bank team [also] criticised the use of foreign exchange for non-producing programmes such as transportation and communication. How, we wonder, [would] this affect Ceylon's plans with the development of their telecommunication system and tenders [which are] now under consideration? And will in the face of such criticism Ceylon proceed with its intention to purchase jet aircraft for the proposed Colombo/Bangkok services?²⁴⁰

A local newspaper, the *Ceylon Daily News*, also commented that preconditions for WB loans consisted of unreasonable major policy changes, such as currency devaluation.²⁴¹ William E. Humphrey, a loan officer from the South Asia Department of IBRD, after assessing the impact of a general devaluation on both foreign exchange earnings and the budget, was of the opinion that "in the short run the adverse effects of a general rupee devaluation might well offset the advantage".²⁴² S. Tomlinson, the BHC in Colombo also reported the adverse effects of devaluation to George M. Thomson, Secretary of State for Commonwealth Affairs, stating that

²³⁷ Ibid., Secret letter from the BHC to Malaysia to Secretary of State for Commonwealth Affairs, October 30, 1967. ASEAN, composed of Malaya, the Philippines, and Thailand, was established in Bangkok on July 31, 1961. However, outsiders saw ASEAN as politically aligned with the West. For a brief history of ASEAN, see Lee (2008); for a historical review, see Narine (2008).

²³⁸ Ibid., a confidential telegram from CRO to Colombo, 9 November 1967.

²³⁹ Ibid., a confidential telegram from F.S Tomlinson, BHC to CRO, November 13, 1967.

²⁴⁰ Ibid., Confidential letter from George to A.K. Robertson, 14 November 1967.

²⁴¹ Ibid., World Bank may be difficult – *Ceylon Daily News*, 11 November 1967, OD/27154,

²⁴² WBGA: Confidential Memorandum from Humphrey to Files, 5 July 1967, 1554078, Ceylon - General - 3, 1966.

Devaluation has come as a further blow to Ceylon's already hard-pressed economy...The weakness of the rupee gave Ceylon no choice except to follow suit when British devalued; devaluation by 20% decided...The immediate results of devaluation will be to increase the cost of the current import programme by up to Rs. 400 million...This affected not only over the local economy but also on the British as limiting their exports to Ceylon...Internally the cost of living has risen sharply and in spite of interim allowances being granted in public and private sectors, there have been a number of strikes in protest...if matters get too bad the prime minister may throw in his hand. Any succeeding government would be less well disposed...Implications for our future aid to Ceylon and possible damage to British interests if it is felt that we have let Ceylon down in the present crisis.²⁴³

On July 11, 1967, Cecil Lyon, who had recently finished his stint as the US Ambassador to Sri Lanka, was called by Ian Peter Cargill, Senior Vice President of the WB, to give some of his final impressions on Sri Lanka.²⁴⁴ On the political front, Lyon perceived that

The Government progress was painfully slow. if they did not show...substantial achievement...likely to be defeated at the next general election. The change in the rice subsidy arrangements...seemed to be gathering momentum. However, Ceylon would be in a difficult position for some time due to the bleak prospect of the price of Ceylon's main export crops. It was difficult to see what the long-term solution could be.²⁴⁵

Given this economic turmoil, international financial assistance became increasingly important for Sri Lanka – a problematic development, as will become evident below.

In 1968, the government was able to secure an International Monetary Fund (IMF) short-term credit of Rs 723 million and a USAID loan of \$ 75 million to import essential commodities, and corn grain worth \$ 4.1 million under PL-480, the Food-for-Peace agreement (Nissanka, 1984, pp. 50–80). This means that the aid that flowed into Sri Lanka after 1965 came in the form of loans, thereby substantially increasing Sri Lanka's foreign public debt, as illustrated in table 3.5. Debt began to increase substantially above trend in 1964 and rose dramatically from 1967 onwards. In 1964 and 1965, increased export receipts partly compensated for this, keeping the balance of payment deficit down, but subsequently, receipts fell in 1966. According to column C of table 3.5, Sri Lanka's debt against the yearly export earnings increased alarmingly from 25 per cent in 1965 to 112 per cent in 1972, showing Sri Lanka's addiction to aid. As the US political scientist Olson writes (1977, p. 218), Sri Lanka at this stage became even more vulnerable to economic and political pressures than before, as the country was forced to request loans just to cover the interest on foreign debt, thus increasing the debt load and requiring refinancing and further loans. While in full knowledge of the repercussions of the loan conditions on Sri Lanka's economy, Anglo-US-led donors provided these loans to reduce the likelihood of failure of the pro-West government (that was unable to show financial dividends), given that any alternative government would be less well disposed to their interests and foreign policy. Sri Lankan economist Saman Kelegama (2000, p. 1479) argued that “the 1965–70 period [could] be categorised as...a weak and hesitant attempt...to liberalise the economy at a time when low-cost external financing was not forthcoming”. While the present subsection agrees with Kelegama that Dudley Senanayake's government was indeed hesitant to make decisions on foreign policy and economy

²⁴³ TNA: OD/27154, Ceylon's Devaluation, confidential letter from F.S Tomlinson, British High Commissioner, Colombo, to George M. Thomson, M.P, Secretary of State for Commonwealth Affairs, January 10, 1968.

²⁴⁴ WPGA: 1554078, Confidential Memorandum from William E Humphrey to Files, 11, July 1967.

²⁴⁵ Ibid. Table 3.1 shows there was a collapse in the export figures from 1966 onwards.

(for instance, concerning the tea takeover), it argues that it was the money devaluation induced by foreign funding that caused the severest repercussions for Sri Lanka's economy. First, the government had to pay extra money for imports and had no control over export income. Second, the rising cost of living led to public protests and strikes, which compelled the government treasury to spend more on salaries. This gives rise to the question of how effective the national government was at the spending of the aid received to enhance the productivity of the workforce and social services to create long-term benefits.

Table 3.5: Foreign debt problem of Sri Lanka, 1955–72 (in millions of USD)

Year	External Public Debt(A)	Export Receipts (B)	C= A/B (%)
1955	26.1	404.2	6.5
1956	39.8	361.5	11.0
1957	48.3	350.4	13.8
1958	53.7	356.5	15.1
1959	57.8	364.6	15.9
1960	61.2	361.0	17.0
1961	64.0	376.7	17.0
1962	71.9	376.9	19.1
1963	84.8	360.6	23.5
1964	85.9	405.8	21.2
1965	101.9	406.0	25.1
1966	114.3	354.2	32.3
1967	125.3	286.4	43.8
1968	182.1	344.9	52.8
1969	233.1	324.7	71.8
1970	266.2	344.6	77.2
1971	303.5	330.0	92.0
1972	322.1	287.5	112.0

Sources: Olson (1977).

Though expenditure on social services remained lower than under the previous regime (see table 3.2), the government was unable to sustain the rising employment rate during its tenure. As shown in figure 3.2, the unemployment rate doubled from 1955 to 1965, rising sharply from 16.2 per thousand in 1956 to 24.9 per thousand in 1969. Concerning the issue of unemployment, the inter-agency employment mission to Sri Lanka organised by the International Labour Office (ILO) claimed that

A 10-year plan, published in 1959, recognised the problem of unemployment as one of the key questions of relevance to planning in Ceylon. However, this plan was, in fact, never adopted as a specific programme for implementation. The emergence of chronic large-scale unemployment was due to the contrast between the fast growth of population and inertia of the economy, in the face of challenges towards the world market.²⁴⁶

Ralph E. Fretty (1969, p. 103) writes that the opposition in 1968 criticised the government's economic programme for inflicting suffering on the masses while benefiting only the rich and referred to

²⁴⁶ WHOAG: A Provisional draft report of the interagency employment mission to Ceylon organised by the international labour office, 21 July 1971, M 12/372/3, ILO World Employment Programme: The ILO is the permanent secretariat of the International Labour Organization.

as “class struggle”. Poor people were suffering due to the rising cost of living and reduced social spending as a result of tight credit and reduced government spending, the first casualty of which was most often social and welfare programs (e.g., rice allotments). A further factor in this suffering was the acceleration of unemployment that started while the opposition had been in power in 1956. When Senanayake’s government was defeated in the 1970 general election, the next government needed to meet the Sri Lankan people’s demands for racial harmony, economic growth and a solution to unemployment.²⁴⁷

3.4 Shifting to an anti-West posture and an inward-looking economy: Sirimavo Bandaranaike, SLFP, 1970–77

In the 1970 general election, the United Front, led by Mrs Bandaranaike (SLFP), achieved a landslide victory, securing 115 seats in a house of 157 members, whereas the UNP was able to return only 17 members.²⁴⁸ The United Front consisted of the SLFP and two left-wing parties: the LSSP (Trotskyist) and the pro-Moscow CP, which restored the rice subsidy that had been reduced during the Senanayake regime.²⁴⁹ The LSSP and CP gave higher priority to equity issues, and did not want to be “dictated to by the IMF and the World Bank”.²⁵⁰ Accordingly, the two parties advised the government not to engage in large-scale foreign borrowing that involved conditionality. However, Mrs Bandaranaike was “short of money to pay for food and clothing her country must import and she [had] to find jobs for 700,000 persons, many of them impatient [university] graduates” (*The Anniston Star*, 1970).²⁵¹ Facing a budget deficit of \$195 million in 1970 – inherited from Senanayake’s government – Bandaranaike attempted to control the economy in two ways.²⁵² Her first strategy was the implementation of price controls. Secondly, while approaching communist countries, such as Russia, China and East Germany, she also requested a standby credit of \$25 million from the IMF.

The country was now falling into an ever deeper economic crisis, as the foreign aid flowing was inadequate. This brought underlying tension among the Sri Lankan youth to the surface. This resulted in the April 1971 youth insurgency led by the Janatha Vimukthi Peramuna (JVP), which caused significant property damage and threatened the stability of the country (Kearney, 1977).²⁵³ The causes for the insurgency were multifaceted: increasing youth unemployment, marginalisation of educated youths, and so forth. Analysing the repercussions faced by the government due to the 1971 insurgency, the ILO mission in July 1971 claimed the implementing their previous solutions could have averted such a situation:

²⁴⁷ Also see WBGA: 1554078, Ceylon: Foreign Exchange Reform of May 06, 1968.

²⁴⁸ For the election results, see Sri Lanka Parliamentary Chamber (http://archive.ipu.org/parline-e/reports/arc/CEYLON_1970_E.PDF).

²⁴⁹ WBDA: Premachandra Athukorala and Sisira Jayasuriya, “Macroeconomic Policies, Crises, and Growth in Sri Lanka 1969–90”, Washington DC, *The International Bank for Reconstruction and Development / The World Bank Washington*, (1994) 17.

²⁵⁰ Ibid.

²⁵¹ The source is a daily newspaper called the *Anniston Star* that serves Anniston, Alabama, and the surrounding six-county region.

²⁵² Ibid.

²⁵³ The JVP, a communist and Marxist-Leninist party, was secretly founded in 1965 by a team led by Rohana Wijeweera and educated Sinhalese youth. Its aim was to establish a leading force for a socialist revolution in Sri Lanka.

The government's ability to implement this [the solutions presented in previous reports] [was] constrained by popular expectation, and [the ILO mission] believe[d] that report offers technical solutions leaving it to the government to decide whether the political cost of putting them into effect would exceed the cost of doing so. The ILO mission believes, however, that a more comprehensive programme is needed, especially following a disturbance in April 1971.²⁵⁴

An appeal by Mrs Bandaranaike for help in quelling the rebellion against her government was swiftly responded to by India and Britain; subsequently, the US, too, extended their support.²⁵⁵ Eastern Bloc countries, the Soviet Union and Yugoslavia, also contributed various ways to assist Sri Lanka to combat the insurgency effectively.²⁵⁶ China was reluctant at first, but gave a generous loan to assist Sri Lanka's recovery (Kearney, 1977). The complex interplay in this context can be understood better by studying the negotiations between the recipient and a representative donor country; the example chosen here is Britain. Hearing news that a Chinese ship with a supply of arms had reached the Colombo port on April 7, 1971, the British quickly initiated their own support programme for Sri Lanka, providing arms and equipment.²⁵⁷ For instance, the British PM, Edward Heath, ordered a supply of six Sioux helicopters of US origin (produced by the Bell aircraft company), as requested by Sri Lanka's PM.²⁵⁸ On 27 April 1971, I.J.H. Sutherland of the South Asia Department confidentially informed Sir Stanley Tomlinson, Deputy Undersecretary at the Foreign Office and the former British High Commissioner in Sri Lanka, about the British government's politico-strategic interest in Sri Lanka.

Whether sentiments have in fact distorted our judgement of British interest in relation to Ceylon is doubtful....Meanwhile from the point of view of both British commercial interests in Ceylon and our general politico-strategic interest the right course is to seek to preserve our influence by maintaining a generally helpful and sympathetic posture; by continuing to supply such arms and equipment as we can, as we consider to be genuinely needed by Ceylon. It is clear that our general interest we should support Mrs Bandaranaike's government against the insurgency...But the determination of our long-term policy should wait until the situation becomes a little less fluid.²⁵⁹

British diplomats in Colombo also saw that the Sri Lankan government was attempting to leave the British Crown: "Mrs Bandaranaike's government [were] committed to the introduction of a republican constitution...we know that Mrs Bandaranaike herself want[ed] her country to remain within the commonwealth".²⁶⁰ As the British support was not a free grant, N.M. Perera, Finance Minister, proposed to the UK's Financial Secretary the possibility of waiving some of the cost and paying for the rest in instalments.²⁶¹ As this was contrary to "HMG's original agreement", Britain's Ministry of Defence (MOD)

²⁵⁴ WHOAG: M 12/372/3, ILO, Provisional draft report of the inter-agency employment mission to Ceylon organised by the International Labour Organization, July 21, 1971, 6.

²⁵⁵ TNA: "Ceylon Asks Britain to Supply Six Helicopters", *The Financial Times*, and "Arms deal to help Ceylon", *The Guardian*, 14 April 1971, T 317/1635, Ceylon political crises: UK supply of military equipment, 1971.

²⁵⁶ The Eastern Bloc, also known as the Communist Bloc, the Socialist Bloc and the Soviet Bloc, was the group of socialist states under the influence of the Soviet Union and/or its ideology (communism) that existed during the Cold War (1947–1991) in opposition to the capitalist Western Bloc or West. The main Eastern Bloc countries were Russia, China and the Eastern European countries. The main Western Bloc countries were the US, UK, Canada, Australia and the Western European countries.

²⁵⁷ TNA: Extract of *Daily Mirror*, 22 May 1971, FCO 37/788, Ceylon internal political situation, 1971.

²⁵⁸ TNA: T 317/1635, Letter from C.W. Roberts (10 Downing Street) to J.A.M. Graham (FCO), 11 April 1971.

²⁵⁹ TNA: FCO 37/788, Confidential letter from Sutherland to Tomlinson, 27 April 1971.

²⁶⁰ TNA: T 317/1635, Draft note (confidential) of BHC, Colombo, n.d..

²⁶¹ Ibid., 'Visit of Ceylon Finance Minister', a confidential telegram from FCO to Colombo, 4. May 1971.

argued that there was no reason from the defence point of view for waiving the cost.²⁶² The MOD and FCO later jointly decided not to pass the cost of £165,000 for the helicopters and freight chargers on to the GoSL for political reasons but insisted on recovering a £750,000 cost of providing armed vehicles, which was treated as a normal defence sale.²⁶³ Further, the FCO argued that Sri Lanka was not a good candidate for further commercial credit.²⁶⁴ This may also have contributed to a drastic reduction of trade deals between Britain and Sri Lanka, although the British slightly increased aid to Sri Lanka (figure 3.3).

In October 1971 Mrs Bandaranaike paid a visit to the UK, aiming to expound Sri Lanka's need for support and aid. However, the Downing Street officers advised PM Heath to plan the meeting so as to take advantage of Sri Lanka's chaotic economic and political situation.

"Ceylon is in a mess both politically and economically...Our aim should be to convince Bandaranaike that, if she wants our help, she must pay greater heed to our interests; protect remaining British investments in tea plantation [and]...activation of Defence Agreement using Sri Lanka's desperate requirement of arms. [We should emphasise that] there is no practical alternative to her government [without this].²⁶⁵

Sri Lanka's financial situation prompted Mrs Bandaranaike to request British aid, emphasising the financial constraints of the country before the Aid Group Meeting.²⁶⁶ Such requests had been repeatedly ignored by the British PMs; for instance, PM Heath replied, in 1972, that "we will do what we can do...I cannot say more in advance".²⁶⁷ Sociologist Tissa Fernando (1982) argues that the international assistance that the national government received from both East and West during the 1971 insurrection was due to Bandaranaike's non-alignment position. This subsection argues that most of the support during this emergency came at a huge cost, which further harmed Sri Lanka's economy. Further donor countries, such as Britain, attempted to obtain an undue advantage to achieve their political and economic goals by using Sri Lanka's political and economic vulnerability. However, despite the pressure applied by Britain and other Western nations, who were keen to keep Sri Lanka within the Commonwealth and their sphere of influence, Sri Lanka proceeded to become an independent country.

Ceylon became the Socialist Republic of Sri Lanka after the adoption of the new republican constitution in 1972, which conceded the highest place to Buddhism and declared Sinhala the official and

²⁶² Ibid., Dickson to Hansford, 17 May 1971.

²⁶³ Ibid., confidential letter H.R. Brendon, Ministry of Defence, to P.M. Maxey (FCO), London, May 4, 1971; confidential letter Dickson to Hansford, May 5, 1971.

²⁶⁴ Ibid., confidential letter from FCO to Minister of State, May 10, 1971; "Chinese ship with arms was here in April", *Daily Mirror*, 25 May 1971.

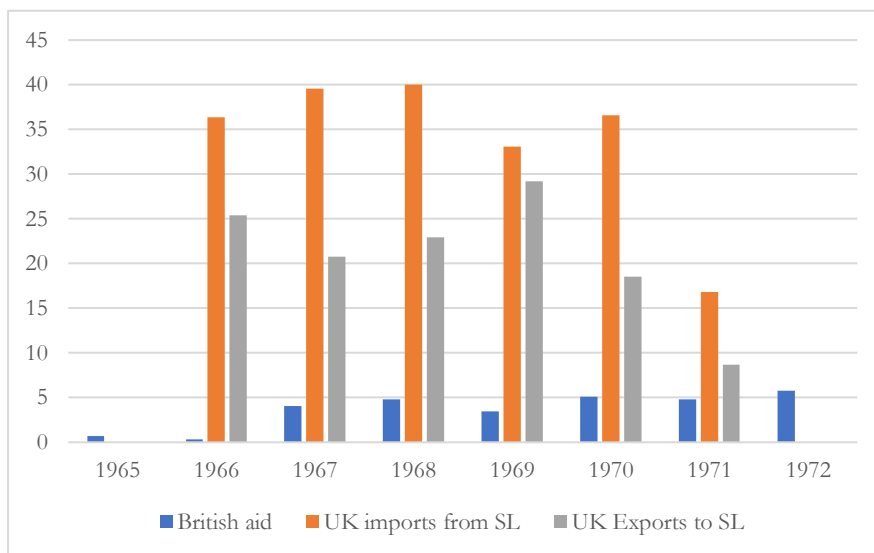
²⁶⁵ TNA: Confidential document titled "Brief for the Prime Minister's talk with the Hon Mrs Sirimavo R D Bandaranaike, MP Prime Minister of Ceylon on Monday 25 October 1971, FCO 37/794, Visits of Ministers and Members of Parliament from Ceylon to the UK, 1971.

²⁶⁶ TNA: Letters from Mrs Bandaranaike to Heath, 9 May 1972 & 12 January 1972 PREM 15/2222, Aid for Sri Lanka: Prime Minister's meeting with Sri Lankan officials; correspondence, 1973–74: same correspondence, February 11, 1974; Heath to Mrs Bandaranaike, 19 February 1973, CAB 135/56, Felix R D Bandaranaike, Minister of Justice, Sri Lanka.

²⁶⁷ TNA: CAB 13556, same correspondence, 11 February 1974; Letter from Edward Heath, PM, to Mrs Bandaranaike, 19 February 1973, PREM 15/2222, Aid for Sri Lanka: Prime Minister's meeting with Sri Lankan officials; correspondence, 1973–74.

administrative language.²⁶⁸ The position of Governor-General was replaced by the President, a purely ceremonial position without any powers and unable to dissolve Parliament. If the governing party enjoyed a three-quarters majority in Parliament, it could change legislation without being guilty of abuse of power for the pursuit of its own self-interest.²⁶⁹ Furthermore, the 1972 Constitution brought the administrative structure of the country under the control of the cabinet, removing the notion of an independent civil service and politicising the bureaucracy.²⁷⁰ The Prime Minister was given sole power to rule without accountability during times of national emergency under the public security ordinance; accordingly, the consequences of declaring an emergency were very grave.²⁷¹ Though all four Tamil parties objected to the 1972 Constitution, hoping to achieve a better deal for the Tamil community, the government used the Constitution to extend its term of office for two more years, enjoying a period of seven years in total without a parliamentary election (Warnapala, 1982).

Figure 3.3: British aid to and trade with Sri Lanka (1965–1972)



Sources: TNA: H.G Byatt, South Asian Department, to Robinson, 16 September 1971, FCO 37/794, Visits of Ministers and Members of Parliament from Ceylon to the UK, 1971. Notes: 1972 pipeline data.

Various levels of the national government also attempted to rebuild the economy by approaching the international community. For instance, the Finance Minister, N.M. Perera, had a meeting with the British Finance Secretary in 1971 about the "renewal of [the] existing Sterling agreement".²⁷² Since the Sri Lankan government was split over whether foreign assistance was, in fact, desirable, even in the current situation of crisis, it was not possible to obtain cabinet approval for the renewal agreement.²⁷³ S.U. Kodikara

²⁶⁸ For the 1972 constitution and its issues, see de Silva (1972); Warnapala (1973).

²⁶⁹ Ibid.

²⁷⁰ Ibid.

²⁷¹ For the 1972 constitution, see de Silva (1972); Warnapala (1973).

²⁷² TNA: PREM 15/2222, Secret notes of the meeting of Dr N.M. Perera, 3 May 1971.

²⁷³ TNA: T 317/1635, "Brief on the present political situation", confidential report, 1971.

(1982, 1980) wrote that various groups of the government were critical of Anglo-US economic assistance, even terming the West's attitude "economic imperialism".²⁷⁴ These critics hoped that Sri Lanka would reduce its dependence on the West for economic assistance and borrowing, but it was not so, as Sri Lanka retained the IRDB loan and also appealed to the West and lending institutions for loans. Further, in a closed-door meeting with John Silkin, the UK's Minister for Planning and Local Government, in January 1976, Bandaranaike and Felix Dias Bandaranaike, then Finance Minister, offered the UK government options for offshore oil exploration in an attempt to overcome difficulties and regain a good relationship with Britain.²⁷⁵ However, the British PM, Harold Wilson, was not convinced, as the British investors were waiting for the outcome of demands for compensation for the British planters following the government takeover of their plantations before engaging in any further ventures in Sri Lanka.²⁷⁶ The tensions within the Sri Lankan government, with its split between pro-West and anti-West fractions, meant that even secret approaches to various layers of the British government appealing for economic assistance were unsuccessful.

Associate Professor at the Lee Kuan Yew School of Public Policy at the National University of Singapore, Razeen Sally (2006, p. 5), sums up the situation in Sri Lanka at this time:

Government transfers had to bail out haemorrhaging state-owned enterprises. A bloated public sector concentrated on capital intensive production and generated little employment, while exports shrank further. Red tape, rent-seeking, patronage politics and corruption were pervasive. This was a time of rising unemployment, stagnant savings and investment rates, balance-of-payments crises, acute shortages and rationing of consumer goods, and growing popular dissatisfaction.

However, contrary to Sally's claim, the present study finds that during this period, unemployment in fact reduced significantly by 30.4 to 12 per cent from 1970 to 1976 (figure 3.2).²⁷⁷ Further, international liquidity was increased nearly threefold during the period. Government social expenditure was lower than under the previous SLFP and UNP regimes. But by the mid-1970s, growth had come to a halt, while welfare costs were still growing (figure 3.2).

The SLFP followed a socialist and collectivist strategy, including, for example, land reform, income ceilings, import and exchange controls, and cooperative undertakings (Fernando, 1982). But welfare without economic growth was bound to lead to economic difficulties, and there were clear signs by the mid-1970s that the system was failing. Following Bandaranaike's defeat in 1977, there was a change in the direction of the Sri Lankan foreign policy, economy and parliamentary system, introducing the 1977 Constitution (Fernando, 1982). The changes were far-reaching and have remained generally unchanged up

²⁷⁴ S.U. Kodikara was a professor of political science at Peradeniya University, Sri Lanka.

²⁷⁵ TNA: T 317/1635, Letter from John Silkin, Minister for Planning and Local Government, UK to PM, UK, January 16, 1976.

²⁷⁶ Ibid., Letter from James Callaghan, PM office to CRO, February 6, 1976. In 1975–76, Sri Lanka's government attempted a further expropriation of private properties culminating in the nationalisation of many of the tea estates, a move that affected both Sri Lankans and foreigners, mostly British.

²⁷⁷ This means that the ILO's recommendations to combat unemployment may have had a positive impact, helping to overcome unemployment; however, this chapter could not access the relevant central bank of Sri Lanka's data due to closure of libraries and archives.

until the present.²⁷⁸ Chapters five and six will examine the dynamics between these economic and political changes and health policy after 1977.

3.5 Conclusion

As presented in chapter two, AMR is not just a health issue but is also underpinned by international and national political and economic drivers. Accordingly, this chapter has examined the attitudes of and negotiations between the Sri Lankan government and international donor agencies, donor countries and different echelons of national governance in terms of political and economic encounters. Cold War politics also had a huge impact on the Sri Lankan political economy, as foreign aid became a familiar diplomatic tool for the Western and Eastern Bloc countries. Sri Lanka's efforts to satisfy the Western Bloc were no guarantee of better treatment. For example, pro-West Dudley Senanayake's government was forced to move towards the Chinese Rice-Rubber Pact when the US refused to support it in 1952. Senanayake was first forced to resign in 1954 and subsequently defeated in the 1970 general election, as the UK and US and later the IMF failed to provide adequate financial aid, despite knowing the government's adverse economic position. Sri Lanka's desire for sovereignty was a problem first for the Britain-Ceylon Defence Agreement of 1947, then for the US's and Britain's supremacy in the region. In an attempt to retain control, the UK and US tried to coerce Sri Lanka's politicians with perks and aid. Later, in 1971, officials in the British PM's office tried to take advantage of Sri Lanka's political and economic crisis, promoting the reinstatement of the Defence Agreement as to the solution to Sri Lanka's economic problems. British diplomats in Colombo unsuccessfully attempted to gain wider influence in South Asia through Sri Lanka's Prime Minister John Kotelawala as well. Sri Lankan governments adjusted both their posture towards donor countries and their domestic policies to facilitate the smooth flow of aid. As this chapter brought up, the intention behind the Western Bloc's assistance to Sri Lanka was not only to gain economic benefits, but also to preserve their position in Asia, and the aid provided was thus hardly benevolent in nature. Intelligence reports indicated that the US's ambition in Sri Lanka was to prevent the forming of an anti-US government, while the British intention was to control the Russian-supported industries in Sri Lanka via British trained experts. Mrs Bandaranaike's government's political decisions, such as the expropriation bill of 1961, and its pro-communist attitude led to the reduction of aid from the Western Bloc. However, this loss was not compensated by increased support from the Eastern Bloc. Seeking to overcome the ensuing economic difficulties and regain a good relationship with Britain, in 1975, the Finance Minister of Mrs Bandaranaike's government, Felix Dias Bandaranaike, secretly approached the UK government with an offer of offshore oil exploration in its waters. This approach was unsuccessful as the British PM, Harold Wilson, was not convinced that Sri Lanka's economic policy was favourable to British investors. Sri Lanka thus failed to

²⁷⁸ The 1977 J.R. Jayewardene government (UNP) was pro-Western, pro-capitalist and sympathetic to the US. Import and price controls were removed, taxes were lowered, and the currency was devalued by 46 per cent. Subsidised food rations were removed and replaced with food stamps for the very poor. The economy encouraged private enterprise by removing the controls that were stifling business activity (Fernando, 1982).

break away from interlocking political-economic factors rooted in the five-year electoral cycle and a foreign aid-dependent economy.

This chapter argues that the degree of the economic downfall was eventually determined by two extreme national political ideologies that unsuccessfully attempted to overcome economic constraints. Bandaranaike's governments came into power with support from nationalistic and communist groups, and thus had to maintain not only a pro-communist stance but also inward-looking national economic policies such as a government-controlled economy. In contrast, the UNP governments embraced policies that were the complete opposite. However, neither economic policy helped to develop national production or increase national saving significantly. As most of the respective ruling governments' political and economic initiatives were opposed and protested by the opposition party, the governments were unable to sustain their initiatives, for instance, Senanayake's agriculture development and Bandaranaike's government-controlled economy. Sri Lanka as a country consistently failed to achieve sustainable self-sufficiency in fundamentals such as food. Therefore, amidst the burden of social expenditures on the national economy, neither party was successful at preventing the depletion of foreign reserves and the devaluation of the currency that led to the cutting down of most imports and a rising cost of living.

Despite achieving significant prosperity in the early 1950s, Sri Lanka's economy in fact deteriorated under every regime from 1948 to 1977. The main international political strategy of each government was the shifting affinity from one side to the other in the Cold War rivalry. Each government was compelled to perform some critical policy changes to sustain the pressure that originated from international as well as local demand. However, each of those policies was seen by one side of the Cold War players as "policy errors" as far as they negatively affected them. However, policy errors such as adaptation or postponement of crucial policy changes until a crisis engulfs the ailing economy have been a hallmark in the Sri Lankan political arena. In 1948, Sri Lanka was thriving, with a plantation-driven export economy and a surplus on the external account. International organisations also noticed the potential for achieving self-sufficiency in Sri Lanka by enhancing the growth of the agricultural and industrial sectors. However, none of the governments managed to use these surpluses and opportunities to lay the foundation for diversifying the economy and reducing the unduly heavy dependence on the export market by setting up the necessary infrastructure. The overall result was a faltering economy, plagued by low foreign liquidity and high unemployment.

These conclusions raise two questions for further investigation in relation to healthcare delivery. The first of these is how Sri Lanka's government dealt with the different layers of the WHO and other agencies, donor countries, and their health experts when developing its national health structure and public health initiatives. The second question is how the national governments managed to provide healthcare in the face of growing economic difficulties. The following chapter will seek to answer these questions.

Chapter 4. Meeting Sri Lanka's unmet health needs

As previous chapters have shown, antibiotic use and supply and AMR is not only a health, but also a political and social issue. Post-independence Sri Lanka's economy was adversely affected by its national and international economic policies. Against this background, this chapter explores the dynamics of the relationship between different echelons of the healthcare governance of Sri Lanka, UN organisations, donor agencies and donor countries in terms of the provision of healthcare related to antibiotics use, supply and AMR between 1948 and 1977. The history of healthcare in Sri Lanka and the role played in it by international actors were assessed by Margaret Jones in three scholarly works. In *The Hospital System and Health Care: Sri Lanka, 1815–1960* (2009), Jones examined the country's health system regarding the development of hospital services such as child and maternal health. In "Tuberculosis control in Sri Lanka, 1948–1990" (2016), Jones then focused mainly on the WHO/UNICEF-assisted tuberculosis (TB) control programme in North Western Province (NWP), Sri Lanka, concentrating to a lesser extent on the work of TB experts Mr Donald Barlow and Dr R.T. Neubauer. Assessing healthcare in Sri Lanka between 1948 and 2000 in *Striving for Equity: Healthcare in Sri Lanka from Independence to the Millennium* (2020), Jones again examined the public health structure, TB control, child health, and non-communicable disease. The 1952 Health Service Act was also examined by Laksiri Jayasuriya (2010, pp. 111–114), who identified this Act as a great pillar of social development in the country. Tudor Silva studied malaria control in Sri Lanka but paid less attention to the contribution of the WHO and other international donor agencies. Thus, historical accounts do not explain satisfactorily important aspects of Sri Lanka's national and international health encounters, such as Sri Lanka's negotiations at the WHO HQ and the SEA Regional Office, the dynamics of relationships between Sri Lanka and foreign experts in terms of the development of health structure and public health activities, and how Sri Lanka managed health services and pharmaceuticals and antibiotics amidst economic crises. Examining all the above areas, this chapter analyses how those factors contributed to antibiotic use, supply and AMR.

This chapter uses archival sources and secondary literature as described in chapter 1.7. Public perceptions and reactions to policies are key factors in policy analysis. Evidence for these in the form of newspaper articles, parliamentary debates, gazette notifications, parliamentary acts and regulations is drawn from the National Archives of Sri Lanka (SLNA) and the Ministry of Health (MoH), Sri Lanka. Correspondence and published and unpublished reports of the WHO and other international organisations are important in analysing the work of those organisations. Those materials are found in archives such as WHO, Geneva; the US National Archives, College Park, Maryland; and the Canadian National Archives, Ottawa. Research for this chapter was hampered by travel restrictions and archive closures during the current pandemic, which meant that it was impossible to access some of the relevant data sets kept at the abovementioned archives.

4.1 Negotiations in a globalised world

The inaugural encounter of Sri Lanka with the WHO took place at the first World Health Assembly (WHA) of the WHO, held in Geneva between June 24 and July 24, 1948, and attended by more than 70 participating countries (*American Journal of Public Health*, 1948).²⁷⁹ When Dr S.F. Chellappah, Director of Medical and Sanitary Services (DMSS) of Sri Lanka, presented the application for the admission of Sri Lanka as a full member of the WHO, Dr van den Berg, a delegate of the Netherlands and chairman of the Legal Committee, recommended this be referred to the Legal Committee, querying Sri Lanka's independent status.²⁸⁰ Following a vote, the President of the WHA, Dr Andrija Stampar of Yugoslavia, announced that "I see that Ceylon, as an independent State with dominion status, is admitted [as a full member]".²⁸¹ Sri Lanka was then elected to serve on the Executive Board (EB), which was to be composed of 18 individuals technically qualified in the field of health, each one designated by an elected member state.²⁸² The terms of members of the EB – whether for one, two or three years – were determined by lot: Sri Lanka and India, for instance, were elected for a term of one and three years respectively.²⁸³ In 1949, when Sri Lanka put itself forward for re-election to the next EB in the Second WHA, it was asked to step aside, since the South-East Asia (SEA) region could be represented by only one country to ensure "equitable geographical distribution", and that country was to be India.²⁸⁴ Dr W.G. Wickremesinghe, acting DMSS, Sri Lanka, complained about this:

"We are not happy that the only representative of the region should be a large country [India], especially when the Director of the Regional Organization comes from that country [and is the representative on the EB]. We small countries have a sense of pride and have no desire to be mere lookers-on...I do want to express our resentment at a statement that is supposed to have been made by the chief delegate of India [Rajkumari Amrit Kaur], that she was prepared to make a sacrifice of one country in the South-East Asia Region".²⁸⁵

Challenging the statement, Rajkumari Amrit Kaur, Chief delegate and health minister of India, argued:

"It is not true to say that I agreed to make the sacrifice. All I said was this: that if a region has got to make a sacrifice (and it was said that it was the South-East Asia zone that was to make the sacrifice), I pleaded, then, that this zone should have representation, and that if we did not get enough votes in the General Committee to come amongst the first six, at any rate, another country from this zone might be put among the nine countries."²⁸⁶

²⁷⁹ The WHO came into official existence on April 7, 1948. The WHA is the plenary body (or decision-making body of the WHO) where all member states are represented annually. For the WHO's structure and functions, see (K. Lee, 2008).

²⁸⁰ Institutional Repository for Information Sharing of the WHO (IRIS): Official records of WHO No.13, The First WHO, Plenary Meetings, Verbatim Records, 1948, 46. The application was proposed by Dr C. Mani, deputy director-general of Health Services.

²⁸¹ Ibid. The admission of San Marino and Monaco was referred to the appropriate committee.

²⁸² Ibid., 95. The EB of the WHO oversees the implementation of the decision taken by the WHA. In 1948, it consisted of 18 members and this number had risen to 34 by 2007 (K. Lee, 2008).

²⁸³ Ibid.

²⁸⁴ IRIS: WHO No. 21, Second WHA, 1949, Plenary meetings, Verbatim Records, 1949, 112.

²⁸⁵ Ibid.

²⁸⁶ Ibid.

Sri Lanka's attempt was not successful, as Thailand was the only country from SEA selected to join the EB in 1950. Sri Lanka got an opportunity to work on the EB in 1951, which remained its only term in the 1950s.²⁸⁷ In WHO's first decade, Sri Lanka and India served four and five years respectively on the EB. However, India was represented on many expert and technical committees, whereas Sri Lanka was appointed only to the Expert Committee on Insecticides.²⁸⁸

In terms of working with other countries (especially regional countries) at the WHO HQ, at the Second WHA, S.W.R.D. Bandaranaike, Sri Lanka's Minister of Health, opposed a statement by the chief delegate of India, Rajkumari Amrit Kaur (who had attempted to generalise a heavy leprosy burden across the region) with the words: "it is not a major disease in our country but it does deserve some consideration".²⁸⁹ At the discussion of programme and budget estimates for 1953 at the EB, Dr C. Mani, regional director (RD), SEA, stressed that "the emphasis must be placed on the development of health services for rural populations" in the region, where there was extreme poverty and illiteracy, coupled with very few healthcare workers.²⁹⁰ Dr W.A. Karunaratne, a Sri Lankan representative, did not wish members of the EB to gain a wrong impression from Dr Mani's statement, as "there was a great variation in the standards in the different countries of South-East Asia".²⁹¹ According to Kelley Lee, a public health specialist, decisions at the WHA are formally governed by the principle of "'one state, one vote' thus giving all countries regardless of their size and power, an equal say in decision-making matters", and thus Sri Lanka, a small country, as a full member enjoyed equal voting power as larger countries. However, this subsection argues that it was not an easy task for a small country like Sri Lanka not only to be represented on, but also survive in the EB and expert and technical committees of the WHO. However, to understand Sri Lanka's work shaping the WHO policies – for instance, medical supplies, which have a direct impact on the supply of antibiotics and AMR (as presented in chapter 1) – it is necessary to examine the negotiations between Sri Lanka and other member states at the different levels of the WHO.

First, Sri Lanka wanted to become self-sufficient in medicines; in 1949, S.W.R.D. Bandaranaike, the elected Vice-President of the Second WHA, requested "help to facilitate the preparation of drugs in our own countries, the necessary plants...the necessary trained personnel".²⁹² He stated that the country's health system had been "hampered by the fact that sufficient equipment, sufficient quantities of DDT, sufficient quantities of drugs such as streptomycin are not available".²⁹³ He further complained that he did not think that "in the programme and financial proposals for the year 1950 anything like adequate provision [had been] made for those needs". Without allocating funding for the medical supplies, Brock Chisholm,

²⁸⁷ IRIS: The first ten years of the WHO, 1948.

²⁸⁸ IRIS: First ten years of WHO, 1958, 495.

²⁸⁹ IRIS: WHO No.21, 1949, 84.

²⁹⁰ IRIS: EB9/Min/6, EB9/Min/6 Rev.1, Minutes of the sixth meeting, Geneva, 23 January 1952, 13.

²⁹¹ *Ibid.*, 17.

²⁹² IRIS: WHO No.21, 1949, 84.

²⁹³ *Ibid.*

DG, WHO urged “governments to give very careful consideration to this serious and frequently critical need”.²⁹⁴ Opposing the DG’s report concerning most of the financing being directed towards those countries devastated by the war, Bandaranaike insisted that the same attention should be paid to backward countries in SEA.²⁹⁵

Second, when delegates at the Second WHA were divided regarding the nature of the medical supplies expected from WHO, Dr W.G. Wickremesinghe (acting DMSS, Sri Lanka) urged: “The supplies section should advise governments on such purchases, and on how to become self-sufficient in the production of those [medical] supplies”.²⁹⁶ By contrast, Dr W.P. Forrest (Secretary, Committee on Programme) argued that “the Organization was not equipped to advise on the feasibility of the technique in establishing pharmaceutical industries”.²⁹⁷ Agreeing “with the delegate of Ceylon”, Dr K.C.K.E. Raja (DG of Health, India) argued that “there was no provision for assisting governments to obtain medical supplies at a reasonable price”.²⁹⁸ Highlighting the importance of the creation of a proposed “bureau of medical supplies” to advise governments on medical supplies and production, Dr P. Tagaroff (chief delegate, Bulgaria) suggested including “an expert from the country concerned who would be aware of the special needs of that country”.²⁹⁹ Dr L.A. Scheele (surgeon general, US Public Health Service, Federal Security Agency and the chief delegate of the USA) stated that his government “thought the procurement of supplies was basically an economic question...the improvement of medical supplies should be sought from international economic organisations able to analyse the needs and propose solutions”.³⁰⁰ Scheele opposed the WHO undertaking a large-scale supply programme “which would require increasing expenditures from the Organization's slender resources”.³⁰¹ Disagreeing with the statement in the DG's report that “the supplies of insulin would more than meet the requirements of countries”, Dr W.G. Wickremesinghe again argued that “several countries in SEA had experienced great difficulties...with regard to insulin.”³⁰² Criticising a proposal that countries lacking the necessary processing facilities send raw materials to manufacturing countries, he argued that “that would be a radically incorrect approach...The policy of the WHO should be to encourage local production”.³⁰³

Third, at the Regional Committee (RC) meeting for SEA, held in New Delhi in September 1949, Mr Bandaranaike, Dr Wickremasinghe and Dr Raja again pressed for the adoption of a resolution of assisting the governments of SEA to make themselves largely self-sufficient in medical supplies.³⁰⁴ As the

²⁹⁴ Ibid.; IRIS: WHO No.18, Programme and budget estimates for 1950, 1949, 5.

²⁹⁵ IRIS: WHO No.21, 1949, 54.

²⁹⁶ Ibid., 209–10.

²⁹⁷ Ibid.

²⁹⁸ Ibid. 209–10.

²⁹⁹ Ibid. 208.

³⁰⁰ Ibid. 210.

³⁰¹ Ibid.

³⁰² Ibid. 212–13; see also footnotes.

³⁰³ Ibid.

³⁰⁴ IRIS: EB5/11, RC for SEA, Report on the second session 1949,11. Six regional offices of the WHO were established to support the organisation’s work in South-East Asia (SEARO), Africa (AFRO), the Americas

devaluation of regional currencies was hampering the supply of essential drugs and equipment, the committee further urged immediate attention from the DG “to investigate possible solutions such as...specially arranged rates and payment in local currencies”.³⁰⁵ As the issue had not been addressed by the WHO HQ, at the 1950 RC meeting, held in Kandy, Sri Lanka, another resolution was passed “for assistance in obtaining medical supplies and for their manufacture within the region”.³⁰⁶ As presented in chapter two, because of the failure to resolve issues relating to medical supplies and equipment at WHO HQ and regional level, at the 1952 WHA, Dr Daengisvang, a delegate from Thailand, requested that “serious attention” be paid “by the Organization” to the question of “medical supplies and equipment”.³⁰⁷ He recalled that the RC for SEA had recommended that “the limitation on the use of technical assistance funds should be removed since it led to difficulties in providing essential supplies and equipment for the projects in the region”.³⁰⁸

However, after several years of negotiation, as presented in chapter two, India and Pakistan received antibiotic plants, but Sri Lanka received a DDT plant (instead of an antibiotic plant) from the WHO/UNICEF.³⁰⁹ Accordingly, a DDT plant was established near “Elephant Pass” with the support of UNICEF funds and with WHO’s technical assistance, under the supervision of Sir Geoffrey Wilson, director of the Colombo Plan Technical Co-operation Bureau.³¹⁰ Another locally funded caustic soda plant was also planned to produce chlorine for the production of DDT.³¹¹ The previous historiography has studied the WHO/UNICEF contribution to Sri Lanka in terms of delivering health initiatives. For instance, the British historian Margaret Jones (2016) and the Sri Lankan sociologist Tudor Silva (2014) examined WHO/UNICEF-supported TB and DDT led malaria programmes respectively from a policy perspective in the Sri Lankan context. However, neither of these studies give an insight into the range of formal and informal negotiations between the WHO and Sri Lankan governments that led to such initiatives. This subsection further argues that those negotiations contributed not only to the granting of WHO assistance to Sri Lanka and the region, but also to the shaping of WHO policies in both HQ and the SEA region.

4.2 Foreign experts and the expansion of health services

At the invitation of the newly independent GoSL, Dr John Howard Lidgett Cumpston, formerly DG of the Australian Department of Health, following a detailed analysis, submitted his report, the

(AMRO), the Eastern Mediterranean (EMRO), Europe (EURO), and the Western Pacific (WPRO) (K. Lee, 2008). The RC meetings are organised annually at RO level to review progress and discuss priority public health issues with representatives from national ministries of health.

³⁰⁵ Ibid., 3.

³⁰⁶ IRIS: WHO No.30, Annual report of the Director-General 1950, 96.

³⁰⁷ IRIS: A5/VR/6, Sixth plenary meeting, provisional verbatim record, 7 May 1952, 15.

³⁰⁸ Ibid.

³⁰⁹ Sri Lanka was having difficulties purchasing the annual requirement of “600 tons of technical DDT” (which could not be obtained within the country) from the world market as the “price was prohibitive”.

³¹⁰ TNA: Letter from Geoffrey Wilson to BHC, Colombo, September 25, 1951, enclosure, DO 35/2733, Technical Co-operation Scheme: selection of experts in technical and industrial fields, 1950-51.

³¹¹ TNA: A letter from Geoffrey Wilson to Office of UK High commissioner, Colombo, September 25, 1951.

Cumpston Report (1950), which led to the Health Service Act in 1952.³¹² The main recommendations of the report were fourfold: the systematic development of a hospital system, the reorganisation of the Department of Health, and the establishment of a medical school and a hospital in Kandy with immediate effect. Before studying Cumpston's report and expansion of healthcare services, it is important to assess the negotiations between foreign experts and the Sri Lankan government to understand the healthcare situation in Sri Lanka.

In 1951, the GoSL and WHO invited a team of consultants from the UK to advise the government on how to improve the administrative machinery of the DoH, Sri Lanka.³¹³ When Scotland's DoH was considering the possibility of putting forward a nomination, the Commonwealth Relations Office (CRO), London, highlighted the ambiguous nature of the request:

A former Director of the Medical Services in Australia recently carried out an enquiry in Ceylon at the request of the Ceylon authorities and produced a report (The Compton Report [sic]) containing various recommendations. I understand that it is a regular habit in Ceylon to set a Commission to catch a Commission and this attitude may perhaps explain the present request!³¹⁴

Later, F.W. Beak and J. Stirling, respectively Assistant Secretary and Accountant General of the DoH, Scotland, were appointed to advise the GoSL on general administration and finance administration in their corresponding capacities.³¹⁵

In the same year, J.R. Jayewardene, the Finance Minister, specifically recommended that the International Bank for Reconstruction and Development (IBRD) mission to Sri Lanka include an expert in Public Health.³¹⁶ Later, as requested by Richard H. Demuth, assistant to the Vice-President of the IBRD, the WHO nominated a public health expert, Dr A.R. Mehta, ex-deputy DG of Health Services, India, for the IBRD mission.³¹⁷ During the mission in October 1951, Mehta was consulted by Drs L.G. Blaze and D.L.J. Kahawita, assistant directors in Medical and Sanitary Services respectively, on the professional education of medical and paramedical staff. Further, the Chief MO for Colombo Municipality and the MO for International Health sought opinions over sanitary services and foreign aid. Dr Mehta also reviewed disease programmes relating to TB, VD, filariasis and leprosy.³¹⁸

Sir Cecil Wakeley, a British surgeon and health expert, visited Sri Lanka in December 1953, returning just after Donald Barlow, a famous thoracic surgeon from England, highlighted lamentable

³¹² SLNA: Library: Dr J. H. L. Cumpston, Sessional Paper III, Report on the Medical and Public Health Organisations of Ceylon, 1950.

³¹³ TNA: Letter from the Department of Health, Scotland to W.P. Barrett, United Nations Information Centre, London, 19 September 1951, MH 78/33, Loan of Mr F W Beek to Government of Ceylon to advise on Health Services

³¹⁴ Ibid., Letter from the Commonwealth Relation Office, London, to R.A. Briggs, Ministry of Health, London, 19 June 1951.

³¹⁵ Ibid., Establishment minutes No.57/5 by M.R.P. Gregson from the Ministry of Health.

³¹⁶ WPGA: 1554091. Chapter three presented details of the IBRD mission.

³¹⁷ WPGA: 1554091, letters from Richard H. Demuth to the WHO, June 26 & August 10, 21 & 26, 1951.

³¹⁸ Ibid., Letters from the MoH to Dr A. R. Mehta, October 17, 1951 (DHS was not invited to the meeting as it was entangled in a controversy with the Minister and the secretary over the Cumpston report).

aspects of the TB services in Sri Lanka.³¹⁹ In a newspaper interview, Wakeley was reported to have criticised the hospital administration in Ceylon, describing it as the “worst in the world” due to over-centralisation.³²⁰ “Patients [had] suffered and even died because the Medical Superintendent (MS) was on weekend leave and no drugs could be issued in his absence.” He had been “shocked to find morphine and other drugs which were in short supply being peddled about within the hospital premises – with the authorities doing nothing about it.”³²¹ He said the blood bank needed better supervision and “the treatment given to TB patients [was] worse than useless”.³²² As for the children’s hospital, he had “never seen a hospital anywhere else in the world where two children were put in one cot”.³²³ He went on to say that “in a tropical climate, where infection can easily be carried from one to another, this practice [was] highly dangerous”.³²⁴ The sterilising unit which emitted steam had been constructed right at the centre of the theatre, which he described as “madness”. He further stated that “If there were an efficient administration, the state health services would cost only half as much as they did”.³²⁵ Subsequently, there had been a quite acrimonious exchange between Wakeley and the health minister. P. Somasuntharam, the Permanent Secretary of the MoH, personally wrote to N.E. Costar, acting BHC, saying words to the effect that it would be very welcome if they could “find a way to indicate to future visitors and experts who come to Ceylon under [the British] wing...that they should use some discretion when expressing opinion publicly...the Press [would] do their best to encourage newsworthy criticism”.³²⁶ Later, A.C.B. Symon of the CRO passed this message on to Wakeley and Barlow and advised them to be careful about what they said in public.³²⁷

General Sir J.B. Hance, Medical Advisor to the CRO and former DG of the Indian Medical Services, also carried out a survey of the medical aspect of Colombo Plan projects during this period of turmoil in March 1954 and handled the press cautiously without criticising Sri Lanka’s health services.³²⁸ While the Australian government was “glad to give whatever assistance for the General’s recommendations”, the *Ceylon Daily News*, Sri Lanka’s national newspaper, commented that “bringing another expert at considerable expense to report on the report of Dr Cumpston [was useless]: The health minister was thus burdened with two reports, and no drastic changes were possible [since the government] had to work within the old framework.”³²⁹ It is evident that the Sri Lankan government was keen on developing the health system, and thus sought an array of expert opinions that led to a duplication of work.

³¹⁹ Interactions between the GoSL and foreign specialists in tuberculosis during this period will be discussed later in this section.

³²⁰ TNA: “Hospital Administration ‘worst in the world’”, *Times of Ceylon*, December 30, 1953, DO 35/5766, Medical and Public Health services in Ceylon: report of visit by Lieutenant General Sir Bennett Hance

³²¹ *Ibid.*

³²² *Ibid.*

³²³ *Ibid.*

³²⁴ *Ibid.*

³²⁵ *Ibid.*

³²⁶ *Ibid.*, Secret letter from Costar to A.C.B. Symon, CRO, February 9, 1954.

³²⁷ *Ibid.*, Secret letter from Davis (CRO) to Costar, February 18, 1954.

³²⁸ TNA: DO 35/5766, "He will survey medical aspects of CP", CDN, January 29, 1954.

³²⁹ *Ibid.*, Letter from the Australian High Commissioner's Office, Colombo to BHC, Colombo, April 23, 1954, and "The Cumpston Report" by L. Nandasena, CDN, July 27, 1954.

However, the higher officials of the MoH, Sri Lanka, could not accept the criticality of those experts' opinions of Sri Lanka's health system. Meantime, Cumpston's report, however, enjoyed a mixed response from various groups.

Health Ministry officials including Dr Wickremasinghe (the DMSS), the doctors' trade union and the local press responded to the Cumpston's report in different ways. In January 1950, a Sri Lankan national newspaper, *Lankadeepa*, reported that, at a cabinet meeting, the cabinet had given "serious consideration" to Cumpston's criticism: "over-centralisation, excessive government interference and no place for talents".³³⁰ Cumpston had also noted that the "work of the Department of Health [had] been sluggish and unproductive [and] the method of controlling communicable diseases [had shown up] the inefficiency of the health system...[which needed] drastic reforms"³³¹. Moreover, "[t]he strategy of appointing a medical officer as the head of the institution [had] led to a separation between staff in the department. It [was] high time to stop 'the devaluation of the profession'".³³² Agreeing with Cumpston, the Government Medical Officers Association (GMOA) protested against the appointment of a medical officer (MO) as the Director of Health Services (DHS), arguing that doctors, who made up 6 per cent of the health workforce should not manage the entire health community.³³³ Meanwhile, Dr S.G. Wickremasinghe (DMSS), called the Cumpston Report "vindictive" and reported his dissatisfaction directly to the cabinet without going through the proper communication channels. Subsequently, W. Kannangara, Permanent Secretary to the Ministry of Health (MoH), ordered a disciplinary inquiry against Dr Wickremasinghe for violating government procedures, stating: "It's a violation of the constitution. He should send it to the health minister, not to the Cabinet. Dr Wickremasinghe's participation at the forthcoming WHA is at risk now."³³⁴ Disagreeing with Dr Wickremasinghe's comments about the report, S.W.R.D. Bandaranaike, the health minister, stated that "when we prepared the cabinet memorandum, he was there; he should know my view".³³⁵ Keen to implement Cumpston's report, a member of Kandy Municipal Council, A.C. Wickramarathe, stated that this report aimed to stop malpractice in health services and also the Department of Health. He went on to criticise Dr Wickremasinghe for opposing this important report.³³⁶ This issue did not go further, as Dr Wickremasinghe's apology was accepted by the health minister.

Because of this issue, the health minister gave priority to implementing departmental reforms as recommended by Cumpston.³³⁷ As part of the follow-up action on Cumpston's report, the Health Service

³³⁰ SLNA: "Medical Sector is criticised", *Lankadeepa*, 28 January 1950, 1.

³³¹ *Ibid.*

³³² *Ibid.*

³³³ *Ibid.*, "Government doctors take the final decision" *Lankadeepa*, January 24, 1950, 1. GMOA is a trade union for government medical officers.

³³⁴ *Ibid.*, "Chargers against Director", *Lankadeepa*, April 6, 1950.

³³⁵ *Ibid.*, "Director was aware of our stand", *Lankadeepa*, April 17, 1950, 6: Appreciating the content of the Cumpston Report, Kandy Municipality Counsellor, H.C.H. Wickramarathe, urged the HM to "implement this report fully without being caught in the battle of the PM post", *Lankadeepa*, May 2, 1950.

³³⁶ *Ibid.*, "It is time to implement the Cumpston's recommendations" *Lankadeepa*, 02, May 1950, 6

³³⁷ *Ibid.*, "Minister will implement the report", *Lankadeepa*, 01 June 1950, 1

Act, No. 12 of 1952 received assent on 8 March 1952.³³⁸ The cabinet accepted the report's recommendation to reorganise the Department of Health, and this reorganisation was actively implemented from 1 October 1954.³³⁹ The highest layers now were the Director of Health Services (replacing DMSS) and three deputy directors in health services: medical services, public health, and laboratory. Dr Wickremesinghe became the first DHS in the Department of Health. This restructuring also involved the decentralisation of the administrative establishment, following which the island was divided into 15 divisions, each under a superintendent of health services (SHS), who coordinated the medical, public health, and laboratory resources of the department in the division.³⁴⁰

Cumpston observed the uneven geographical distribution of hospitals and argued that the availability of transport systems meant that the question of accessibility was of less importance, and those small units were not cost-effective and difficult to maintain at a satisfactory standard.³⁴¹ He further claimed that this inequitable distribution of resources also involved inequalities in healthcare provision in the country and that these factors led to the concentration of services and resources in Colombo, as patients bypassed the local hospitals to seek treatment at the Colombo hospitals.³⁴² In the background, Cumpston recommended the adoption of a pyramidal structure that had four levels.³⁴³ The first level, at the top, consisted of the teaching hospitals of Colombo, which provided 2000 beds. The nine provincial hospitals, with beds between 400-700, situated in the major provincial towns, were the second level. The intention was for these to have the full range of major and minor specialist services as soon as sufficient staff could be trained.³⁴⁴ The third level comprised the 12 base hospitals with about 200 beds, offering the three major specialities. The fifth level was made up of the district hospitals, usually in urban council areas, with between 80-100 beds, generally with one or more MOs assisted by an apothecary. The final level included a diverse set of small institutions: the peripheral unit, small rural hospital, dispensary and maternity home; there were 67 complete units and several incomplete ones. All the teaching hospitals of Colombo – the GH, De Soyza, Lady Ridgeway, Victoria Eye, Castle Street Maternity and the Dental Institute – came under the purview of a General Hospital Committee. In addition to these, there were the specialist TB, leprosy and mental hospitals, altogether making up a total of 400 hospitals with about 31,000 beds.³⁴⁵ All higher levels of hospitals were to have the full range of specialist services as soon as sufficient staff could be trained, but this would not be an easy endeavour.

³³⁸ WTA Library: K21587, Health progress in Ceylon: A Survey by David Montague, 1956, 19.

³³⁹ Ibid.

³⁴⁰ Ibid., 20.

³⁴¹ SLNA Library: Dr J. H. L. Cumpston, Sessional Paper III, Report on the Medical and Public Health Organisations of Ceylon, 1950.

³⁴² Ibid.

³⁴³ WTA Library: K21587, 20.

³⁴⁴ Ibid. Major specialities were medicine, surgery, and obstetrics and gynaecology. Minor specialties were radiology, ENT, ophthalmology etc.

³⁴⁵ Ibid.

In 1947, the Ministry of Health referred to the local branch of the British Medical Association for its view on the Austrian government's request concerning the possibility of employing some surplus practitioners from that country in specialised posts in the Government Medical Service in Sri Lanka.³⁴⁶ In 1949, this was met with protest from the Ceylon Branch of British Medical Association. Thereafter, in 1950, addressing the severe shortage of specialists in the country, the Minister of Health Bandaranaike appeared on the scene and set about getting Viennese specialists to Sri Lanka. The Ceylon Medical Associations (CMA), and the government medical officer's association, protested, as Viennese qualifications were not registerable in Sri Lanka.³⁴⁷ To get over this difficulty, the government had the Medical Ordinance amended. Dr E.M. Wijerama, a past president of CMA, claimed:

It is strange that in spite of this amendment no Ceylonese having the same qualification as the Austrians is given the same recognition as the Viennese. These imported specialists practised in Ceylon hospitals until 1955 when Dr A S Rajasigham brought to the notice to the Association that steps were being taken by the government to extend the contracts of the specialists and that immediate action should be taken to stop it. The Council decided to interview the Minister [and protest against him] ...In conclusion, the Minister added that the government was now sending them away, five have already been sent away and been replaced by the nationals of this country and the other four would soon be replaced.³⁴⁸

When addressing the issue of the Austrian doctors in 1953, the health minister requested that CMA submit a proposal to reform the composition of the Ceylon Medical Council, which was empowered to register medical professionals, as part of this issue.³⁴⁹ A CMA committee consisting of Drs Wijerama, Kumaran Ratnam (the former mayor of Colombo) and Wimalasooriya submitted a report on the reforms of the Ceylon Medical Council.³⁵⁰ According to their recommendations, the Council should consist of 12 members, out of which two were to be nominated by the Minister, one to be elected by the medical teachers of the Ceylon University, another one to be elected by the dental surgeons, and the remaining to be elected by the medical profession in general. The President and the Vice Presidents were to be elected. However, the implementation of the proposed reforms was delayed for 10 years, and Dr Wijerama thus complained in 1963:

The report was accepted by the association and sent to the minister though it is nearly 10 years since the agitation for reform of the Ceylon Medical Council started and although every minister of health during this period has expressed himself in favour of the reforms, no reforms has yet taken place.³⁵¹

Meanwhile, the problems in the health sector were growing. While peripheral hospitals were suffering without specialists, the appointment of specialists to the key posts in the Department of Medical Services was hampered by strong differences of opinion.³⁵² For example, the acting Permanent Secretary

³⁴⁶ SLML: E.M. Wijerama, "Seventy-five years", *CMJ* 8 (1) (1963), 23.

³⁴⁷ SLNA: "Doctors protest against Viennese doctors" *Lankadeepa*, 18 May 1950.

³⁴⁸ SLML: Seventy-five, 23.

³⁴⁹ The Medical Ordinance became effective in 1928, during our colonial era, probably mirroring regulations governing the UK's General Medical Council. It established the Ceylon Medical College Council (CMCC) and the Ceylon Medical Council, the precursor of the Sri Lanka Medical Council (SLMC).

³⁵⁰ *Ibid.*

³⁵¹ *Ibid.*

³⁵² SLNA: "Medical director's order overruled", *Ceylon Daily News*, 2 February 1951.

of the MoH and the DMSS clashed over the payment of the senior visiting obstetrician to De Soyza maternity hospital. The appointment made by the Director of Medical and Sanitary Services to this post was cancelled by the acting Permanent Secretary three months after payment had been made, with the Secretary claiming it was an irregular appointment made without considering the seniority of the office.³⁵³ The Secretary suggested appointing another officer from the same station to the post. Concerning public health staff, in 1977, a WHO specialist, Dr Juraj Cervenka, highlighted the fact that the Epidemiology Unit (established in 1959) had only five epidemiologists, and only three health districts (SHS areas) out of 16 had a regional epidemiologist. Further, he stressed that “the epidemiologist [had] no administrative power and [could not] implement epidemiological measures and evaluate their effect.”³⁵⁴

The Prime Minister, who had taken over the portfolio of the Minister of Health since the resignation of Mr S.W.R.D. Bandaranaike, had to address many growing issues in the health sector.³⁵⁵ He attempted to address the question of overcrowding in the hospitals: “Immediate survey [was] to be made to investigate overcrowding in hospital with a view of the providing additional temporary accommodation in them as far as possible”.³⁵⁶ The second issue he needed to address was a severe shortage of drugs. He ordered that drugs be purchased from any market, without over-relying on the stocks from the UK.³⁵⁷ A lack of hospital infrastructure facilities, financing and staff were the other major problems.³⁵⁸ Assessing issues faced by the health sector, the Director of Health Services stated in his administrative report for the year 1959 that “the State has agreed as a matter of policy to give health protection to the people of the country. Yet there is neither sufficient funds nor personnel and equipment available to carry out this undertaking efficiently.”³⁵⁹ At the 1963 presidential address of the Ceylon Medical Association, Dr A.D.P.A. Wijegoonewardene argued:

To this statement of Director of Health Service, I would like to add as follows; nor is there any likelihood of there being sufficient funds to employ the personnel to the next 40 years unless there is a phenomenal increase of economic growth and unless there is a change from the present system to that of a system utilising the entire professional personnel that is available at present on a different basis of remuneration than hitherto to the adaptor.³⁶⁰

According to table 4.1, even without sufficient funds, Sri Lanka was able to increase the availability of doctors significantly from 1950 onwards and stood at third place in the region in 1970. Based on Sri Lankan sources, however, in 1960 the shortage of doctors was 56 per cent, meaning that a 127 per cent increase in the cadre would have been necessary to bring it up to the standard requirement of the population

³⁵³ Ibid.

³⁵⁴ WHORA: SRL/ESD/002, *Strengthening of Epidemiological services in Sri Lanka*, Report 24, March 1977: SEA/EPID/79. Dr Juraj Cervenka, Strengthening and surveillance and control of communicable diseases –Sri Lanka, August 29, 1977. During this time, the whole island was divided into 16 Superintendent of Health Services (SHS) areas for administrative purposes.

³⁵⁵ SLNA: “Drug to buy from any market”, *Ceylon Daily News*, 14 July 1951, 1.

³⁵⁶ Ibid.

³⁵⁷ Ibid.

³⁵⁸ See SLNA: “hundreds of pregnant mothers cannot admit as no beds in hospital: 302 beds and more than 500 patients” *Lankadeepa*, 20 March 1950.

³⁵⁹ SLML: A.D.P.A. Wijegoonewardene, “Presidential address”, *CMJ* 12 (1) (1963).

³⁶⁰ Ibid.

(table 4.2). As there was a shortage of healthcare personals, it is important to study the public cost and availability of healthcare to understand the development of the health system in Sri Lanka.

Up to 1950, when the principle of free medical care was established, the health ministry earned revenues from three major types of user fees: user fees for basic services, fees from pay-wards, and opium sales (Rannan-Eliya, 2006). It though user charges were already insignificant sources of revenue, and the change in official policy had a little material effect. In 1950, the government introduced the principle of free health services to the whole population and abolished even the nominal charges that existed (M Jones, 2009). The principle of a citizen's right to free government health care was firmly accepted, and the comparable duty on the state to provide for such services. During the period 1950 to 1971, thus, some concern in the government for re-introducing a user fee as revenue to government health expenses, but no minister was willing to countenance even official consideration of such a policy, because of what was perceived to be the potential negative impact on the political stability of the ruling party. In 1971, with severe financial constraints and a leftist finance minister, N. M Perera's, intent on achieving fiscal savings, user charges were introduced even with resistance from the own government (Rannan-Eliya, 2006). A 25 cent "token" charge was introduced for all outpatient first visits at MoH facilities, but inpatients were exempted. Around Sri Lankan rupee 4.5 to 6.0 million was raised each year through the fee, compared with annual recurrent expenditures of the Health Ministry during 1971 - 77 of Rs. 250 to 450 million, which means, the effective rate of cost recovery was only 1.5 - 2.0% of recurrent costs (Rannan-Eliya, 2006). The user fee is also considered as a reason for the election defeat of the ruling government in 1977. This was removed after a few months after the next election and the impact of the removal of user fees will be discussed in chapter 5.

According to table 4.2, most of the medical practitioners were not working for the MoH. That means they were involved in private medical practice as only medical specialists in the public sector were allowed to work in the private sector.³⁶¹ This is called dual practice (DP), working in the private sector after working in government facilities (Eggleston and Bir, 2006; Hipgrave and Hort, 2014). This rule was further tightened during the 1970 regime under the government-controlled economic policy as presented in chapter 3, where the DP of the government specialists was also restricted (Attanayake, 2008). During the continued protest of the doctor's union in 1976, the private practice of government specialists was granted back. Accessibility to healthcare due to lack of doctors was also a concern among the people that also adversely affected the ruling party on the next election. Chapter 5 will study the effects of allowing the DP for all categories of doctors after 1977.

³⁶¹ SLML, Seventy-five years, 1963

Table 4.1: Physician manpower in countries of the SEA Region between 1950 and 1970

Country	Number of physicians			Population per physician		
	1950	1960	1970	1950	1960	1970
Bangladesh*		5,491	7,893			8,428
Bhutan						
Burma	997	1,962	3,073	19,900	11,394	8,796
DPR Korea			16,253			855
India	64,062	77,780	112,000	5,700	5,644	4,813
Indonesia	1,196	1,938	4,383	66,000	48,627	27,258
Maldives					50,000	
Mongolia		873	2,259		1,109	560
Nepal		128	221		72,188	50,814
Sri Lanka	1,318	2,201	3,238	6,000	4,453	3,865
Thailand	1,522	3,402	4,313	12,000	7,757	8,433

Source: IRIS: Health status of South-East Asia Region between 1950 and 1970. *Then known as East Pakistan

Table 4.2: Cadre and shortage of medical personnel

Year	1930	1940	1950	1960
Population (millions)	4.9	5.6	6.8	9.8
Registered practitioners	794	3905	1176	2114
DHS medical personnel	313	383	674	1107
DHS cadre	316	377	729	1173
Needed based on a standard of 1:4000	1230	1409	1700	2424
DHS shortage	914	1032	971	1301
% of shortage of standard cadre	74	73	57	56

Source: SLML: A.D.P.D Wejagoonawadene, "Presidential address", *CMJ*, Vol 8, No 1 (1963)10-11

It appears that the abovementioned issues continued. In 1966, at the request of the GoSL, Dr W.D. Hood, recently retired deputy Chief Medical Officer for Scotland and a WHO consultant in hospital planning and administration, visited to assess the development of hospital services. Highlighting significantly overcrowded hospitals where bed occupancy stood at 150 per cent, he commented that "the present situation is almost chaotic and promotes neither good patient care nor the efficient operation of hospital services".³⁶² To reduce this congestion, he made three recommendations: imposing a small token charge to discourage some unnecessary admissions; upgrading small hospitals to reduce congestion at base hospitals; and starting branch dispensaries to reduce congestion at small hospitals. After assessing ongoing construction work at seven major hospitals, he stated that "the use of the type plans for a more elaborate building [was] beset by pitfalls. Type plans in wards, theatres and other separate departments [were] of no assistance in the design of the hospital as a whole – the space relationships between departments, the communications and the traffic routes ought to be specified as precisely as anything else."³⁶³ He believed that "the use of obsolete type plans means planning for the needs of yesterday, not for today" and recommended they be revised in consultation with hospital staff and redrawn to meet modern requirements.³⁶⁴ Further, he suggested allocating sufficient money for the construction work and establishing a building department within the health department as private firms had failed to fulfil

³⁶² WHORAG: Ceylon 76, Hospital Administration, Jan-May 1966, p. 6; at this time, the bed availability for 10,000 population was 3.3.

³⁶³ Ibid., 18.

³⁶⁴ Ibid.

requirements. These issues notwithstanding, according to table 4.3, Sri Lanka was successful in increasing hospital facilities and health centres and had the highest number of beds per 10,000 population in the region.

Table 4.3: Hospital facilities in countries of the SEA Region between 1960 and 1970

Country	Hospital beds per 10,000 population		Population per hospital bed		health centres**	
	1960	1970	1960	1970	1960	1970
Bangladesh*	0.91	1.4	-	6,932	152	256
Bhutan	-	-	-	-	-	-
Burma	8.3	8.5	1,200	1,173	769	1,182
DPR Korea	35.0	104.0	283	134	-	-
India	4.5	6.3	2,229	1,590	2,498	28,542
Indonesia	7.4	5.9	1,360	1,692	-	12,236
Maldives	1.0b	-	10,000	-	-	14
Mongolia	79.8	94.3	125	106	581	910
Nepal	1.2	1.5	8,112	6,752	96	150
Sri Lanka	31.7	30.3	316	331	1,061	1,321
Thailand	8.1	11.2	1,235	895	1,573	3,740

Source: IRIS: Health status of South-East Asia Region between 1950 and 1970. *Then known as East Pakistan

**Includes rural health, maternal and child health (MCH), school health and urban health centres.

This subsection's findings on Cumpston's report are threefold. First, the report was not acknowledged by health department officials as it criticised the work of the department. Second, the health minister, secretary and the DMSS disagreed about Cumpston's recommendations. Third, and importantly, the GMOA protested the appointment of a medical officer as the Director of Health Services in the country. While the health minister attempted to respond to the severe shortage of specialists by deploying Austrian doctors, this strategy was short-lived due to growing resistance from the medical fraternity. Health ministers showed no interest in reforming the Ceylon Medical Council's structure for 10 years. Finally, the government attempted to provide citizens with health security without allocating adequate funds, staff and infrastructure to the health sector. It is not possible to chart the development of AMR without studying public health programmes that have directly impacted AMR. Accordingly, the following subsection will explore the dynamics of relationships between the foreign experts and various levels of national health governance in the development of services in the three exemplary areas of tuberculosis, sanitation and quarantine, charting the changes from the country's independence.

4.3 Public health programmes and development of AMR

The first example to be examined is tuberculosis, which is the top infectious disease responsible for around a quarter of all deaths caused by AMR bacteria, with nearly half a million multidrug-resistant tuberculosis cases currently estimated annually (Knight et al., 2020). TB morbidity in hospitals (table 4.3) had been rising during the 1940s, and the colonial government of Sri Lanka had identified TB as a major health threat and placed greater emphasis on its treatment and control from the beginning of the twentieth century.³⁶⁵ As tuberculosis had become the most serious medical and socio-economic problem along with

³⁶⁵ For tuberculosis control activities in Sri Lanka before 1948, see Urugoda (1987) and Jones (2016, p. 517).

the control of malaria in Sri Lanka, Dr S.F. Chellappah (DMSS), at the first WHA, urged international assistance for TB control on the country: “Let me not give the impression that Ceylon does not need assistance in her own health problems. Some of these problems have been solved, but there are problems, especially tuberculosis, that call for assistance.”³⁶⁶

Table 4.4: Hospital TB morbidity in Sri Lanka, 1946–1954

Year	Population	Respiratory TB		All forms of TB	
		Cases	Rate	Cases	Rate
1946	6,719,000	7,775	115.7	8,357	124.4
1947	6,903,000	7,814	113.2	8,682	125.8
1948	7,109,000	10,014	140.9	10,928	153.7
1949	7,321,000	10,646	145.4	11,960	163.4
1950	7,544,000	11,513	152.6	12,900	171.0
1951	7,742,000	13,797	178.2	15,598	201.5
1952	7,940,000	13,025	164.0	14,812	186.5
1953	8,155,000	12,378	151.8	13,562	166.3
1954	8,385,000	10,416	124.2	11,427	136.3

Source: *Health progress in Ceylon: A survey*, by David Montague de Silva (1956). The cases referred were only those hospitalised in government institutions, and the rate was calculated per 100,000 population.

As requested by the GoSL, in December 1948 the WHO provided a TB expert and bacteriologist to assist the government in setting up a comprehensive anti-TB programme, including BCG production and vaccination programmes.³⁶⁷ The WHO consultant, who conducted a survey, found the country suitable for the establishment of a UNICEF/WHO teaching and training centre with which BCG work could be integrated and where it was proposed that postgraduate training could be offered to medical students and other personnel from Burma and Thailand.³⁶⁸ In 1949, recognising Sri Lanka’s “exceptionally better” TB control in the region, the WHO’s DG, Dr Brock Chisholm, noted that “the nucleus of an effective tuberculosis service [had] been established, but it required considerable strengthening and expansion”.³⁶⁹ WHO assistance was then extended to the government-initiated rural tuberculosis control project at Kotte.³⁷⁰

During the early 1950s, while Dr J.H.L. Cumpston dedicated a whole chapter of his report to the organisation of measures for TB control, Dr A.R. Mehta, who took part in the IBRD mission, also reviewed the anti-TB programme (ATP).³⁷¹ The turning point came when, in 1951, the Prime Minister of Sri Lanka requested a British thoracic surgeon, Donald Barlow, by to visit under the Technical Cooperation Scheme

³⁶⁶ IRIS: WHO No. 13, First WHA, Verbatim Records, 1948, 51.

³⁶⁷ IRIS: WHO No. 24, Work of WHO, 1949, Annual Report of the DG, 1950, 5. In 1882, Robert Koch, a German physician and microbiologist, cultured the tubercle bacillus and discovered the vaccine for TB, Bacille Calmette-Guérin (BCG). Despite the need for TB control to cover a multitude of aspects, strategies soon became concentrated on BCG vaccination, which was lucrative for UNICEF, which itself allocated \$4 million in 1948 to the International Tuberculosis Campaign (ITC), a Scandinavian voluntary organisation, for mass BCG campaigns in Europe and certain countries outside Europe.

³⁶⁸ Ibid., 33.

³⁶⁹ IRIS: WHO No. 30, Work of WHO 1950, Annual Report of the Director-General, 1951, 96.

³⁷⁰ Ibid.

³⁷¹ SLNA: Cumpston Report, 1952; WBGA: 1554091, Letters from the MoH to Mehta, 17 October 1951, 1554091.

of the Colombo Plan.³⁷² The primary intention of Barlow's visit was to make recommendations for the establishment of a thoracic surgical unit at Welisara Chest Hospital, and later the scope of his assessment was widened.³⁷³ Barlow's estimate of the incidence of TB at around 200,000 cases a year drew the immediate attention of the PM and the health minister to stemming its spread and led to Barlow's report being published as a White Paper.³⁷⁴ However, there was growing resistance to Barlow's assessment at a ministerial level, with the MoH, which estimated only 50,000 cases annually, and senior health TB officials arguing that "Barlow's figure [was] exaggerated; if accepted, it meant that there [was] one case of tuberculosis to every 40 persons in the Island".³⁷⁵ Conversely, highlighting the widespread nature of the disease in the island, Dr Johannes Holm, chair of WHO's Expert Committee on TB, also claimed that the incidence was higher than in the Southern part of India.³⁷⁶ These different calculations of annual TB cases were presented against the backdrop of some controversy between the British thoracic surgery team and ministry officials regarding the management of TB patients.

According to N.E. Costar, Acting BHC to Sri Lanka, Colombo, the Prime Minister, who had taken exception to the tone of Barlow's remarks, wrote to the health minister for urgent comments regarding two other matters. The first was an allegation, as Costar stated that

Mr R. Abbey Smith, a member of the British thoracic surgery team, had removed a patient from the Joseph Fraser Home, a private nursing hospital, into the General Hospital, Colombo for operative treatment, and, here is the rub, imparted a (European) nurse [Miss Walters] from Frazer home to the General Hospital to look after the patient. This came to the attention of the [MoH], but that while they took a very poor view of the business, they proposed not to do anything about it. It had, however, evidently got to the Prime Minister's ear. Finally, the PM tackled the MoH on the question of the report [of the patient care at [the] government hospital that Miss Walters [a private hospital nurse] had submitted to Barlow. ³⁷⁷

Somasuntharam, the Permanent Secretary of the MoH, was also upset by the tone of the letter and Barlow's action in sending it to the Commonwealth Relation Office (CRO). N.E. Costar, BHC, Colombo, told the CRO what he had said to the ministry officials who had secretly sought his opinion on how to deal with the PM's letter:

Barlow who was an out and out enthusiast and who had his heart and soul in thoracic surgery, and was doing his best to help Ceylon, was the type of man who might not be so guarded in his remarks as e.g., a Civil Servant. We thought that this outburst should not be taken too much to heart. Miss Walters's outpouring, we suggested that this could be attributed to aggressive feminism which would naturally be wounded at what it saw in this man run country".³⁷⁸

As both Barlow and Abbey Smith had made foes rather than friends, Costar suggested the CRO "send no expert rather than one who is not a good ambassador".³⁷⁹ Highlighting the fact that this situation could

³⁷² TNA: White Paper, 1952, 1. DO 35/5558, Recommendations arising out of a report by Donald Barlow FRCS on the thoracic services, 1952.

³⁷³ Ibid.

³⁷⁴ Ibid., "Ceylon Can be the Healthiest Nation in Asia", *Times of Ceylon*, July 10, 1953.

³⁷⁵ Ibid., "Dr Barlow's TB Figures 'Exaggerated'", CDN, July 1, 1953.

³⁷⁶ Ibid., Notes on a conversation with Dr Holm by Melville Mackenzie, July 1953.

³⁷⁷ Ibid., Confidential letter from N.E. Costar, BHC, Colombo to A.C.R. Symon, CRO, London, July 25, 1953.

³⁷⁸ Ibid.

³⁷⁹ Ibid.

have been avoided by the prompt action of MoH officials, it is important to know the consequences of Barlow's report on TB.

As a first consequence, in 1952, the Australian government, under the Colombo Plan, gifted wheat flour valued at Rs. 3 million to the GoSL to establish the Colombo Chest Clinic and eight provincial chest clinics.³⁸⁰ Moreover, the Governor-General, at the opening of the second parliament of Ceylon in 1953, also endorsed financial assistance to the patients, their dependants and the TB Nurses Training School (NTS), as well as the utilisation of Rs. 400,000 of the Colombo Plan funds.³⁸¹ However, Sir Cecil Wakeley considered that granting financial assistance to TB patients was "a colossal waste of money".³⁸² The BHC's office, Colombo, likewise commented that the government's NTS project proposal "was both premature and inaccurate".³⁸³ Dr Tuli, the (Indian) WHO representative in Sri Lanka, was also "not very impressed with the rather insignificant equipment list they [GoSL] had produced" for this project.³⁸⁴ The PM also intended to expand thoracic surgery services at the General Hospital, Colombo (GHC) as per Barlow's idea. Dr Johannes Holm, a member of the WHO expert committee of TB and director of the International Tuberculosis Campaign, criticised this idea in July 1953:

The whole position of tuberculosis work in Ceylon was complicated by the fact that the official advisor to the government was a clinician who had a large private practice and was primarily concerned with the improvements in the clinical approaches to the disease. He had little knowledge or interest in preventive work or hospital accommodation. In India, where there had been a big move for thoracic surgery, it had been now realised that the money could be better spent on preventive work than surgery. A Danish expert felt strongly that the visit of teams for thoracic surgery to Ceylon was unsatisfactory because the conditions under which operations were done...was the same as in England.³⁸⁵

When the MoH began working to implement the recommendations of Barlow's report, which had given greater priority to treatment than prevention, H.E. Davis, a CRO officer, expressed concern:

We think that the public health approach has been neglected. This is, of course, primarily a matter for the Ceylon authorities, whose responsibility it [was] (and not ours) to foster the anti-tuberculosis campaign. But if we [were] to go on spending large sums out of Technical Co-operation Scheme funds, we must be satisfied that the work being done fits into a properly correlated programme of development, that we do not fritter away our resources on work which cannot effectively be carried on by the Ceylonese when, in the course of time, our assistance is withdrawn.³⁸⁶

However, the superintendent of Sri Lanka's anti-TB campaign, Dr G.E. Ranawake, attempted to attribute the poor progress of the TB work to Barlow and another WHO expert:

Progress made was slow enough to blunt all enthusiasm and damp initiative and organisation. The delay in the execution of the 2-year plan [was] attributed to WHO experts, the competence of some of whom is doubted. A figure of incidence [was] exaggerated by nearly 150,000 – thus the increase of

³⁸⁰ Ibid., Extracts from Current Notes on International Affairs, Department of External Affairs, Canberra, July 1952.

³⁸¹ Ibid., Extract from Ceylon Parliament, July 7, 1953.

³⁸² Ibid., Hospital Administration "worst in the world", *Times of Ceylon*, December 30, 1953.

³⁸³ Ibid., Letter from BHC to CRO, June 18, 1953.

³⁸⁴ Ibid.

³⁸⁵ Ibid., Notes on a conversation with Dr Holm by Melville Mackenzie, July 1953.

³⁸⁶ Ibid., Confidential letter from H.E. Davis, October 6, 1953.

761 beds since Mr Barlow arrived here [was] proportionately a high comparative figure in his [Barlow's] erroneous basis of the calculation of beds needed.³⁸⁷

It is not hard to see how these very different assessments both of the situation and of the means to improve it led to controversy, making it hard to develop a unified and consistent approach. This in turn had a negative impact on TB control.

In terms of antibiotics use in TB management, in a conference of MoH officials and ITC experts in 1948, Dr Ranawake brought up the question of the use of streptomycin.³⁸⁸ He pointed out that a large sum of money was being spent unnecessarily.³⁸⁹ Dr Lind of ITC stated that in Denmark, all streptomycin was controlled by the state. Dr Ranawake said that in Ceylon, too, there was a departmental committee that controlled its use. Dr Chellappah, DMSS, however, requested that the DG of the WHO provide information on the appropriate use of streptomycin.³⁹⁰ Barlow's report, however, paid minimum attention to antibiotic treatment, instead promoting thoracic surgery facilities for TB management.³⁹¹ As presented in chapter 2.3, India experienced a crisis due to the short supply of penicillin, and Sri Lankan hospitals experienced a similar situation due to the unavailability of streptomycin. On 18 May 1950, *Lankadeepa*, a national newspaper, claimed that the unavailability of streptomycin in Welisara TB hospital, the main TB hospital in the country, had contributed to the growing number of TB cases in the country.³⁹² Lack of streptomycin in Ragama hospital also led to an increased length of stay of TB patients in the hospital.³⁹³ The officers of the drug store in Welisara Hospital were blamed for the pilferage of half of the hospital's stock of streptomycin tablets (the hospital was given only 500 tablets).³⁹⁴ Even DMSS had to order an investigation of the severe shortage of streptomycin and penicillin in Colombo General Hospital, which meant that patients needed to purchase those medicines from the private sector.³⁹⁵ During a visit of premier D. S. Senanayake and DMSS, G. W. Wickremasinghe, to Ehaliyagoa Hospital in Ratnapura District, TB patients complained that the lack of drugs had led to overcrowding in the hospital, which was managing 255 patients in 176 beds.³⁹⁶ When the PM requested that health officials sort the issue soon, Dr Wickremasinghe said that there was no shortage of drugs, but that this issue might have been created due to a supply problem.

In 1953, however, Marjorie Hudson, a WHO public health nurse, highlighted the availability of streptomycin in government-run Domiciliary Treatment Service (DTS) in Galle.

³⁸⁷ TNA: DO 35/5766, Extracts from the CDN, March 27, 1954.

³⁸⁸ Streptomycin is an anti-TB drug.

³⁸⁹ WHOAG: Conference of departmental staff with Dr Gellnen and Dr Lind, 31 August 1948, WHO1-458-91, TB BCG immunization campaign, Ceylon 1948.

³⁹⁰ Ibid.

³⁹¹ TNA: DO 35/5558, White Paper, 1952, 1

³⁹² SLNA: "No important medicines Welisara hospital", *Lankadeepa*, 18 May 1950.

³⁹³ Ibid., "Overcrowding due to lack of drugs", *Lankadeepa*, 02 June 1950.1

³⁹⁴ Ibid., "Government medical stores", *Lankadeepa*, 1 September 1950.6

³⁹⁵ Ibid., "Director Order an investigation on shortage of drugs", *Lankadeepa*, 1 August 1950.

³⁹⁶ Ibid., "Prime minister listens to companies of TB patients", *Lankadeepa*, 11 January 1952.

As prescribed by the clinic physician streptomycin (1 gram twice weekly) and PAS tablets according to body weight [were] given. A two-week supply counted into a cigarette tin which was left in each home. If penicillin injections [were] necessary, the patient was admitted to the hospital.

The success of the Domiciliary Treatment Services depended on 1. The availability of streptomycin. The government of Ceylon [provided] free of charge streptomycin and other drugs. 2. Good coordination of preventive and curative services.³⁹⁷

Barlow's White Paper did not pay attention to the antibiotics treatment but emphasised expanding the number of hospital beds for TB patients to isolate and rest. This subsection accepts Jones's statement of Barlow whose "criticisms about the conditions in inpatient TB facilities and the pointlessness of 'streptomycin being poured down the throats of those who are not resting'" (Jones, (2020, p. 64). Dr R.T. Neubauer, who served as a WHO expert on Sri Lanka's TB programme from 1954 to 1957, stated that "Ceylon [had], no doubt, showed a particularly great understanding for the importance of proper treatment by giving anti-tuberculosis drugs free for all patients". Neubauer arrived in Sri Lanka at the same time as Dr Ranawake's retirement from his post as superintendent of the TB campaign, which the British experts saw as a major blow to TB control activities. Earlier scholars were unable to study Neubauer's work in Sri Lanka, as the primary materials were held in WHO's SEA regional office, which was not accessible to them.³⁹⁸ This study is therefore the first to study the work of Neubauer.

When Dr Ranawake announced his retirement, his successor "[had] not been decided upon", though Dr J.R. Wilson was next in line.³⁹⁹ Sir Bennett Hance commented that "politics and personalities [were] playing their part, and jockeying for the position [was] in progress".⁴⁰⁰ The MoH officers had told the BHC that "they had no suitable Ceylonese doctor for the appointment, and the BHC hoped that "the imported WHO man would train a successor while he was here".⁴⁰¹ Hance was disappointed that Sri Lanka had asked the WHO for "an advisor to [the] tuberculosis campaign" without notifying the BHC or the CP.⁴⁰² The CRO team subsequently was frustrated further when the WHO appointed Dr R.T. Neubauer, director of a TB sanatorium in Yugoslavia, despite his pro-communist background.⁴⁰³ Barlow, Hance and the CRO team unsuccessfully attempted to establish communication with Neubauer to prevent any "crossing [of] wires" about "what Mr Barlow and Professor Crofton [would] be doing when they visit[ed] Ceylon". H.E. Davies asked Costar "to try to persuade Dr Neubauer to postpone making any recommendations to the Ceylon authorities until he [had] had a chance to talk to Mr Barlow and Professor Crofton".⁴⁰⁴ Finally, Neubauer, while heading to Colombo, was held up in Delhi by Ben Thomas, BHC to India, who informed CRO that "he [Neubauer] was a most charming person as all the Yugoslavs [were]

³⁹⁷ WHOAG: Domiciliary Treatment Service in Ceylon by a Public Health Nurse, 1953. Ceylon 25, TB control Galle, 1953: PAS (para-amino salicylic acid) is an anti-TB drug.

³⁹⁸ My affiliation to the Sri Lankan government assisted me in getting access to these materials.

³⁹⁹ Ibid., a report titled 'Colombo Plan' by Hance.

⁴⁰⁰ Ibid.

⁴⁰¹ Ibid., Secret letter from BHC to CRO, April 23, 1953.

⁴⁰² Ibid., A report titled 'Colombo Plan' by Hance.

⁴⁰³ Ibid., Handwritten note "pro-communist" on newspaper extract of Neubauer's interview.

⁴⁰⁴ Ibid., Secret letter from N.S. Davies, CRO, to N.H. Costar, BHC, Colombo, May 14, 1954.

that I [had] ever met".⁴⁰⁵ Thomas stated that Neubauer was not intending to come to any conclusions until he had studied the problem at length, and he was looking forward to meeting Barlow and the team in Sri Lanka.⁴⁰⁶ Somasuntharam also informed Costar that "he [had] told Neubauer to spend his first month absorbing the local atmosphere... [and] should not attempt to formulate any views until he had done so."⁴⁰⁷

Arriving in Sri Lanka in May 1954, Neubauer declined the GoSL's request that he become the head of Chest Services, and this decision was supported by the WHO area representative.⁴⁰⁸ This led to the appointment of Dr J.R. Wilson as acting Superintendent of Chest Services. Neubauer and Wilson viewed a forthcoming visit of Mr Barlow and Professor Crofton, also in 1954, as follows:

It was still not quite clear why [the] government found it necessary to invite both experts when the WHO advisor was due to arrive. But the purpose of their visit being the same as the purpose of the Advisor's appointment, mainly to advise the government as to the best way how to organise tuberculosis control.⁴⁰⁹

Barlow's second visit in July 1954 (with Professor Crofton, a Scottish TB expert), was uneventful compared to his previous one. Handling the press cautiously, Barlow stated that "if it proves successful, Ceylon's anti-tuberculosis campaign will be used as a working model for other countries". This was in response to the DHS's statement that "tuberculosis [had] taken a heavy toll of life".⁴¹⁰

As Barlow's White Paper mentioned, there was "no sufficiently definite long-term plan" to combat tuberculosis, and therefore the government embarked on a "six-year programme of investment" in 1954.⁴¹¹ After assessing the system for three years, in 1957 Neubauer and Wilson embarked on developing a "ten-year plan for control of TB in Ceylon" that could be accommodated in the existing plan.⁴¹² Highlighting Sri Lanka as an ideal place to carry out a model TB programme, their report also emphasised "the formation of the Government's long term policy for the control of tuberculosis".⁴¹³ After two years, Neubauer and Wilson noted:

It would have been a gross mistake from many points of view to accept this proposal [for Neubauer to become the head of Chest Services]. The advisor, lacking a thorough knowledge of the administrative rules and regulations governing the government services of this country, would have found himself involved in such a turmoil of questions and problems, often very controversial, regarding personnel, patients, social assistance and, course, technical aspects and so on, that he would have been entirely diverted from his primary task and might have proved a failure.

⁴⁰⁵ Ibid., copy of extracts from letter from G.B. Thomas, May 12, 1954.

⁴⁰⁶ Ibid.

⁴⁰⁷ TNA: DO 35/5766, Costar to Davies, CRO, June 7, 1954.

⁴⁰⁸ Records of South-East Asia Regional Office, WHO, Delhi (RSEA): SEA/TB/2, Final report of reorganisation of Tuberculosis Control in Ceylon (Restricted), A WHO Project by Neubauer and Wilson, February 16, 1956, 3.

⁴⁰⁹ Ibid., quoted from the second quarterly report of 1954.

⁴¹⁰ TNA: DO 35/5766, "Anti-TB drive here example to world if work is successful" *Times of Ceylon* 9 June 1954.

⁴¹¹ RSEA: SEA/TB/Add.1, Ten-Year plan for control of TB in Ceylon, March 4, 1957, 1.

⁴¹² Ibid.

⁴¹³ Ibid.

The development of the fight against tuberculosis seemed necessary mainly to show that this was far from being a 'virgin soil' for advice; on the contrary, there was the great danger of conflicting views, of contradictory advice, even of creating confusion.⁴¹⁴

The story of Neubauer's appointment is instructive not only concerning TB control but also with regard to healthcare management in Sri Lanka more generally. It is obvious that the higher officials of the MoH trusted the work of foreign experts over that of local officials, even though local officials already possessed significant expertise – Neubauer himself noted that if he had accepted the GoSL's invitation to lead the TB control programme, this actually could have hampered TB control activities. By inviting two experts at the same time, the government hoped to be able to cherry-pick the best aspects of the different two options. But this manner of proceeding involved significant downsides – for one, the high cost of hiring those experts (although the CP and WHO sponsored some activities, the GoSL also incurred a cost for the expert missions), and for another and the danger of conflicting views, of contradictory advice, even of creating confusion about how to organise tuberculosis control.

When requesting further support from the WHO, Mrs Vimala Wijewardene, health minister of Bandaranaike's government, highlighted at the 1956 WHA: "Ceylon, in its social approach to tuberculosis, is spending four million rupees yearly as assistance to about 8000 known patients, but our experience has been that this money is not wisely spent unless scientific knowledge is brought to bear on the problem of rehabilitating the patients."⁴¹⁵ The WHO subsequently supplied a specialist for three months from November 1957 to help in the further planning and development of a countrywide TB programme using modern methods for controlling the disease.⁴¹⁶ However, a WHO specialist highlighted the issues of reciprocal support from the regional governments:

"In practically no instance [had] the original standard been maintained or improved, mainly because of lack of staff and materials (to be provided by governments). Breakdown and delay in the repair of equipment [were] a common feature. I wish to put on record my disappointment with the majority of the laboratories visited to date."⁴¹⁷

A WHO senior officer, Dr James Deeny, led a national TB survey in 1957, based on a random sample of 10,645 persons in 20 villages, and noted a national estimate of 63,000 unhealed cases of TB and 35,000 healed cases, with a 1 per cent and 0.5 per cent prevalence rate respectively.⁴¹⁸ These figures lay in between the estimates of Barlow and the Ministry a few years before. Even though TB notification had started in 1910, it had been unsuccessful due to multiple issues, such as the lack of staff that was highlighted in Barlow's White Paper. In 1957, a WHO statistician, Mr R.K. Son, laid the foundation for making the

⁴¹⁴ RSEA: SEA/TB/2, Final Report of Tuberculosis Control in Ceylon (Restricted), A WHO Project by Neubauer and Wilson, February 16, 1956, 3, 10.

⁴¹⁵ IRIS: WHO 71, Ninth WHA, Verbatim Records, 1956, 104.

⁴¹⁶ IRIS: Sear/RC11/2, Tenth Report of the RD to the RC of the SEA, 1957-1958, 72.

⁴¹⁷ IRIS: The Tenth Annual Report of RD of SEARO, 1958, p. i.

⁴¹⁸ WHOAG: Ceylon 25, Report on the national Tuberculosis survey of Ceylon, WHO Project 25, SEARO, SEA/TB/Part 1, July 19, 1957, (Restricted).

documentation of all forms of TB compulsory and establishing the Central Tuberculosis Registry (CTR), in which 99,490 cases were registered between 1958 and 1970.⁴¹⁹

However, external experts continued to point out issues relating to service delivery. Dr E. Mossige, a WHO bacteriologist, highlighted that “the TB culture work of the Welisara Hospital Laboratory was not up to date...due to shortage of staff”.⁴²⁰ In October 1959, a WHO BCG assessment team in Sri Lanka revealed that “unsatisfactory results of BCG-induced post-vaccination allergy in the population [were] due neither to poor vaccine nor poor vaccination techniques, but to the treatment of the vaccine during storage and distribution”.⁴²¹ In 1961, Drs R. Padley, a WHO statistician, and J. Falisevac, a WHO epidemiologist, flagged up that there was considerable confusion regarding the confirmation of diagnosis, and hospitals refrained, in many cases, from notifying cases.⁴²² They further noted that even when the information was available, it was seldom used for any practical purpose, and the data was never analysed on a nationwide scale. Accordingly, they recommended a complete revision of the system. After a year, the RD of SEA noticed that the “new system of notification [had] functioned satisfactorily” in Sri Lanka with the help of the WHO-assisted Epidemiological Unit in Colombo.⁴²³

In 1964 Sri Lanka proposed to the WHO a new pilot project studying the useful employment of a mobile X-ray unit in a rural area to develop a more satisfactory treatment system. The WHO and Sri Lanka also initiated a project involving the prophylactic treatment of tuberculin-positive schoolchildren with isoniazid (INH).⁴²⁴ In 1964, to intensify TB control measures, the government planned “to embark upon a comprehensive provincial tuberculosis control programme”.⁴²⁵ This programme started in 1966 in NWP as a pilot project supported by the WHO and UNICEF but technically guided and supervised by the provincial TB officers.⁴²⁶ This pilot project was managed under the joint direction of Dr J.V. Seneviratne, former director of the Welisara Chest Clinic, and the WHO’s Dr F.J. Loven (later replaced by Dr Eung Soo Han). The main aim of this pilot project was to screen and treat TB patients at a “centre” close to the patient.⁴²⁷ For this, all hospitals, bases, districts, peripherals and dispensaries to which a permanent MO was attached and designated as “centres” for sample collection and treatment. Patients who tested positive were to be immediately offered treatment at the centre closest to their homes. These centres were supplied with the appropriate drugs, funded by the government and free to the patient. Treatment consisted of twice-weekly injections of 1g of streptomycin plus 700g of INH (isoniazid), given at the same time as the

⁴¹⁹ RSEA: SEA/VHS/14, Assessment Report on the Statistical Aspect of WHO TB Control Project, (Restricted), 1957; RSEA: SEA-TB-112, Assignment Report on TB control in Ceylon, (Restricted), 1971.

⁴²⁰ RSEA: SEA/TB/9, Report on assistance to Tuberculosis Laboratory, Intercountry Tuberculosis Programme, (Restricted), July 22, 1957, 1.

⁴²¹ IRIS: SEA/RC/13/2, Twelfth Annual Report of the RD of SEA August 1959 to July 1960, 7.

⁴²² RSEA: SEA/VHE/41, Notification of the infectious diseases in Ceylon, Restricted, April 12, 1961.

⁴²³ IRIS: SEA/RC15/2, Twelfth Annual Report of the RD of SEA, August 1961-July 1962, 20.

⁴²⁴ IRIS: SEA/RC18/2, Seventeenth annual report of the Regional Director to the RC for SEA, August 1964-July 1965.

⁴²⁵ IRIS: SEA/RC18/2, Seventeenth Annual Report of the RD to the RC of SEA, August 1964-July 1965, 10.

⁴²⁶ IRIS: SEA/RC20/2, Nineteenth Annual Report of the RD to the RC of SEA, August 1966-July 1967, 8.

⁴²⁷ Ibid.

injection, and 5–6g of pyridoxine, for one year. Sputum samples were tested after six months and at the end of one year, and those patients who still tested positive were referred to the specialist clinics, as they were assumed to be drug-resistant and considered for second-line drugs. According to the RD of SEA, following a “comprehensive evaluation and successful implementation of anti-tuberculosis activities in the North-Western Province, [these were] extended to the Central and North Central Provinces.”⁴²⁸

However, the initiation of a provincial TB control programme in the North Central Province was delayed owing to a belated posting of managerial staff.⁴²⁹ The 1970 RD’s (SEA) report noted that:

The case-finding in the NWP has improved in terms of higher case yield of sputum direct smear-positive cases, which resulted from better sputum collection and better supervision of the provincial managerial teams. A cohort analysis of cases on treatment has shown a very high rate of regularity achieved by intermittent, twice-weekly treatment with streptomycin plus isoniazid.⁴³⁰

A Regional Tuberculosis Training and Evaluation team was assigned to Sri Lanka to evaluate the provincial TB programmes.⁴³¹ In 1971, following a survey in 22 clusters, Dr S. Grzybowski, a WHO consultant, found that 12 out of 28 bacteriologically proven cases had normal X-rays. Further, national data from 1969 indicated that only 45.1 per cent of cases (2,490 out of 5,519) were positive bacteriologically, and the national incidence rate for 10,000 population was 4.5 per cent, whereas it was 3.2 per cent in NWP.⁴³²

In 1974, “the integrated community-oriented tuberculosis programme” had been introduced countrywide to interrupt transmission through early identification at the hospital level, and to eliminate the disease through effective chemotherapy and immunisation of susceptible groups.⁴³³ Identified patients were registered at the CTR and admitted for intensive chemotherapy with streptomycin, INH, and PSA for three months followed by two weekly treatments of streptomycin and INH for 18 months. Resistant cases were believed to constitute less than 15 per cent of the total that were treated with the second line of drugs. The plan was to screen one in every two hundred cases at the OPD according to the national prevalence of chest symptomatic cases. Evaluating the programme in 1977, Dr L.R. Giri, a WHO consultant, highlighted:

Most of the medical institutes [had] not been able to screen chest symptomatics at this rate. Except for specialised institutions...screening of chest asymptomatics from the other rural units [was] very low. The central dispensary (CD) of Eriyagama [had] handled over 33,000 outdoor cases (first visits) in 1976 and prepared only 19 slides without finding a single smear-positive case.⁴³⁴

Giri speculated that the reasons for the poor participation of small institutions were the inefficiency of the institution, a lack of guidelines, and poor technical ability on the part of microscopists. Then he suggested giving administrative authority to the managerial team, MoH and District TB Control Officers to ensure the proper implementation of supervision and corrective measures.⁴³⁵

⁴²⁸ IRIS: SEA/RC22/2, Twenty-First Annual Report of the RD to the RC of SEA, August 1968-July 1969, 8.

⁴²⁹ *Ibid.*

⁴³⁰ IRIS: SEA/RC23/2, Twenty-Second Annual Report of the RD to the RC of SEA, August 1969-July 1970, 115.

⁴³¹ *Ibid.*

⁴³² RSEA: SEA/TB/112, Assessment Report on Tuberculosis control, Ceylon, (Restricted), June 25, 1971, Annex 3.

⁴³³ RSEA: SEA-TB-146, Report of the Tuberculosis Control Programme in Sri Lanka (Restricted), October 12, 1977.

⁴³⁴ *Ibid.*, 4, 5.

⁴³⁵ *Ibid.*

This subsection confirms the findings of this study with four arguments put forward by Jones (2016) concerning the WHO's integrated tuberculosis programme. For one, the results of the pilot project in 1967 "did not indicate a high success rate for the favoured WHO method. The peripheral agencies tested more patients but had fewer positives due to [lack of] known specialist services, [and] lack of resources" (Jones, 2016, p. 529). For another, the fact that only half of TB cases were negative bacteriologically substantiates the seminar finding declaring that "the treatment of only the TB positive was condemned and that such a procedure was considered both morally and scientifically unsound" (Jones, 2016, p. 531).⁴³⁶ The findings above also confirm that the WHO-integrated programme failed mainly through a lack of resources (Jones, 2016, p. 531).⁴³⁷ As the historian Sunil Amrith (2004, p. 129) shows, former WHO TB specialist (and then DG) Dr Halfdan Mahler argued concerning the 'post-Madras' approach to international TB control:

The new approach towards tuberculosis control needed to be based on the fact that 'the technology for controlling tuberculosis' had been 'standardised and simplified to such an extent' that the problem lay merely 'in setting up an effective...sales organisation with *standardised consumer goods*'.⁴³⁸

This subsection, however, argues that not only the WHO's integrated programme but the total control of TB was adversely affected by poor TB culture procedures, problems with TB notification, poor BCG vaccine techniques and delays in deploying staff. This led to an increased number of TB cases, which consumed more antibiotics and ultimately created drug resistance. In addition, this subsection finds that there was an information gap, for instance when the Minister of Health claimed to be aware of about only 8000 cases, but the national estimate was 63,000 unhealed cases of TB and 35,000 healed cases in 1957. This gap still exists today.

The second example is food- and water-borne bacterial disease that also consumed a substantial amount of antibiotics, and accordingly, it is important to investigate how environmental conditions, such as safe drinking water and proper garbage and sewage disposal and latrine were managed in the Sri Lankan context. In 1950, Dr Kumaran Ratnam, Mayor of Colombo Municipal Council ordered government analysts to check the quality of drinking water of Colombo City immediately, following the rise of gastroenteritis in the city. He also asked the health minister to investigate this issue and increase facilities at the Rady Ridgeway hospital for children to accommodate children with gastroenteritis.⁴³⁹ As a result of many reported cases of gastroenteritis in the country, the WHO and the GoSL embarked on rural environmental sanitation projects in Kurunegala in NWP. These projects aimed to improve water supplies and excreta disposal and train personnel, and there were plans to expand this programme throughout the

⁴³⁶ This seminar on tuberculosis control was held in Sri Lanka and organised in collaboration with the International Union Against Tuberculosis in 1971.

⁴³⁷ Jones uses a quotation of Dr C.G. Uragoda, a former head of the TB control programme.

⁴³⁸ The Madras Project was an internationally sponsored project (WHO and British Medical Research Council) conducted in the southern part of India (now Chennai) from 1956 to the mid-1960s to investigate the medical and social implications of introducing anti-tuberculosis drugs in poor urban communities.

⁴³⁹ SLNA: "Mayor ordered to check the water quality of the capital", Lankadeepa, 2 July 1950.

country.⁴⁴⁰ In September 1955, Professor Abel Wolman of Johns Hopkins University, a US public health engineer, took part in a WHO mission to advise the GoSL on water policies. Following several joint meetings with ministry officials, he passed on his preliminary conclusions to the US Embassy in Colombo, which the embassy reported as follows in a despatch to Washington dated September 13, 1955: “The Government of Ceylon has no semblance of national water policy. Each ministry goes its own way.”⁴⁴¹ However, “potable water supplies to all cities, towns and large villages rank as a very high priority in Ceylon’s economic development planning. Even in Colombo, the drinking water is not safe and only about one-half of the dwellings have sewage connections”.⁴⁴² Wolman pointed out that about one half of hospital beds were occupied with cases resulting from water-borne diseases, and that with potable water supplies throughout the country, the government could cut back sharply its plans for hospital extension and the construction of new hospitals.⁴⁴³ The US Embassy endorsed this, holding that “[o]n the whole, Wolman made a very favourable impression and his report could be of great value if the Ceylonese Government is inclined to implement it”.⁴⁴⁴ According to the despatch, Wolman was “a staunch advocate of the American system in which municipal water systems and rural irrigation districts pay their own way by full charges for water use.” The US Embassy was “not disposed to agree with him that the revolutionary change in constitutional and government organization required to put municipalities on their own as far as water services [was] concerned, [would] be accomplished shortly”.⁴⁴⁵ In an exclusive interview with the *Morning Times* in Colombo, Wolman again stated that “the improvement of the water supply of the country should get top priority from [the] government because the supply [was] so inadequate and hopeless”.⁴⁴⁶ Because of these failures and shortfalls in sanitation, Sri Lanka had experienced several outbreaks of water-borne diseases. In addition to the gastroenteritis mentioned above, during this time, an infectious hepatitis epidemic resulting from the probable breakdown of the water supply to a women’s training school near Kandy with 350 students on the rolls had already caused two deaths.⁴⁴⁷ As requested by the GoSL, in July 1956, the USOM to Ceylon responded promptly, airlifting gamma globulin injections to “limit and ameliorate [the] epidemic”.⁴⁴⁸ The highest level of the government also identified the importance of environmental sanitation. For instance, Vimala Wijewardene, the health minister for the newly elected Bandaranaike government, also urged at the 1956 WHA: “Pure water, adequate shelter and clean food have to be provided for the growing population if we are to walk the earth with heads erect and raise the level of health of our people”.⁴⁴⁹ At the subsequent WHA, P.B.G. Kalugalle, secretary to the health minister and

⁴⁴⁰ IRIS: WHO No 75, Work of WHO 1956, 68; Annual report of RD of SEA, 1956, 23, 26.

⁴⁴¹ NARA: Letter US Embassy, Colombo, to the Department of State, Washington, September 15, 1955, RG469 P131A B3, Records of U.S. Foreign Assistance Agencies, 1942 - 1963, Near East Central Files: Ceylon, 1953-1954.

⁴⁴² Ibid.

⁴⁴³ Ibid.

⁴⁴⁴ Ibid.

⁴⁴⁵ Ibid. Wolman was the Chairman of the Water Resources Board of the United States of America.

⁴⁴⁶ Ibid., “Our water supply is hopeless”, *Morning Times*, Ceylon, September 24, 1955.

⁴⁴⁷ NARA: RG469 P131A B3, Cablegram from Grant, Colombo to International Corporation Administration (ICA), July 31, 1956.

⁴⁴⁸ Ibid.

⁴⁴⁹ IRIS: Ninth WHA, Seventh plenary meeting, provisional verbatim record, Friday, May 11, 1956, 12-13.

chief delegate for Sri Lanka, stated that “every sixth patient seeking outdoor treatment in our medical institutions, or the occupant of every eighth bed in our hospitals, [was] a victim of diseases of environmental insanitation”.⁴⁵⁰

During a 1958 assessment on public health legislation in Sri Lanka, the WHO consultants F. Grundy and E.H. Watson also highlighted that legislation was inadequate for the systematic provision of latrines and a clean water supply.⁴⁵¹ Moreover, although the WHO assisted Sri Lanka with an environmental sanitation project, according to Dr P. Rajasingham, senior MO in epidemiology and a Sri Lankan delegate at the 1959 WHA, “owing to the lack of adequate trained technical staff, the progress made by this project so far [had] not [been] up to expectations”.⁴⁵² In a 1959 RC meeting, when describing the rural environmental sanitation projects in Ceylon and India, the committee “felt concerned over the increasing morbidity rates of preventable diseases and...the illogicality of governments spending more than it costs to provide proper sanitation, on hospital beds for the treatment of diseases from environmental causes”.⁴⁵³ In 1960, Dr C. Mani, RD of SEA, noted that “Ceylon, a small country but one having a very good network of health services, still has twenty thousand cases of typhoid a year”.⁴⁵⁴ He argued “that the inexorable cycle of dirt and disease goes on” as governments and municipal authorities made inadequate “budget provision for clean water supplies, sewerage, drainage and garbage disposal[;] they put up a few more hospitals instead”.⁴⁵⁵ A general practitioner in Colombo, R.P. Wijeratne, also observed the situation and stated how those diseases could be managed with antibiotics.

In this country, where bowel infections are common, older children are also susceptible to gastro-enteritis. To treatment, I have adopted, [of] gastro-enteritis, is to give an insoluble sulphonamide in mild cases. In more severe cases one of the tetracyclines group of antibiotics is used or chloramphenicol in infants with severe cases [were] given.⁴⁵⁶

An epidemiological survey carried out in Colombo and some rural areas in 1962 by a WHO Diarrhoeal Diseases Advisory Team revealed that there was a significant percentage of shigella, E. coli and salmonella pathogens in water specimens.⁴⁵⁷ By studying hospital records, it was found that 11–20 per cent of patients were hospitalised yearly for various types of intestinal infections, and 24 per cent of the total number of deaths in children under five were due to intestinal infections. It was also shown that a large number of isolated pathogenic strains were resistant to the antibiotics that were routinely used. Regarding enteric fever, table 4.2 indicates that although infection rates decreased, the number of cases rose from 1953 to 1976.⁴⁵⁸ The 1962 December, the editorial of the *Ceylon Medical Journal* also highlighted the

⁴⁵⁰ IRIS: Tenth WHA, resolutions and decisions: verbatim records 7-24 May 1957, 114.

⁴⁵¹ World Health Organisation, Records and Archives Geneva (WHORA): Ceylon 46, assessment on public health legislation in Ceylon, WHO Project, (Restricted), SEA /PHA/9, August 13, 1958, p. 18.

⁴⁵² IRIS: Twelfth WHA, Geneva: resolutions and decisions: verbatim records, 12-19 May 1959, 107.

⁴⁵³ IRIS: EB25/7, Regional Committee for SEA, report on twelfth session, December 4, 1959, 17.

⁴⁵⁴ IRIS: SEA/RC/13/2, Twelfth Annual Report of the Regional Director SEA August 1959 July 1960, v.

⁴⁵⁵ *Ibid.*, vi.

⁴⁵⁶ SLML: R. Wijeratne, “Some problems of general practice in Ceylon”, *The Ceylon Medical Journal*, Vol. 4, No. 3 (May 1958) 187.

⁴⁵⁷ IRIS: SEA/RC16/2, Fifteenth annual report of the Regional Director to the RC for SEA, 1963, 20.

⁴⁵⁸ Enteric fever is a food-borne bacterial disease which is treated by antibiotics.

importance of cleanliness even in hospitals, expressing concern about rising hospital-acquired infections, including intestinal infections:

Surgeon Keerthi Singha of Kurunegala has spotlighted a very common problem of cross infections in hospitals in a very simple and versatile manner in his article in this issue of the journal.

The great moral to learn from all this is that cleanliness is next to godliness even for doctors and para medical staff of hospitals and that prevention is better than cure (in this case, it is an expensive one) for bacteria never did and do not respect persons nor do they, antibiotics.⁴⁵⁹

Table 4.5: Cases of Enteric Fever Treated in Government Hospitals 1953–1967

Year	Typhoid	Para Typhoid	Total	Rate/ 100,000
1953	4169	455	4624	56
1954	4549	421	4970	59
1955	4540	377	4917	57
1956	3942	412	4354	49
1957	3913	393	4306	47
1958	3996	381	4377	47
1959	3940	516	4456	46
1960	3997	566	4563	46
1961	4097	577	4674	46
61/62	3309	312	3782	36
62/63	3180	1358	4538	43
63/64	3952	760	4712	43
64/65	3451	541	3992	36
65/66	4092	492	4584	40
66/67	4274	974	5248	46

Source: SLML: P. Arumanayagam and N.M.M Mendis, “Typhoid fever in Ceylon”, CMJ, Vol 14, No 4, (1969), 32.

These findings confirm Jones’s claim (Jones, 2020) that poor sanitation and diarrheal diseases had impacted both the morbidity and mortality among children in Sri Lanka. This subsection has identified several issues related to poor environmental sanitation. For one, government legislation was not strong enough to provide safe drinking water and proper sewage facilities to the majority of the population, and this situation led to the emergence of local intestinal infection epidemics and increasing hospital admissions. For another, government policy focused on developing the hospital system to treat those infections rather than on improving sanitary conditions through municipal councils. This gave rise to a growing trend in antibiotic resistance among intestinal pathogenic bacteria.

Prevention strategies that seek to inhibit diseases requiring management with antimicrobials also impact the development of AMR. Having studied the conditions affecting internal disease, this subsection will now investigate how the Sri Lankan government attempted to prevent such diseases from entering the country. Sri Lanka has a long history of invoking quarantine measures. For instance, from February 9, 1897, the Quarantine and Prevention of Diseases Ordinance came into force to prevent the introduction and spread of plague and all contagious or infectious diseases (Jones, 2004b; Philip and Hirst, 1917; Uragoda, 1987). Though this subsection mainly focuses on plague disease that needs antibiotic treatment, it is important to study Sri Lanka’s general quarantine measures to understand measures against plague.⁴⁶⁰ Sri

⁴⁵⁹ SLML: Editorial, *The Ceylon Medical Journal*, Vol. 6, No. 3 (May 1962) 8

⁴⁶⁰ Plague is a disease that affects humans and other mammals and is caused by the bacterium *Yersinia pestis*. Antibiotics are necessary to manage plague and its severe complications.

Lanka, as a pioneering country in the region, made suggestions for the draft of the International Sanitary Regulations (ISR) at the RC meeting in 1950, and was very vigilant and ready to resort to quarantine measures.⁴⁶¹ The Secretary for the Ministry of External Affairs reported to the Committee on International Quarantine at the WHA that between July 1, 1953, and June 30, 1954, “only three cases of the quarantinable disease [smallpox] occurred in Ceylon which was due to international traffic”.⁴⁶² All had entered either via the Indo-Ceylon railway route via the Dhanushkodi steamer ferry or else via Colombo Harbour from India. “Control measures were promptly undertaken”, including isolation of the patient in a temporarily isolated sick-room, segregation of contacts, declaration of the area as a diseased locality under Ceylon law, and mass re-vaccination of the population in the locality.⁴⁶³ After those measures, “no fresh cases occurred”.⁴⁶⁴ However, Dr H.N.C.V. Kelaart, MO in Sri Lanka, flagged up that the quarantine measures were deficient: the procedures were such that “in practice first and second class passengers [entered] Ceylon without detention at Mandapam and though under surveillance [could] introduce an infectious disease into Ceylon – this [had] happened repeatedly”.⁴⁶⁵

Madras is a commercial city in Southern India that had repeatedly been affected by plague epidemics.⁴⁶⁶ The origins, according to the historian Ira Klein (1988, p. 738), went back to the British India era, when parts of Madras were “intensely crowded, lacked drains and piped water, and ‘the whole land’ had become a ‘mess of decomposed matter, consisting of everything filthy and abominable’...Its [Madras’s] ‘primitive granaries’ were ‘overrun with hordes of rats exceedingly susceptible to...plague’”. Therefore, Sri Lanka’s airport health authorities were on the lookout for a plague epidemic starting in South India. Shri T.V. Anantanarayanan, Under-Secretary of Health, the Government of India, was to complain to the WHO on September 7, 1959, that the “airport health authorities in Colombo have re-imposed restrictions against consignments of newspapers from Madras city, which is not infected with plague and is about two hundred miles away from the infected local area [Salam District]”.⁴⁶⁷ He further complained that restrictions were imposed on goods from Madras based on press reports. E.J. Ratnayake, on behalf of the director, Quarantine, Sri Lanka, reacted immediately, stating that this information

was gathered from the *Weekly Epidemiological Bulletin* of the WHO Epidemiological Intelligence Station [EIS], Singapore...and the *WHO Epidemiological Bulletin*...and not from press reports. Quarantine restrictions were imposed on goods arriving in Ceylon from Salam District and not from Madras city.

⁴⁶¹ IRIS: SEA/RC3/31 Rev.1, A Note by the Ceylon Delegation Epidemic Standard for Quarantine Diseases, September 25, 1950. Before the establishment of the WHO, international quarantine measures based on multiple sanitary regulations were used around the world. From 1946 to 1948, a series of expert groups convened jointly by the WHO and the Office International d'Hygiène Publique offered essential technical advice on the possibility of drawing up a single set of regulations to replace the sanitary conventions.

⁴⁶² IRIS: A8/P&B/3, Second report of the Committee on International Quarantine, March 7, 1955, 32.

⁴⁶³ Ibid.

⁴⁶⁴ Ibid.

⁴⁶⁵ H.N.C.V. Kelaart, ‘Cholera in Ceylon’, Transactions of the Society of Medical Officers of Health, (1946-1952), 13, (Colombo, 1953), p. 91. Mandapam Camp, in South India, was built in the early 1900s by the British Government to house migrant plantation workers coming to India from Sri Lanka.

⁴⁶⁶ Madras, now called Chennai.

⁴⁶⁷ WHORA: Letter from Shri T.V. Anathanarayanan, Under Secretary of GOI, to the DG, WHO, September 7, 1959.

However, restrictions for goods from Salam District were also withdrawn following the declaration of India of September 10, 1959, that Salam district [was] free of plague.⁴⁶⁸

Again on September 21, the director of the Epidemiological Intelligence Station, W.W. Yung, advised Colombo that “India [had] complained plague measures against air consignment of newspapers from Madras contravened Article 48 of International Sanitary Regulation [and] request[ed] ‘immediate withdrawal’”.⁴⁶⁹ Sri Lanka had “no reservation to this Article”, which exempted mail, newspapers, books and other printed matter from the sanitary measures.⁴⁷⁰ Colombo’s Director of Quarantine replied that “anti-plague measures against air consignment of newspapers from Madras [had been] adopted presuming that the newspapers were printed in the plague-infected district of Salam”. He regretted this error as “the provisions of Article 48 of the International Sanitary Regulations were overlooked by an oversight”.⁴⁷¹

Despite the complaints they caused, these measures helped Sri Lanka to safeguard the country from many infectious diseases; for instance, while India had 1,145 cases of plague and 176 reported deaths from it, Sri Lanka had zero morbidity and mortality due to plague for three years from 1961.⁴⁷² However, S.A. Meegama (1979, p. 148), the chairman of the Statistical Advisory Committee of the GoSL, stated that “no quarantine checks could stop the smuggler or the illegal entrant”, and some of the cholera outbreaks in Ceylon were caused by such people. Accepting the fact that those most likely to carry the organism would probably not be so considerate as to report to quarantine stations, and it would not be possible to identify carriers without symptoms, the Sri Lankan government’s quarantine measures proved successful at preventing diseases that need antibiotics from entering the country. Accordingly, these quarantine measures had a positive effect and inhibited the development of AMR as fewer antibiotics were required. As presented in chapter two, Sri Lanka’s foreign and local policies adversely impacted the national economy. It is important to study how this in turn impacted the country’s health system, including the provision of pharmaceuticals and antibiotics, which have both a direct and an indirect effect on AMR.

4.4 Economic constraints and healthcare, including pharmaceuticals

As presented in chapter 2.2, even though the international policies of S.W.R.D. Bandaranaike’s government did not favour the UK and US, the national government received most of its foreign aid support from the US- and UK-led alliances. In the 1959-60 financial year, the majority of the financial aid received for healthcare by Sri Lanka’s MoH (table 4.6) came from the Colombo Plan financial aid programme and the United States Agency for International Development (USAID). With regard to disease control programmes, in 1958 Sri Lanka entered into an agreement with the USOM to finance a project

⁴⁶⁸ Ibid., Letter from E.J. Ratnayake, Director, Quarantine, Sri Lanka, to Director, WHO Epidemiological Intelligence Station, September 21, 1959.

⁴⁶⁹ Ibid., Telegram from W.W. Yung, Director, WHO Epidemiological Intelligence Station, to Director of Health, September 21, 1959, and the letter from the Under Secretary of September 7, 1959.

⁴⁷⁰ Ibid., the letter from the Under Secretary letter of September 7, 1959.

⁴⁷¹ Ibid., Letter from E.J. Ratnayake, Director, Quarantine, Sri Lanka to Director, WHO Epidemiological Intelligence Station, October 2, 1959.

⁴⁷² IRIS: Annual reports of the Regional Director to the RC for SEA, from 1961 to 1963.

supplying DDT and other products, as the WHO had urged the launch of malaria eradication projects. The contributions of the USOM and the GoSL were Rs. 807,500 and Rs. 743,000 annually respectively for five years.⁴⁷³ When the Finance Minister, Stanley De Zoysa, was able to release only Rs. 153,215 for this project, the HM, Vimala Wijewardene, pointed out the fact that "when the spraying of insecticide was stopped in February 1955, during the middle of 1956, there was an outbreak of malaria" and highlighted "the need to launch an intensive campaign to eradicate the disease once and for all".⁴⁷⁴

Table 4.6: Foreign financial and expenditure in 1960 by the MoH

Source of Aid	Total Aid (Rs.)	Expenditure (Rs.)
International Co-operation and Administration of USA	1,190,500	1,129,512
U.S. Aid – Malaria Eradication Project (dated August 5, 1957)		
CP Financial Aid from Canada for the purchase of a cobalt therapy unit	241,522	207,819
CP Financial Aid from New Zealand for the purchase of a motor ambulance launch	185,080	185,080
CP Financial Aid from New Zealand for the purchase of mobile dispensary vans	39,578	-
CP Financial Aid from New Zealand for the Dental Nurses' Training School and Hostel	711,499	585,100
CP Financial Aid from Australia for chest clinics	6,540,950	4,367,285
CP Financial Aid from Australia for Institute of Hygiene	1,070,396	18,306
Total	9,979,525	6,493,102

Source: Administration Report of the DHS for 1960. Note: In 1960, 1 British pound was equal to 11 Sri Lankan rupees.

Following the 1961 expropriation, inquiring at the CRO in May 1962 about the list of pending applications for experts and equipment, T.L. Crosthwait, CRO officer, commented: "it was suggested that we [CRO] would have to consider reducing the scale of our technical assistance to Ceylon in view of the manner in which the Ceylonese [were] treating our nationals".⁴⁷⁵ After a few days, the request by the GHC for a Melrose heart-lung machine at £33,000 was rejected as being outside the scope of technical assistance.⁴⁷⁶ G.D. Anderson, BHC, Colombo, informed the CRO that "we are receiving a diminishing dividend on our aid to Ceylon" and recommended "re-investment elsewhere" of this aid. He expected to have "a larger return from the new recipient rather than in any improvement in Ceylon's behaviour".⁴⁷⁷ Additionally, the proposed technical support to the medical school (£26,000) and engineering faculty (£25,000) was at risk. T.L. Crosthwait warned Sir A. Rumbold of the Foreign Office, UK, that "withdrawal of support for either scheme would lose us considerable goodwill among Anglophile elements in the University".⁴⁷⁸ International and national voluntary organisations also attempted to support Sri Lanka's health system during the economic crisis under the regimes of Dudley Senanayake (1965-1970) and Mrs

⁴⁷³ SLNA: "Plan campaign to wipe out malaria", *Ceylon Daily News*, 28 January 1958, 1.

⁴⁷⁴ Ibid.

⁴⁷⁵ TNA: Confidential letter from T.L. Crosthwait to McConville, May 15, 1962, DO 189/319. Appointment of president and director of Colombo Plan Bureau, 1962-1963: See chapter 2.2 for the effects of the 1961 expropriation.,

⁴⁷⁶ Ibid., Confidential letter from R.B.W. King to T.L. Crosthwait, May 28, 1962.

⁴⁷⁷ Ibid., Confidential letter from G.D. Anderson, BHC, to T.L. Crosthwait, July 10, 1962.

⁴⁷⁸ Ibid., Confidential letter from T.L. Crosthwait to A. Rumbold, September 6, 1962.

Bandaranaike (1970-1977). It is important to study the dynamics of negotiations between such organisations, the WHO and the Sri Lankan government to understand how the economic and political situation affected the country's health system.

The World Health Foundation of Ceylon (WHFC), a non-governmental organisation (NGO), was formed in March 1967 by a group of members of the elite, most of whom were Colombo Rotary Club members, to improve people's health and living standards under the direction of the WHO.⁴⁷⁹ As this organisation had several influential office bearers (the vice-president was Dr V.T.H. Gunaratne, DHS, for instance),⁴⁸⁰ it was not difficult for it to obtain the highest level of support from the government, including from the Ministers of both Health and External Affairs. Dr Gunaratne, in his official capacity, endorsed the suitability of this entity for membership of the Federation of World Health Foundations (FWHF), Geneva.⁴⁸¹ These recommendations led to the signing of a work agreement between the WHFC and Dr M.G. Candau, the DG, on behalf of the WHO in November 1967. Most of the WHFC projects were self-funded and received the highest level of support from the government and the WHO. For instance, in July 1969, Dr R.O. Darwish, the WHO entomologist in Colombo, was asked by both the SEARO and the HQ to lead a "mobilisation of support against the malaria epidemic". The regional advisor of SEARO, F.R.S. Kellett, endorsed this, saying: "We were indeed struck by the interest and enthusiasm of the Foundation, which deserves both encouragement and guidance."⁴⁸² Later, however, the WHFC met with a different response to their work from the WHO. In 1971, the WHFC requested WHO funding for a research proposal on a survey of the nutritional status of the rural population, led by senior staff at the MoH and the University of Colombo. However, the proposal was declined by the SEARO, where Dr Gunaratne, former DHS and vice-president of the foundation, was the RD, as there were no funds in the research budget, and it was claimed that efforts would probably duplicate ongoing UNICEF work in Sri Lanka.⁴⁸³

Oxfam, an independent organisation, had been assisting Sri Lanka through selected care homes, Christian organisations and voluntary medical organisations; this was on a small scale, compared with other countries in the region.⁴⁸⁴ During PM Dudley Senanayake's tenure, John Stanley, an Oxfam representative who visited in 1968, noticed that "there appear to be an 'amateurishness' and lack of expertise when it

⁴⁷⁹ WHORA: W 4/348/2 SRL. Establishment of and relations with WHF, Sri Lanka, 1965.

⁴⁸⁰ Ibid., The first interim report of WHF, Sri Lanka, December 10, 1967.

⁴⁸¹ Ibid., Letter from V.T. Gunaratne, to Sir John Charles, November 17, 1967.

⁴⁸² Ibid., Letters from WHO HQ and RO to R.O. Darwish, July 24, 1969.

⁴⁸³ Ibid., Memorandum from the RD of SEA to WHO Representative, Sri Lanka, November 9, 1971.

⁴⁸⁴ Libraries, The University of Oxford (Bodleian): MS. OXFAM PRG/1/2/1 Folder 3 1969-1969, Ceylon Report of the tour in July and August 1968. The name "Oxfam" derives from the Oxford Committee for Famine Relief, founded in Britain in 1942. In the post-war period, Oxfam had assisted needy people in developing countries through their partner organisations. For a brief history, see Gwynn, 1993; for Oxfam's work approach, see Aaronson and Zimmerman, 2006.

comes to newer government activities including malaria control and family planning”.⁴⁸⁵ He made the following comment:

This amateurishness exists at all levels, from planners to field workers, and it [was] also found in non-governmental organisations. It may result from the extreme difficulty in travelling abroad due to the foreign exchange restriction. I was told that hardly any of the senior University staff in the country [had] been abroad during the last 10 years and that this [made] for “insularity”. Governments in Ceylon (especially the previous Bandaranaike government) [tended] to decide on principle, irrespective of the economic consequences and the technically qualified manpower available.

Difficulties over an [foreign] exchange may also help to account for what seemed to be an “amoral” tendency within the government over the use of foreign aid funds. At present, it is the government’s policy to encourage voluntary organisations, and not to more deeply involve itself in institutional care.⁴⁸⁶

Therefore, the representative recommended that Oxfam be cautious over requests for support, given that assistance from the government was declining for Christian institutions. After assessing the health services, he further noted:

Ceylon’s health services [had] a good reputation which, judging by two hospitals I saw in Colombo, [was] well deserved. In 1965 there were 316 hospital beds per 1,000,000 of population: the equivalent figure for India [was] 48.

The health services [had] failed badly recently having allowed the incidence of malaria, which had been steadily reduced after 1943 to as few as 10 indigenous infections recorded in 1964, to rise to a current estimated one million cases in 1968. The exact cause [was] obscure, but the Permanent Secretary to the Ministry of Health candidly admitted that the preventive and detection services had been defective. In response to a request from the Government of Ceylon, WHO prepared a re-eradication programme costing Rs. 80 million. Half of this smaller total [was] to be in local currency, which the Ceylon Government [would] contribute and the other half [was] foreign exchange for which the government and voluntary agencies [were] being asked to contribute.⁴⁸⁷

Oxfam also unsuccessfully approached the government about extending support for antimalarial activities, and it later came to light that the British government had agreed to provide support in this regard. The Oxfam agent further stated that “there was little or nothing that Oxfam could or should assist in the medical field – given that the prevalence of TB. [was] probably less than 0.5%, that of leprosy less than 0.1%, and average life expectancy at birth [was] 60 years (42 years in India)”.⁴⁸⁸

During PM Mrs Bandaranaike’s time in office, Srikanth, an Oxfam field member and John Stanley’s assistant in Bangalore (India), toured Sri Lanka in 1973-74 and came to the following conclusion:

The political and economic situation [had] been deteriorating further. The government was unable to carry out programmes of free rationing and medical care, and [was] resorting to a large-scale nationalisation. The situation [had] been made worse by a shortage of food and ever-dwindling foreign exchange reserves due to the decline in world prices for tea and rubber. Unemployment [was] already high and rising still further as the population, now at over 14 million, continue[d] to rise sharply.⁴⁸⁹

⁴⁸⁵ Ibid.

⁴⁸⁶ Ibid.

⁴⁸⁷ Ibid.

⁴⁸⁸ Ibid.

⁴⁸⁹ Bodleian: MS. OXFAM PRG/1/2/2 Folder 3 1974-1975, Filed Committee for Asia, Sri Lanka, 1974.

Srikanth felt that “it [was] becoming increasingly difficult for voluntary organisations to continue working in Sri Lanka” and recommended Sri Lanka should remain a low-priority area for Oxfam.⁴⁹⁰

This tallies with the statement of Sri Lankan sociologist Tudor De Silva (2014, p. 143), who wrote that “even though Ceylon [had] achieved near eradication of malaria as of 1963 with zero reported cases of new local transmission, the situation [had] started to reverse from 1966 onwards.” This subsection argues that the momentum to increase DDT use was hampered by a lack of political and financial support (due to the country’s economic crisis). The above findings also confirm those of Jones (2020), who noted the economic downturn and the effect that this had on child health as cited in the 1970 socio-economic survey, which showed that 43.6 per cent of the population lived in poverty. This subsection argues that poverty trends had been deteriorating since the late 1950s, along with national economic indicators as presented in chapter three. Accordingly, this situation impacted child morbidity although mortality rates went down, meaning that children were more prone to get infectious diseases requiring frequent medical visits and the use of antibiotics. While, as seen above, Sri Lanka’s health sector received some support from the UK and US governments and international health organisations (according to table 3.3, the UN aid was not affected by the country’s economic policy), the country’s indicators (which were among the higher ones in the region) and red tape in the political and administrative structure adversely affected foreign assistance. The devaluation and depletion of foreign reserves meant that Sri Lanka was unable to access health programmes (country’s contribution) and hampered foreign travel and higher education for academics, which had a serious impact on the country’s health system. Finally, adverse healthcare provision of the country led to greater ill-health among the population, which increased the use of antibiotics as well.

Of further interest is the question of how the country’s economy affected the provision of pharmaceuticals and antibiotics. As presented in chapter 2, most countries, including India, experienced a severe shortage of medical supplies in the early 1950s. The situation in Sri Lanka was the same, as the British drug supply had not arrived on time.⁴⁹¹ Even Prime Minister D. S. Senanayake had to issue directions that “essential drugs and other medical equipment [were] to be flown to Ceylon from wherever they are available to meet the scarcity in Ceylon”.⁴⁹² In the late 1950s, Sri Lanka encountered problems with importing drugs, not only due to economic constraints but also because the brisk development of the pharmaceutical sector resulted in a rapid increase in the number of drugs being imported without any rational selection.⁴⁹³ The government subsequently consulted Sri Lankan pharmacologist Professor Senake W. Bibile, asking him to develop a hospital formulary to establish rational prescribing. Given the importance of this document, Bibile’s views on generic prescription and antibiotic use are of interest. Reviewing a booklet called *Antibacterial Drugs*, in 1955, Bibile wrote:

⁴⁹⁰ Ibid.

⁴⁹¹ SLNA: “Drug supply position improving”, *Ceylon Daily News*, 4, July 1951, 1.

⁴⁹² SLNA: “Order to buy drugs from any market”, *Ceylon Daily News*, 14 July 1951, 1.

⁴⁹³ See chapter 3.2 on the economic crisis during the late 1950s.

It is to be hoped that, however, that prescribers will not be content slavishly to follow the author's recommendations and forsake the skilful art of posology [the part of medicine concerned with dosage]. There would also appear to be in this country practice of clinical uses referring to the drugs, not by their official or approved names but by the means of proprietary products most familiar to them. It is a pity that the author encourages this practice even to the extent of scattering proprietary names here.⁴⁹⁴

To reduce imports and increase rational prescribing, he suggested that public prescribing should be limited to an approved list of about 500 drugs under generic names written into a hospital formulary. The Ministry of Health accepted this proposal and appointed a Formulary Committee; the first Ceylon Hospital Formulary was published in 1959.⁴⁹⁵ The economic crisis induced by the expropriation in 1962 compelled the government to curtail the imports of many goods, including drugs, by the private sector.⁴⁹⁶ This issue was not confined to Sri Lanka, as at the 1964 WHA, Dr C. Mani, RD for SEA, also stated that “the provision of drugs for the domiciliary treatment of tuberculosis presented a serious problem in the region, particularly as all countries were short of foreign exchange”.⁴⁹⁷ Sri Lanka's National Formulary Committee (formerly the Formulary Committee) reviewed 4000 drugs and recommended that 2100 be gazetted as approved for importation.⁴⁹⁸ As each drug could be imported under any number of brand names, prices varied widely, and the total import bill did not reduce significantly. Even the users were not happy about the situation; for instance, the medical director of Planters Association Estates Health Scheme, who purchased drugs for the plantation health sector, claimed: “ironically while this amendment awaits ratification drug prices continue to increase. If and when it eventually gets gazetted the contour of the grand will again be almost as unrealistic as before”.⁴⁹⁹ During this time, the practice of Sri Lanka's drugs firms consisted of simple formulations and the packaging of imported drugs for over the counter (OTC) sale without prescriptions. An article in the *Ceylon Medical Journal* (CMJ) highlighted the negative impact of such effects and suggested a system of drug management that was practised in the USSR.

The pharmaceutical industry [of the USSR] was run by the State. There is no interest in creating sensations or making a profit. Every new medicine is tested at special state clinics and by the Pharmaceutical Committee of [the] USSR Ministry of Public Health, consisting of prominent scientists and specialists, before reaching the consumer. The prices of the drugs are phenomenally low compared to those in western countries and in Ceylon where private enterprise rakes in millions of the expenses of human suffering.⁵⁰⁰

In 1970, Mrs Bandaranaike's government appointed a parliamentarian, Dr S.A. Wickremasinghe, and Professor Bibile to inquire into and correct the needless loss of foreign exchange in the import of

⁴⁹⁴ SLML: Senake Bibile, “Antibacterial Drugs”, *CMJ* 3 (1) (September 1955), 85; The British Library (BL): 37919, “Pharmaceuticals reforms by medical friend”, *Pharmaceutical Third World Experience*, (Colombo, Faculty of Medicine, Colombo Campus, 1978). Generic prescribing allows for any suitable drug, rather than a particular brand of drug, to be dispensed. This can lead to cost savings because cheaper alternatives can be prescribed.

⁴⁹⁵ BL: 37919, Pharmaceutical.

⁴⁹⁶ Ibid. See chapter 3.2 on the expropriation.

⁴⁹⁷ IRIS: WHO No. 136, Seventeenth WHA, Part II, Verbatim Records, 1964, 291.

⁴⁹⁸ Ibid.

⁴⁹⁹ WT: WTI/LBC/C/2/3/3, Planters' Association Estates' Health Scheme, Medical Director's Report for the year 1969.

⁵⁰⁰ SLML: K. Rajasuriya “From Russia – with admiration”, *CMJ*, Vol. 14, No. 3 (1969), 126.

drugs. Wickremasinghe and Bibile's report was published the following year.⁵⁰¹ It proposed a list of measures: the creation of a state buying agency; reduction of the number of drugs that were imported; use of generic names; an increase in circulation of 'prescriber' published by the National Formulary Committee; and an expansion of the quality testing facilities and pharmaceutical formulating (labelling etc.) within the country. In December 1970, the editorial of CMJ had likewise encouraged generic prescribing for their members.

Drugs sold under non-proprietary names [were] generally cheaper than those having brand names. For example, a quality tested tetracycline manufactured in Europe [was] available as a non-proprietary preparation at Rs. 13.86 per 100 capsules while a tetracycline manufactured in the United States [was] sold, under a brand name, at Rs. 129.69 per 100. Therefore, people often [had] to pay unnecessarily high prices for the branded product simply because brand names [were] better remembered by the doctors as a result of skilled sales promotions.⁵⁰²

Notwithstanding considerable opposition generated by the international pharmaceutical industry led by the Transnational Companies (TNCs), the report was accepted by the government, and a State Pharmaceuticals Corporation (SPC) of Sri Lanka was established in 1971 (SPC, 2020). The SPC initially came under the Ministry of Health. It was subsequently transferred to a left-wing minister in the cabinet under the Minister of Industries & Science Affairs, Mr T.B. Subasinghe. It also proposed to develop state and local manufacture of pharmaceuticals based on government guidelines. However, it took 15 years to establish the State Pharmaceutical Manufacturing Corporation (SPMC), which was finally set up in 1987 (SPMC, 2013).

In 1973–74, following the Wickremasinghe & Bibile Report, Sri Lanka attempted to formulate 34 tablets and capsules that were used in large quantities in the country and have them produced by local manufacturers, to save \$485,000 of foreign exchange and create more employment opportunities.⁵⁰³ Although small local manufacturers got involved in the programme, the subsidiaries of transnational companies (TNCs) proved uncooperative.⁵⁰⁴ During the negotiations, participating manufacturers started making tetracycline capsules using raw materials imported from Hoechst (West Germany) through the State Pharmaceuticals Corporation (SPC). Because of the cholera epidemic, the demand for capsules increased steeply:

The Hoechst raw materials were in the SPC stores and Pfizer had the capsulating equipment. Pfizer was requested to capsule this to meet an urgent need. Instead of doing so, they sought 'clarification', and the SPC was compelled to airlift tetracycline capsules from abroad at enormous expense. Behind Pfizer's hard-heartedness lies the question of profit. Pfizer was buying tetracycline from its parent company abroad at an inflated c.i.f. price of \$99 a kilo, while Hoechst was selling equivalent quality raw materials to the SPC at \$20 a kilo!⁵⁰⁵

As presented in chapter 3.4, in the early 1970s, inflation and currency devaluation caused a steep increase in import commodity prices. The SPC then started to purchase drugs through worldwide tenders as the

⁵⁰¹ BL: 37919, Pharmaceutical.

⁵⁰² SLML: Editorial, "What's a name", CMJ, Vol. 15, No. 4 (1970), 186.

⁵⁰³ BL: 37919, Pharmaceutical.

⁵⁰⁴ Ibid., TNCs or multinational corporations (MNCs) are companies that operate in more than one country.

⁵⁰⁵ Ibid.

prices quoted by traditional TNC suppliers were higher, and this led to a saving of nearly \$1.8 million between 1972 and 1975 (table 4.7). In 1975, Mrs Bandaranaike was successful in nominating Senake Bibile to the United Nations Conference on Trade and Development (UNCTAD). Bibile's report on Pharmaceutical Policy in Sri Lanka was presented at UNCTAD in June 1977, after his death.⁵⁰⁶ The latter study was part of the efforts made by UNCTAD during Bibile's time as secretary to improve the understanding of the problems relating to the transfer and development of technology in a developing country.

Table 4.7: Price Comparison of the SPC and Traditional Suppliers, 1972–1975

Year	Number of drugs	Traditional supplier's price (A)	SPC price (B)	Foreign exchange savings	(B) as a % of (A)
1972	52	485,000	290,000	195,000	60
1973	55	502,456	140,448	362,008	28
1974	86	751,090	287,712	463,378	38
1975	60	1,053,525	319,250	734,275	30

Source: Pharmaceuticals reforms by a medical friend, 37919, Pharmaceutical Third World Experience, 1978.

Notes: Price in US dollars for the total imports.

The President of the TNC's Pharmaceutical Manufacturers Association (P.M.A.) in the USA, Joseph Stetler, delivered a letter to the Prime Minister and the other concerned ministers that opposed the SPC policies on various grounds and also carried a veiled threat of reprisals.⁵⁰⁷ In Sri Lanka, the campaign against the SPC took various forms:⁵⁰⁸

Several adverse reports were published in the press, symposiums of medical opponents were organised and even direct representations were made to the government. Public confidence in S.P.C. was undermined by creating doubts about the efficacy of low-cost drugs and the case of antibiotics is a good example. Few doctors find out which organism has caused an infection (by culture), and the best drug to use against it, before prescribing an antibiotic. This is quite unstable because of the trouble, delay and expense. Earlier when the doctor's intelligent guess failed it was attributed to a wrong choice of antibiotic and he switched over to another. But after the SPC programme came into operation it became the fashion to attribute this to the poor quality of the antibiotics.⁵⁰⁹

As a result of the 1975 political change and growing political problems and food shortages, the government's pathway changed. The LSSP, the most radical party in the coalition, was expelled from the government.⁵¹⁰ The Prime Minister was not able to continue her earlier strong stance on pharmaceutical reforms.⁵¹¹ Minister T.B. Subasinghe found it increasingly difficult to pursue his former strategy and the SPC was obliged to compromise on some important elements of the programme as originally conceived.⁵¹² The local representative of the TNCs published more open protests in the newspapers, and doctors were able to force more concessions from the Formulary Committee on the retention of particular branded drug

⁵⁰⁶ MetNed, WHO, Geneva (MED): *Case Studies in Transfer of Technology: Pharmaceutical Policies in Sri Lanka*, 1977.

⁵⁰⁷ Ibid.

⁵⁰⁸ Ibid.

⁵⁰⁹ BL: 37919, Pharmaceutical.

⁵¹⁰ See chapter 3.4 on the political change in 1975.

⁵¹¹ BL: 37919, Pharmaceutical.

⁵¹² Ibid.

imports.⁵¹³ The progress of the rationalisation, while not reversed, was certainly slowed down in 1976; the battle was forwarded to subsequent governments.

This chapter partially accepts scholar Sanjay Lall's (1980, p. 238) assertion that healthcare professionals also had doubts about the quality of SPC tetracycline, as the medical fraternity was aware that the difference between the brand and generic form of tetracycline was only the price, as stated in the CMJ editorial. It agrees with Lall (Lall, 1983) that the 1960s economic crisis compelled the government to cut exports and that doctors were against Bibile's tight drug-prescribing policy. This subsection argues that the economic downturn during the 1960s was not limited to Sri Lanka, but also affected other countries in the region. Sri Lankan medical professionals also suggested reforms in pharmaceutical management before appointing Wickremasinghe and Bibile's committee, which attempted to make similar kinds of initiatives. It finally demonstrates that Bibile's medicinal policy helped to reduce the use and supply of antibiotics, which positively impacted the tackling of AMR in Sri Lanka. Amidst issues of final constraints, Sri Lanka was successful in increasing the health indicators during this time period as per table 4.8

Table 4.8: Health, economic and demographic statistics of Sri Lanka from 1950 to 1980

Year	1950	1960	1970	1980
Birth rate	40	35	29	24
Death rate	13	10	8	7
Infant mortality rate	92	74	53	36
Maternal mortality rate	496	248	152	103
Life expectancy, male	58	62	64	65
Life expectancy, female	56	62	68	71
Total fertility rate	5.3	4.7	4.2	3.7
Population growth rate (%)	2.8	2.7	2.2	1.7
Literacy	69	73	82	85
GDP per capita (1990 US\$)	225		260	320

Source: (Rannan-Eliya and Sikurajapathy, 2009), WHO Archives, Geneva, (hereafter WHOAG): Presidential Task Force on Formulation of a National Health Policy 1992), Various reports of national health bulletin, and Department of Statistics of Sri Lanka

4.5 Conclusion

As outlined in the previous chapter, post-independence governments were of the understanding that they did not possess the relevant expertise and monetary soundness for the country's development and sought that assistance from the international donor agencies and countries. The deteriorating national economy, however, compelled the government to curtail imports, even of essential items, into the country. Against this backdrop, this chapter has examined the dynamics of relationships between Sri Lanka's government and UN and donor agencies, donor countries, and the various layers of Sri Lankan health governance related to healthcare delivery. Although Sri Lanka had to compete to work on the WHO's Executive Board and expert committees, this chapter argues that Sri Lanka's negotiations at various levels of the WHO governance contributed not only to the granting of WHO assistance to Sri Lanka and the region but also to the shaping of WHO policies at WHO HQ and in the SEA region. Sri Lanka's attempt

⁵¹³ Ibid.

to become self-sufficient in medicine in the 1950s was unrealistic due to a lack of support from the WHO. Sri Lanka encountered difficulties in buying medicines on the world market due to frequent foreign exchange crises and failed to establish its own medicinal plants for nearly four decades. The government's enthusiasm for developing the country's health structure through foreign consultation resulted in different views that led to a duplication of work. The bureaucrats of Sri Lanka's MoH refused to acknowledge the criticality of those experts' opinions of Sri Lanka's health system, leading to a disagreement between the health minister, secretary and the DMSS, for instance, about Cumpston's and Barlow's recommendations. While the health minister's attempt at employing Austrian doctors as a solution to the shortage of local specialists and appointing a doctor as Director Health Services (DHS) was opposed by the doctor's unions, health ministers also failed to implement necessary reforms to the Ceylon Medical Council for 10 years. However, despite inadequate financing, the MoH was successful at expanding health facilities and human resources compared to regional countries.

By contrast, the MoH's attempt at appointing a WHO expert, Dr Neubauer, who did not have adequate experience of the Sri Lankan context, as the head of the national TB control programme, could have led to severe adverse effects on the activities to control TB in Sri Lanka. All TB drugs, including expensive streptomycin, were provided free of charge to all diagnosed patients. TB control activities had been negatively affected by poor TB culture procedures, problems with TB notification, substandard BCG vaccine techniques, and delays in deploying staff. This chapter outlines those frequent outbreaks and increasing trends of foodborne diseases were due to deficiencies of government policy on water and environmental sanitation. Such disease trends contributed not only to the high use of antibiotics but also to the emergence of antibiotic-resistant bacteria. The overprotective behaviour of the quarantine unit of the MoH also created issues with neighbouring countries, which eventually escalated to the WHO level. However, this vigilance and preparedness for epidemics could have safeguarded citizens' health and limited the use of antibiotics, as delays in the identification of epidemics have been a costly barrier to disease control and prevention.

As a result of the depletion of foreign reserves, as outlined in this chapter, Sri Lanka's governments were compelled to cut essential medical imports, health programmes, and foreign exposure for academics, all of which had a serious impact on the country's health system. This situation also became a barrier to attracting foreign medical assistance to the country. Sri Lanka's adverse healthcare provision led to greater ill-health among the people, which increased the use of antibiotics as well. This chapter has demonstrated that the Bandaranaike governments attempted to economise pharmaceutical management by restricting the number of drugs on the market and promoting generic medicines and tried to introduce not only rational prescribing but also a national medicinal policy created by Professor Bibile, which inspired the WHO's Essential Medicines List (EML).⁵¹⁴ However, while Bibile's reforms in pharmaceutical management reduced antibiotic use, they could not be sustained due to a lack of political support during the late 1970s. The

⁵¹⁴ For EML, see chapter 6.3.

progress of rationalisation, while not reversed, was slowed down in 1976; the battle continued to be waged, with the outcome depended not only on the liberalisation of the economy but also on the health policies of the country from 1977 onwards, which will be addressed in the following chapter.

Chapter 5. Health policies in Sri Lanka from 1977 to 1987: Health for All, user fees and dual practice

As the previous chapter has shown, a significant number of Sri Lanka's achievements in healthcare standards were due to the country's targeted public policies. This chapter identifies and analyses health policies (including legislation, regulations, strategies and reforms) that had direct or indirect consequences for antimicrobial resistance (AMR) in Sri Lanka from 1977 to 1986. The chapter ends in 1987, which was when Sri Lanka established the provincial council system that enabled the devolution of centralised power from the main government to the provinces. It assesses three policy initiatives: the Alma-Ata Declaration, the reintroduction of dual practice (DP) for government doctors, and the abolition of the user fee (UF). Jones' assessment (2020) of HFA in Sri Lanka was influenced by a WHO publication written by Malinga Fernando and Tissa Cooray (1990), which extensively described the HFA process in Sri Lanka.⁵¹⁵ Assessing Sri Lanka's *deep roots in PHC* to achieve HFA, Fernando and Cooray (1990) did not place much emphasis on the negative effects of its adoption on the country's health system. Ferrinho et al. (2004) assessed the available empirical evidence on DP studies and found that it may lead to predatory behaviour by health workers, and to a brain drain from public to private sector. Eggleston and Bir (2006) attempted to compare five theoretical models of DP to find whether theoretical predictions were consistent with empirical evidence. Assessing the perspectives of users, Kumar (2018) revealed that DP led to inequities in access and serious issues with the ethical and professional standards of medical practice in Sri Lanka.⁵¹⁶ The abolition of UFs in a low-to-middle-income country (LMIC) setting was studied by a range of scholars (James et al., 2006; Nabyonga Orem et al., 2011; Ridde, 2015). Examining the Sri Lankan context, Rannan-Eliya and De Mel (1997) argued that the issue of UFs is particularly politically sensitive as it "contributed to the subsequent election defeat of the government, [and] its successor gained important political support for its program of economic liberalization by abolishing user fees". Against this backdrop, this chapter assesses the views of policy-level experts on the actors involved, the context and the effects of those policy initiatives.

This chapter draws on the findings from qualitative interviews with experts in health policy, pharmaceuticals and AMR who had worked or are working in Sri Lanka and/or WHO settings as described in chapter one. The major milestones in the healthcare arena in Sri Lanka are presented in chronological order (table 5.1), and categories and findings are presented under the three main headings of the modified policy triangle framework (figure 1.2) as described in chapter one. This chapter analyses qualitative interviews at the end of each subsection, integrating these with primary research and reviews.

⁵¹⁵ Dr Tissa Cooray was Director of the National Institute of Health Sciences, Sri Lanka.

⁵¹⁶ The public perspective on dual practice can be obtained by systematically analysing newspaper articles and parliamentary debates between 1976 and 1978, which are available in the SLNA. However, this thesis was unable to access those documents due to travel restrictions and frequent closure of the archives due to the COVID-19 pandemic.

Table 5.1: Policy milestones in Sri Lanka related to pharmaceuticals and AMR, 1977–1987

Year	Policy milestones
1978	“Health for All”, the Alma-Ata Declaration
1978	Reintroduction of DP for government doctors
1978	Abolition of the UF
1980	Cosmetics, Devices and Drugs Act (CDDA)*
1980	WHO’s essential medicines list (EML)*

*These will be discussed in the final chapter.

Public perceptions and reactions to policies are key factors in policy analysis. Evidence for these in the form of newspaper articles, parliamentary debates, gazette notifications, parliamentary acts and regulations is drawn from the National Archives of Sri Lanka (SLNA) and the Ministry of Health (MoH), Sri Lanka. Research for this chapter was hampered by travel restrictions and archive closures during the current pandemic, which meant that it was impossible to access some of the relevant data sets kept at the MoH and SLNA: that is, Ministry circulars and confidential internal communications of the MoH from 1977 to 1987, the gazette notifications and parliamentary debates, and newspaper articles from 1977 to 1981.

5.1 “Health for All”, the Alma-Ata Declaration of 1978

On 12 September 1978, at the International Conference on Primary Health Care (PHC) convened by WHO and UNICEF in Alma-Ata, Kazakhstan, WHO’s 134 national government members, including Sri Lanka, signed a declaration expressing the need for urgent action by all governments to protect and promote the health of all the people of the world.⁵¹⁷ This emerged as one of the key milestones of the 20th century in the field of public health, and it identified PHC as the key to attaining health for all (Fernando and Cooray, 1990; Keith, 2018).⁵¹⁸ Forty years later, in 2018, the Global Conference on Primary Health Care acknowledged the important role of PHC in tackling AMR (WHO, 2018a).⁵¹⁹

⁵¹⁷ IRIS: The declaration of Alma-Ata. World health 1988; Aug-Sep: 16–17, section 6.

⁵¹⁸ WHO’s PHC and UNICEF’s essential PHC were discussed in the introductory chapter of this thesis. For the complexities of and issues relating to the PHC model, see Rifkin (2018).

⁵¹⁹ This conference was attended by experts from WHO and UNICEF, and published under the WHO Technical Series on Primary Health Care (WHO/HIS/SDS/2018.57).

Table 5.2: Subcategories and findings of “Health for All”, the Alma-Ata Declaration of 1978

Category	subcategories	Findings
Actors	Contributions	<ul style="list-style-type: none"> ▪ Knowledgeable state health minister ▪ Local specialists ▪ Community contribution
	International assistance	<ul style="list-style-type: none"> ▪ WHO technical assistance ▪ Asian Development Bank (ADB) funding ▪ UNICEF support for the expanded programme of immunisation (EPI)
	Sri Lanka’s contribution	<ul style="list-style-type: none"> ▪ Technical expertise for health for all (HFA) ▪ Sri Lanka’s existing health unit system served as a good example of WHO’s PHC concept.
Context	Sri Lanka’s PHC structure	<ul style="list-style-type: none"> ▪ Well-established system ▪ Best in the region
	Expansion of the PHC system	<ul style="list-style-type: none"> ▪ Establishment of midwife clinic structure ▪ Restructuring of health unit system to create units of a manageable size
Effects	Changes in the PHC structure through midwife clinics	<ul style="list-style-type: none"> ▪ No major impact on the existing system ▪ Increase in access, medical goods and patient referrals ▪ Increase in costs to the health budget ▪ Increase in health-seeking behaviour ▪ Availability of new community-based services: sanitation, health education and nutrition
	New higher-level structure of hospital system	<ul style="list-style-type: none"> ▪ Direct links with PHC structure ▪ Increase in health disparities between districts
	Health under district council system	<ul style="list-style-type: none"> ▪ Established for proper interdepartmental coordination ▪ Failed due to lack of funding and expertise

Source: Interview findings of the sample as described in chapter 1.7.

5.1.1 Actors in the adoption of the Alma-Ata Declaration

The new government was keen to adopt the health reforms indicated by the Alma-Ata Declaration, and according to interviewees, the work that flowed from the declaration had its full support.

The political authorities were glad about the primary healthcare proposals and accepted Alma-Ata. They must have been consulted by WHO. [P16]⁵²⁰

In ’78 we had a [Deputy] Minister of Health (a general practitioner) who was very sympathetic towards primary healthcare and supported Alma-Ata. [P10]⁵²¹

We had an excellent team under Dr Malanga Fernando, who implemented the work. The WHO provided some technical assistance; our technical people did a very good [job]; and we may not need any outside consultants [to] come and tell us. [P01]⁵²²

Primary healthcare in Sri Lanka [was] quite developed with people: you had people, and you had professionals during that time. [P09]⁵²³

⁵²⁰ P16: Policy, Sri Lanka.

⁵²¹ P10: Policy, pharmaceuticals, Sri Lanka, WHO: Dr Rajitha Atapattu was appointed as the Minister for Colombo Group of Hospitals (a project under the Ministry of Health) in August 1978. He then became Minister of Health in the Jayewardene cabinet in 1988.

⁵²² P01: Policy, pharmaceuticals, Sri Lanka.

⁵²³ P09: Policy, pharmaceuticals, WHO.

As one interviewee pointed out, it was not only the government and administrators but also the community who contributed to this endeavour as a wave of goodwill by donating private land for the building of midwife clinics.

A lot of people donated land for the midwife clinic[s], and the government had to build the clinic[s] with facilities. The first one was established in Kamburupitiya in Matara District. [P01]⁵²⁴

The importance of WHO assistance in training healthcare workers on HFA was discussed with interviewees in greater depth: what it consisted of, how the work was implemented and what financial assistance there was. Two interviewees believed that Sri Lanka's HFA initiatives were supported by the Asian Development Bank (ADB) and UNICEF.⁵²⁵

The WHO – other than bringing in the concept – we didn't get any money from the regular WHO budget. We might [have had] some...money from the Asian Development [Bank]. I don't know whether we got some money from the regular WHO budget; I doubt it was very much because the amounts were tiny. [P01]⁵²⁶

“WHO's primary healthcare” or “UNICEF's selective primary healthcare” are only academic jargon. Anyway, we have got one of the components from UNICEF; that's why Sri Lanka has expanded the programme of immunisation. I remember both organisations provided capacity building for health workers. [P08]⁵²⁷

With regard to the creation, formulation and application of HFA, Sri Lanka's contribution was mentioned by many interviewees. This involved not only funding but also technical expertise.

Sri Lanka [also] contributes to WHO funds, but it is a nominal amount. I believe Sri Lanka contributes more in terms of technical expertise via Sri Lankan scientists in different ways to develop and support WHO policies especially with regard to primary healthcare and public health, both at the General Assembly and Regional Expert Committees, [being] involved in shaping up WHO health policies. [P04]⁵²⁸

I can remember one of the earlier [WHO] regional directors, Dr [V.T.H.] Gunaratne, and he [made] a massive contribution [to] the development of the primary healthcare concepts in the region, and thereafter Dr Palitha Abeykoon [and] Dr Kris Weerasuriya for essential medicines. [P13]⁵²⁹

WHO's PHC model was influenced not only by the contributions of Sri Lankan officials but by the Sri Lankan health model, too.

[The] PHC resolution came in 1978, featuring [the] Sri Lankan experience, [the] Kerala experience and Costa Rica's experience as a starting point for healthcare. [It] was motivated by the very bad healthcare situation prevailing in [some] African countries as [those] governments [were] not doing well during that time [and] needed revamping. [P04]⁵³⁰

The contribution of one WHO regional director, Dr V.T.H. Gunaratne, a Sri Lankan, was regarded as playing a particularly important part in building up trust between the two sides at the policy level. As one

⁵²⁴ P01: Policy, pharmaceuticals, Sri Lanka: For the contribution of Sri Lanka philanthropists to the country's hospital system, see Jones (2009).

⁵²⁵ ADB was established in 1948 to eradicate extreme poverty in Asia and the Pacific, and it is owned by 68 members – 49 from the region. For information on current practice, see Hacking (2019); for ADB as a strategic asset for the United States, see Runde and McKeown (2019).

⁵²⁶ P01: Policy, pharmaceuticals, Sri Lanka.

⁵²⁷ P08: Policy, AMR, Sri Lanka, WHO.

⁵²⁸ P04: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵²⁹ P13: Policy, WHO.

⁵³⁰ P04: Policy, pharmaceuticals, Sri Lanka, WHO.

interviewee commented, only a few Sri Lankans had the opportunity to work at the regional level. Another interviewee (from WHO) stated that Sri Lanka had received immense support from the regional director of the South-East Asia Regional Office (SEARO), Dr V.T.H. Gunaratne, who had been the director of health for Sri Lanka in the late 1960s.

Dr Gunaratne, who served as a regional director for WHO for 12 years, helped Sri Lanka a lot and [was] involved in establishing the Medical Education Unit at the University of Peradeniya. He [was] also involved in establishing NIHS [the National Institute of Health Sciences] at Kalutara...Being a regional director of WHO, he did serve as a diplomat and got involved in many agencies to support Sri Lanka [and] include Sri Lanka in all the plans as much as possible. Being a director of WHO, you cannot forget your own country, and it goes out of proportion compared with other countries, and he made all efforts to help Sri Lanka. [P04]⁵³¹

5.1.2 Context of the Alma-Ata Declaration

Two interviewees discussed the long history of PHC in Sri Lanka and PHC-related developments.

In 1978 we already had universal healthcare and [had had] good primary care from 1926, when...the first MOH [medical officer of health] unit [was established] in Kalutara. We were not [really] amateurs...[when] we signed the regional charter. [P01]⁵³²

[The] main features of the PHC scene, such as community empowerment, inter-sectoral action, strengthening of MCH services, were available in Sri Lanka before [the] WHO resolution on PHC. Even drivers of PHC (such as women's education, health literacy, universal franchise), which empowered communities to make a change, existed in Sri Lanka 40-50 years before. [P04]⁵³³

In addition to discussing objectives for the proposed model, the interviewees also spoke about their perception of the status of PHC services and Sri Lanka's performance in the region.

I mean the Alma-Ata Declaration probably sort of...this simply said that what we were doing in Sri Lanka was correct, we [had] achieved what the declaration wanted us to achieve. The Alma-Ata didn't make us move into the community; we [were] already in the community. [P10]⁵³⁴

Sri Lanka was quite advanced in some ways (definitely with the primary healthcare), and the fact there was emphasis [on it]. So, if you compare...different [countries] in the region ([the] South-East Asia Region), Sri Lanka stood out in the factor [of its] primary healthcare emphasis [as that comes] to my mind. [P09]⁵³⁵

The adaptation of the proposed PHC model to the Sri Lankan context was mentioned by several interviewees: for instance, the strengthening of the health delivery model in midwife areas (the smallest health administrative areas) and the reorganisation of the medical officer of health (MOH) led health unit system established in 1926.⁵³⁶

Accordingly, they thought of reorganising the health services. They wanted to establish a division of healthcare facilities. We set up a centre for maternity [services] and [a] child health clinic and quarters for a midwife in each midwife area. [P01]⁵³⁷

WHO's PHC model was put into the ongoing reforms in the administrative system in the country. Prime Minister Premadasa launch[ed] a concept call[ed] Grama Rajya [village kingdom], in which Gramodaya Mandalala [a committee] for each AGA [Assistance Government Agent] area was

⁵³¹ P04: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵³² P01: Policy, pharmaceuticals, Sri Lanka.

⁵³³ P04: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵³⁴ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵³⁵ P09: Policy, pharmaceuticals, WHO.

⁵³⁶ See chapter 1.1 on the health unit system.

⁵³⁷ P01: Policy, pharmaceuticals, Sri Lanka.

established. All the preventive and curative institutions were placed under the MOH of the area, who was the head of health services. [P22]⁵³⁸

The value of reorganising the structure was discussed as it was impossible to expand the health unit system to keep pace with the rising population. One interviewee highlighted the relationship between the size of the unit and the efficiency of the system.

It is necessary to maintain a manageable size of...health unit to gain maximum efficiency. They refashioned the prevailing structure into more manageable units, within the framework of the Health for All policies. [P16]⁵³⁹

5.1.3 Effects of adapting the Alma-Ata Declaration

Where the new and old PHC models were similar, the effects of the changes on the system were small. Three participants said that there was no tangible outcome from adopting the new model.

Alma-Ata [had no] effect, because we had [a] primary care and MOH system, [so] I don't think that made a big difference. [P01]

Two of the interviewees argued that the new system had taken precedence over the existing system, but this had helped to improve the health delivery model. A smaller PHC unit increased access to healthcare and provided basic medical goods for communities, and it opened the door to higher levels of medical care.

Primary healthcare organisation allows a converging and convening platform where everybody comes together because of the other components, so a smaller primary healthcare reorganisation is a backwards link to the communities. So, it starts actually with self-care, family care and community care and secondary and tertiary level[s], and it goes all the way...forwards to end-of-life care. So, access to medicine [in terms of] both quality and affordability will automatically lend itself to the discussion. [P13]⁵⁴⁰

By establishing smaller healthcare institutions and expanding the system, the Alma-Ata [Declaration] helped to expand the healthcare provider to the community. The community-based interventions [were] focused on health education [as a] means to increase awareness, sanitation and nutrition...So those were the policy implications. [P08]⁵⁴¹

One participant argued that maintaining a large number of small institutions was not economically viable and that while community-based institutions increased access to health, they also increased health-seeking behaviour in people.

Managing a great number of midwives' clinics is a burden to the system. Earlier we had more outreach clinics periodically in a cost-effective way for the same purpose. People used those facilities, including the small hospitals, unnecessarily for minor health issues...increasing the health-seeking behaviour. [P16]⁵⁴²

Most of the participants stated that the proposed higher-level health institution system enabled them to connect with the PHC system directly and established a patient referral system. Yet one interviewee argued that, as this system did not downgrade hospitals, that led to an inequitable distribution of hospitals.

⁵³⁸ P22: Policy, Sri Lanka: Sri Lanka was divided into 331 AGA divisions managed under an Assistance Government Agent.

⁵³⁹ P16: Policy, Sri Lanka.

⁵⁴⁰ P13: Policy, WHO.

⁵⁴¹ P08: Policy, AMR, Sri Lanka, WHO.

⁵⁴² P16: Policy, Sri Lanka.

In this initiative, some districts had a couple of secondary and tertiary institutions. Some districts [had] got only one secondary institution because they did not downgrade hospitals during the transition. [P22]⁵⁴³

Healthcare was also incorporated into the district council system, using established inter-departmental coordination as part of the process. However, the interviewees said that those councils did not sustain the service due to both the lack of funding for the proposed plans and the non-existence of experts on the committees who could prepare economically effective plans.

5.1.4 Discussion of “Health for All”, the Alma-Ata Declaration

In general, the interview findings of this subsection (table 5.4) show that the WHO initiative was politically and technically supported by Sri Lanka – though a form of PHC system had already been established there – and this initiative resulted in mixed success in the country. Though Sri Lanka supported the concept of HFA, it had inadequate funding to realise this aim, as explained in the next subsections (figures 5.1 and 5.2). Nevertheless, Sri Lanka’s health minister, Gamini Jayasuriya, was keen to work towards the HFA concept, recognising the inequity of healthcare financing relating to the preventive care sector, and pledging at the 1979 World Health Assembly (WHA) that more money would be directed towards that sector.

The money spent on the curative services amounted to about 70 per cent of the health budget, and on the preventive services to 19 per cent...My government, recognising the inadequacy of expenditure on preventive health services, has taken remedial measures, and this year the expenditure on curative services has been brought down to 62 per cent and the expenditure on preventive health services increased to 28 per cent. With this in view, and with the goal of health for all by the year 2000 in mind, important programmes have been undertaken to improve the health services.⁵⁴⁴

Such attitudes continued, and in 1980, HFA concepts received the highest level of political commitment within an inter-sectoral framework with the signing of the Charter for Health Development. Thus, with the backing of the Prime Minister, the National Health Development Council (NHDC) was established. As Fernando and Cooray (1990) indicated, a positive action under the new PHC system to cater for the increasing population was to “refashion the existing [health unit] structure into more manageable units”. But this chapter shows that the Health Ministry had for nearly 12 years failed to make progress on expanding the number of MOH areas that were to be realised through the 1992 President Task Force (table 5.5).⁵⁴⁵ This notwithstanding, while the government was encountering issues with funding the new proposal, the local philanthropic community was helping with the donation of lands for the building of the proposed local clinics.⁵⁴⁶ Additionally, the ADB supported the implementation of a PHC project for 33 AGA divisions.⁵⁴⁷ The government also maintained the preventive health expenditure at around 13 per cent of the total health expenditure from 1990 to 2016, as illustrated in figure 6.2.⁵⁴⁸ Against this background,

⁵⁴³ P22: Policy, Sri Lanka.

⁵⁴⁴ IRIS: Thirty-First WHA, Verbatim Records, 1979.

⁵⁴⁵ President Task Forces will be discussed in depth in the next chapter.

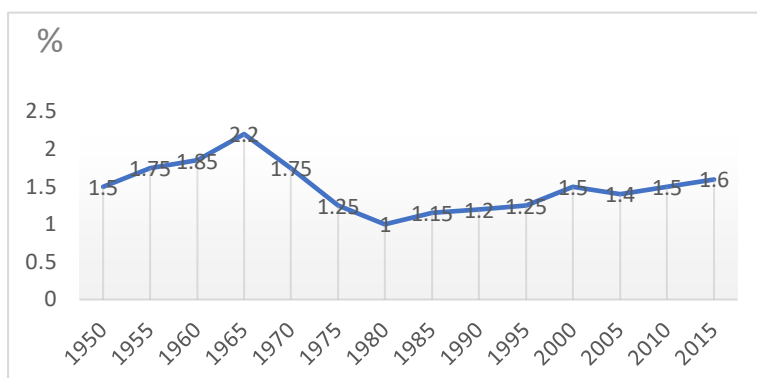
⁵⁴⁶ For the philanthropic activities of Sri Lankan individuals and organisations in country’s health sector, see Jones (2009).

⁵⁴⁷ IRIS: SEA/RC36/2, Annual Report of the Regional Director, SEARO, 1982-83, 4.

⁵⁴⁸ See chapter 6.

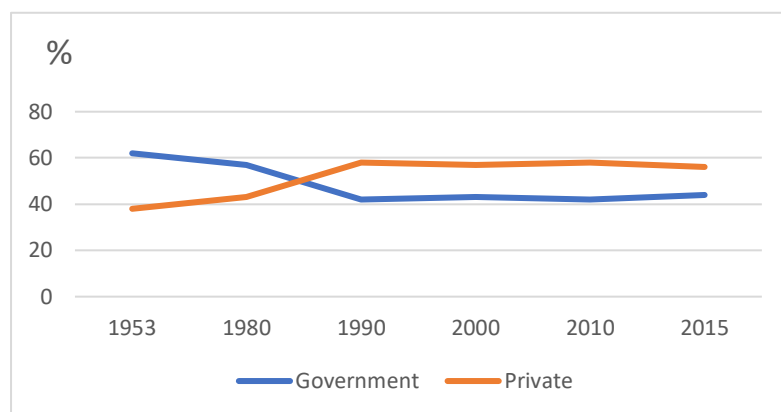
despite the pledges made by Minister Jayasuriya at the 1979 WHA, the Jayewardene government and subsequent governments failed to increase the preventive health budget.

Figure 5.1: Government health expenditure as a percentage of GDP 1925-1995



Adapted from Amarasinghe et al. (2018); Rannan-Eliya and De Mel (1997).

Figure 5.2: Government and private health expenditure from 1953 to 2017



Source: Rannan-Eliya and De Mel (1997).

According to the PHC model adopted by the MoH in 1986 (figure 5.1), the emerging structure within each regional director’s area may be depicted as a pyramid, at the base of which was the village health centre (one for each *grama sevaka* (local area)), headed by a midwife, who was the first point of healthcare delivery, providing comprehensive maternal and child health (MCH) services.⁵⁴⁹ While the sub-divisional level provided only outpatient and maternity care, the divisional level offered all the curative functions, also incorporating the service functions of the health units, which were earlier performed by the MOH. The head of the district hospital (the medical officer in charge) became the divisional health officer (DHO). As this section shows, this PHC system was geared towards increasing access to health: for instance, through medical goods, patient referrals and new public health packages. Additionally, as Fernando and Cooray (1990) noted, a three-tier PHC model was developed to achieve three more outcomes: 1) cost-effective management of all preventive and curative services under one roof; 2) the establishment of an effective

⁵⁴⁹ To strengthen the PHC model, the National Health Council proposed increasing the decentralised health divisions of the country from 15 to 21 and later expanded this to 24 to match the 24 administrative districts headed by a regional director of health services (RDHS).

referral system; 3) the creation of realistic cadre norms.⁵⁵⁰ Nonetheless, the country’s health system failed to achieve any of these objectives, falling short in several respects. Firstly, the priority at the divisional level was to provide curative services, since medical officers were oriented towards private practice (as explained in the dual practice subsection (5.2)), and preventive services were therefore neglected compared with the health unit system that had been reserved solely for preventive services.⁵⁵¹ Secondly, such a referral system has so far not shown itself to be capable of preventing people from bypassing primary care facilities in Sri Lanka, which has led to the overcrowding of large institutions and the underutilisation of PHC institutions.⁵⁵² Thirdly, as stated in the MoH’s *Human Resources for Health Strategic Plan 2009-2018*, up to the present the government has failed to fill the vacancies for midwives and preventive care MOs required by the 1980s cadre norms (MoH, 2009).

Table 5.3: PHC model adopted by the Ministry of Health in 1986

Setting	Quantity/coverage	Composition	Services
Divisional (DH & PU)	1: 60,000 People	Divisional Health Officer (DHO), MO, NO, PHMW	Outpatient, inpatient, maternity care and health unit functions
Sub-divisional (CD & MH)	1: 20,000 people	AMO, RMO, PHI, SPHMW, PHMW	Outpatients, maternity care
Village Health Centre (MH)	1: 3,000 people	PHMW	A comprehensive package of PHC

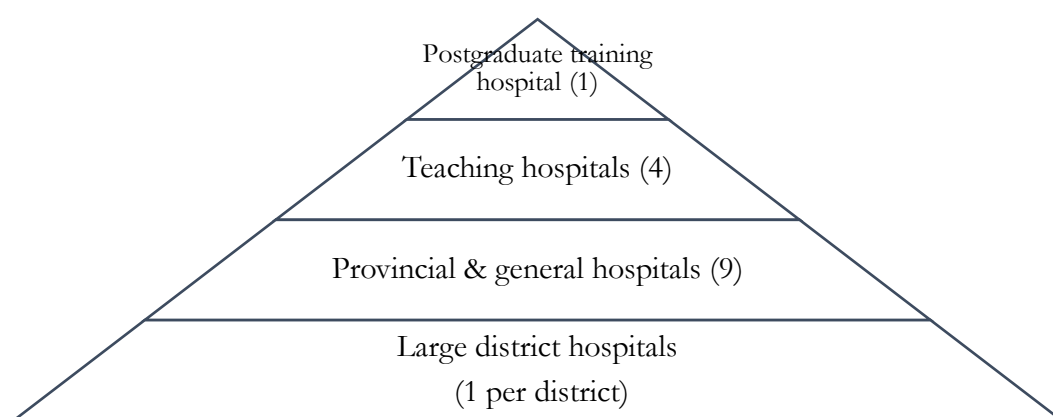
Adapted from Fernando and Cooray (1990). Notes, CD: central dispensaries; MH: maternity homes; DH: district hospitals; PU: peripheral units; SPHMW: supervising public health midwife; PHMW: public health midwife; PHI: public health inspector; MO: medical officer; AMO: assistant medical officer; RMO: registered medical officer; NO: nursing officer.

⁵⁵⁰ According to Fernando and Cooray (1990, pp. 234–6), this might be one midwife per 3,000 population and one preventive care medical officer per 60,000 population. Nevertheless, De Silva (2017) argued that “Ministry of Health, Sri Lanka [had] no scientific cadre planning for medical specialists”. Alwis et al. (2018) also noted that the planning of health sector cadres was not appropriate.

⁵⁵¹ Jones (2020, p. 10) also argued that “Sri Lankan doctors were reluctant to work both in public health and/or in rural areas. Policy-makers from the 1940s onwards acknowledged that preventive medicine for medical professionals was the poor relation of the medical [curative] services”.

⁵⁵² On the bypassing of small institutions and overcrowding of large hospitals, see Delpachithra and Jayasinghe (2001); Govindaraj et al. (2014); Withanachchi and Uchida (2006).

Figure 5.3: Model of higher-level curative institutions adopted by the Ministry, 1986



Adopted from Fernando and Cooray (1990).

Table 5.4: Number of health institutions and hospital beds, 1985–2007

Item	1985	1990*	1995**	2000	2003	2005	2006	2007
Hospitals***	490	422	467	558	607	608	623	615
Patient beds***	44,861	42,079	47,665	57,027	59,262	61,594	67,024	68,694
Beds per 1,000 population	2.8	2.9	2.9	2.9	3.1	3.2	3.4	3.4
Central dispensaries	338	278	320	404	400	413	428	441
MOH areas	111	110	213	252	280	268	288	291

Source: Medical Statistics Unit data, health master plan 2007-2016, *Annual Health Bulletin* 2007 of the MoH.

Excludes: *Northern and Eastern provinces; **Jaffna, Kilinochchi, Mullativu and Ampara districts. Includes:

***maternity homes and central dispensaries

To enhance inter-sectoral coordination and community participation in healthcare, district development councils (DDCs), constituted by Members of Parliament from the district, were established under the 1980 Development Councils Act, whereby 15 subjects, including health, were devolved.⁵⁵³ These councils (including divisional and village councils) were created to ensure the socio-economic development of the area, including health planning, health development and the strengthening of PHC activities. This responsibility was further strengthened by the delegation of certain health functions from the Minister of Health to the District Ministers.⁵⁵⁴ As previously noted by Bagchi (1988), only a limited degree of success was achieved by these councils due to the lack of funding for their proposals and the non-existence of experts on the committees who could prepare economically effective plans.

Lastly, despite revamping the PHC model, Sri Lanka was unable to achieve the expected improvements in quality of care, efficiency and equity that would be considered “an effective response to AMR” according to WHO (2018a). AMR in Sri Lanka has not been tackled in tandem with the ongoing changes in the health system, which have failed to deliver good-quality primary healthcare to all people. For this reason, it is important to examine the effects of the reintroduction of dual practice in Sri Lanka in the late 1970s both on the quality of healthcare and on AMR.

⁵⁵³ SLNA: Development Councils Act 35 of 1980.

⁵⁵⁴ A DDC is composed of a district minister, an elected chairman and an elected council. The district minister, an MP from the government party, is appointed by the president. For the implications of the DDCs, see Matthews (1982).

5.2 Reintroduction of dual practice for government doctors

Dual practice (DP) is defined in the literature in diverse ways. According to García-Prado and González (2011, p. 265), DP refers to a physician working in both the public and the private sectors. Ferrinho et al. (2004, p. 4) described it as multiple health-related practices of health professionals in the same or different sites. This study defines DP as an income generation practice among clinicians who divide their work time between the public and the private sectors. Sri Lanka reintroduced DP in 1976/78, allowing government doctors to engage in private practice during non-working hours. Hence this policy facilitated an increase in the number of private healthcare providers in the country (WHO, 2017, p. 5).⁵⁵⁵ As Govindaraj et al. stated (2014, p. 7), DP currently is widespread in Sri Lanka, with 95 per cent of private medical practitioners being state employees, and importantly, “even the large private hospitals are primarily staffed by doctors – especially specialists – who are also on the government payroll”. Against this background, private providers may play a role in driving AMR in South-East Asia because of the high levels of private healthcare use, as Liverani et al. (2020) have argued.

Table 5.5: Subcategories and findings relating to dual practice policy

Category	Subcategories	Findings
Actors	Demand and induced demand for DP	<ul style="list-style-type: none"> ▪ Trade unions demanded their rights to engage in private practice ▪ Doctors encouraged patients to go to the private sector ▪ Patients went to the private sector for convenience
	Government economic policy	<ul style="list-style-type: none"> ▪ A free market including health ▪ Little government interference in private practice
	International health organisations’ agendas	<ul style="list-style-type: none"> ▪ Alma-Ata Declaration to improve access to health ▪ The World Bank’s agenda of improving the private sector
Context	Crisis of human resources for health (HRH)	<ul style="list-style-type: none"> ▪ Government strategy to retain doctors in underserved areas
	Financial motives	<ul style="list-style-type: none"> ▪ Income for channelling centres ▪ Doctors need to earn more to bridge needs and demand
Effects	Improved access to health	<ul style="list-style-type: none"> ▪
	Engaging in private practice during work	<ul style="list-style-type: none"> ▪ Regulated by the law ▪ Loopholes in monitoring doctors’ attendance
	Rivalry and competition among practitioners	<ul style="list-style-type: none"> ▪ Undue advantage may be taken ▪ Prescription of strong antibiotics and analgesics for quick recovery
	Priority access to public hospitals through DP	<ul style="list-style-type: none"> ▪ Patients misuse the system to bypass the proper referral system ▪ Doctors earn goodwill ▪ Financially unsound patients may be referred from the private sector to government facilities

Source: Interview findings of the sample as described in chapter 1.7.

⁵⁵⁵ See chapter 4.2 for the DP before 1977. The legislation of DP resulted in many public sector specialists retiring from state service to work full-time in the private sector. In 1977, the incoming government removed the ban, extending DP privileges to medical officers and other health professionals.

5.2.1 Actors in the reintroduction of dual practice

A theme raised by interviewees when speaking about DP and its effects was the demand for it from government medical officers. Two important aspects were identified: demand for DP from the Association of Medical Specialists (AMS), and physician-induced demand (PID) for private services (government medical officers encouraged patients to seek private healthcare).⁵⁵⁶ The right to carry out DP was initially given to a small number of doctors (a category called specialist medical officers) just before the 1977 election, and rights were later granted by J.R. Jayewardene's government to all government doctors to engage in DP.⁵⁵⁷

It was AMS, [the] Association of Medical Specialists, who were the people most affected in terms of money. After a prolonged period of negotiations with Mrs Bandaranaike's government, Dr Rienzie Peiris (a consultant orthopaedic surgeon, and [the] President of the AMS) succeeded in obtaining the right for consultants in the government sector to engage in private practice just before 1977 [the election]. All medical specialists in government hospitals today practising their speciality in the private sector should be eternally grateful to him. [P01]⁵⁵⁸

The feeling among consultants about the laboratory reports of the government sector and some services was [that they were] not reliable. So, transmitting this feeling to the patients, they encourage[d] them to go to the private-sector facilities. Later, I know, as I have worked in the periphery, the doctors [were] forced to work in...private practice because people always think that it's better to go to the private practice rather than going to the hospital for many reasons. [P20]⁵⁵⁹

One participant mentioned the fact that not only doctors, but also ordinary people encouraged private practice as it provided access to out-of-hours treatment, with even low-income groups seeking private healthcare.

The rural communities also encouraged the private practice of the hospital doctors to enjoy the after-working-hours access [to] healthcare. Earlier we got patients who could afford the cost, but later, we found that even the low-income groups came to me for treatment. I was not able to close my clinic even on a holiday as there was a huge demand from the people for my private practice. [P16]⁵⁶⁰

According to two interviewees, DP played a part in the economic transition, fuelled by the Jayewardene government's open economic policies.

Government sector medical officers were eventually allowed to do private practice by the new government in 1977 as a part of the government open economy policy. [P16]⁵⁶¹

This is part of the economic liberalisation of [the] 1977 J.R. Jayewardene government, who wanted to have a free market, including health, without much government interference. [P22]⁵⁶²

⁵⁵⁶ In health economics, physician induced demand means that a portion of healthcare purchases may reflect physician preferences. This can occur because of consumers' lack of information about the effectiveness of various healthcare alternatives. Thus, they delegate the choice of alternatives to their physician. For components, see Mohammadshahi et al. (2019).

⁵⁵⁷ There are three categories (grades) of doctors in the MoH, Sri Lanka: administrative-grade medical officers (MOs), specialist-grade MOs and grade MOs. For the classification of government medical officers, see Medical Service Minute (MSM) 2012-01-18. The first MSM had been published under gazette notification No. 66/11 on 7 May 1991, which had been amended several times. According to Medical service minutes of 2002, only administrative-grade MOs cannot engage in DP.

⁵⁵⁸ P01: Policy, pharmaceuticals, Sri Lanka.

⁵⁵⁹ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

⁵⁶⁰ P16: Policy, Sri Lanka.

⁵⁶¹ P16: Policy, Sri Lanka, WHO.

⁵⁶² P22: Policy, Sri Lanka.

Two interviewees argued that the drive for HFA (the main theme of the Alma-Ata Declaration, and a topic discussed at WHO's South-East Asia (SEA) regional meetings for several years before the launch) had been an influencing factor in the move to DP since the latter increased access to healthcare.

[T]he Alma-Ata Declaration..., which encouraged access to health services, enabled the government to reintroduce private practice in 1977. [P10]⁵⁶³

I remember it was introduced to improve access to people, or [as] a little bit of link to, maybe to Alma-Ata, or [to] improve access now when there were no GPs [general practitioners]. [P08]⁵⁶⁴

Challenging the WHO's influence, one interviewee argued that DP had also been influenced by the World Bank's (WB's) agenda to strengthen the private sector.⁵⁶⁵

The WHO could not, equally, secure the credit as the World Bank had got involved in this issue since they tried to persuade countries to go in for private practice also to improve the private sector. Because some time back, they thought that this [public healthcare] was an expenditure for healthcare services. [P01]⁵⁶⁶

5.2.2 Context of the reintroduction of dual practice

According to two interviewees, the government's intention in reintroducing DP was to increase access to healthcare amid a severe crisis over a lack of human resources for health (HRH) in 1977. They argued that DP was a government strategy to retain doctors in underserved areas.

The government involvement was seen as a part of the ongoing policy and to cater [for] the serious human resources [needed] for health. [P01]

One of the issues of health services deliveries was not having [the] necessary human resources for health. And qualified people, [it] is very difficult to send them to the remote areas due to reasons, you know, in their families... [the lack of] education facilities for [them]. The government introduced this to match an incentive income..., so...people who go to the remote area[s] can start their own practice...so that gives [a] separate income. At that time, we didn't have enough medical officers because this [is] sort of [the] 70s when Sri Lanka had only about 1,500 doctors. The doctor-population ratio may have been very low. So, the government looked at this as an HRH issue and allowed government doctors to do the dual practice. [P08]⁵⁶⁷

Reasons for engaging in DP were explained by the interviewees. The financial motives of the medical officers were considered as the most important factor in the mushrooming of low-cost private practices as small businesses or as home-based self-employment.

There was a demand from the prescribers for the dual practice because, compared to the other countries, doctors were very much underpaid. [P20]⁵⁶⁸

The channelling takes place in...private hospitals. In the case of the rural areas...they usually go to some private practitioner's dispensary. I don't think there was much in the prototype; people [who] engage[d] in [private] practice made money, and then channelling centres also made some money. [P01]⁵⁶⁹

⁵⁶³ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵⁶⁴ P08: Policy, AMR, Sri Lanka, WHO.

⁵⁶⁵ See WBGA: LN-690-JM, restricted report of the WB, appraisal of population project Jamaica, 1970.2-3. It emphasised developing countries to mitigate the impact of the "heavy strain on government expenditures on education, health, and housing".

⁵⁶⁶ P01: Policy, pharmaceuticals, Sri Lanka.

⁵⁶⁷ P08: Policy, AMR, Sri Lanka, WHO.

⁵⁶⁸ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

⁵⁶⁹ P01: Policy, pharmaceuticals, Sri Lanka.

This was a good example of the insufficient income of doctors...A famous movie screened in the late 1970s called Sagarayak Meda [Centre of an Ocean] shows the struggle of a doctor who tried to maintain his family with his government salary. Ultimately, he was compelled to accept money from a patient for a surgery, for which he was penalised. Therefore, doctors used this opportunity to increase [their] financial wealth. [P22]⁵⁷⁰

The government doctors then started to open up their private practice at home, even at the government quarters where they lived. This was mainly due to financial pressure...[on] the doctors...[and] the economic liberalisation, which enhanced the needs, wants and demand[s] of the people for better living standards. [P16]⁵⁷¹

5.2.3 Effects of the reintroduction of dual practice

Most of the participants agreed that the reintroduction of private practice had improved access to healthcare. One interviewee stated that access to health had become a political issue in the country.

They had access in terms of geographical access and social access to health; this had become a political issue. [P01]⁵⁷²

When asked about their experience of DP, most of the policy experts considered that the problem of doctors engaging in private practice during working hours had been a serious issue for the system. One interviewee mentioned that DP was regulated by law.

The negative side is that when they engage in private practice, [it disturbs] their duty hours and work in the hospital; that's the issue. If somebody works during duty hours in the hospital and after the duty [is] treating [private] patients, [this] is regulated by law [P08].⁵⁷³

A few participants pointed out that there were many obstacles to monitoring doctors' attendance effectively, which facilitates doctors' engaging in private practice during working hours.

The Ministry should monitor doctors' attendance; unfortunately, the Ministry failed to monitor doctors' attendance and availability. Doctors do not sign on a common attendance registry, and doctors are offered the privilege to maintain a diary that is produced to the head of the unit at the end of the month. So how can you monitor doctors' availability? [P16]⁵⁷⁴

A theme raised by interviewees when speaking about the negative consequences of DP was rivalry and competition among practitioners. One major issue they identified was overprescriptions to get a competitive advantage over others: for instance, irrational prescriptions of antibiotics to speed up recovery from an infectious disease.

Less than 60 per cent of government doctors [are] involved in private practice. Because of the rivalry among them for market share, they do extraordinary things to attract customers; for example, they prescribe strong antibiotics and analgesics for a quick recovery; which has negative consequences. [P16]⁵⁷⁵

One interviewee argued that it was not only doctors who misused DP, but also the general public who took advantage of it (to access public-sector hospitals without the need to go through the proper referral system).

⁵⁷⁰ P22: Policy, Sri Lanka.

⁵⁷¹ P16: Policy, Sri Lanka.

⁵⁷² P01: Policy, pharmaceuticals, Sri Lanka.

⁵⁷³ P08: Policy, AMR, Sri Lanka, WHO.

⁵⁷⁴ P16: Policy, Sri Lanka.

⁵⁷⁵ P16: Policy, Sri Lanka.

People use dual practice doctors to get priority access to public-sector hospitals. Those doctors refer patients who came for their private practice directly to their own clinics or wards [in the public hospital] without referring [them] through the proper channel. [P22]⁵⁷⁶

Another interviewee pointed out that doctors also referred patients who could not afford the cost of private treatment from the private sector to government hospitals.

Doctors [are] also happy to send some patients to the public sector if they are not economically viable for them. Small practices do not offer everything, so [by] taking patients for those procedures in the public sector, they earn goodwill from the patient. [P04]⁵⁷⁷

5.2.4 Discussion of DP

An attempt has been made here to assess the context, actors and effects of DP that led to the strengthening of the private sector, which in turn plays a major role in AMR. The findings derived from the interviewees (table 5.4) show that the reintroduction of DP was the result of prescriber-induced demand from doctors and trade unions and user-induced demand from the general public, which was facilitated by the open economic policy of the government. It was also partly influenced by the WB's private sector development agenda at the time and the Alma-Ata Declaration, with its promotion of access to healthcare. Another factor was the severe HRH issue. At the 1978 World Health Assembly, Dr S.D. Malinga Fernando, a Sri Lankan delegate and deputy director of Health Services, conveyed the difficulties faced by the country due to the shortage of doctors.⁵⁷⁸

In the public sector, Sri Lanka had a cadre of 2,368 medical officers, which had not been increased for 10 years because it had not been possible to fill all the posts. The manpower study and its projections had made no difference to the doctor shortage in Sri Lanka because certain factors had not been taken into account, notably the large numbers of doctors leaving the service for various reasons. A similar shortage existed in the private sector.⁵⁷⁹

Sri Lanka, therefore, initiated DP to tackle the severe shortage of doctors, strengthen the private sector and increase access to healthcare.

The government was unable to pay medical professionals large enough salaries to retain them in the public sector. It, therefore, used DP to ensure retention of doctors by allowing them to generate additional income through after-work private practice. One consequence of this strategy, according to Smith (2018), was that the government transferred half of all outpatient contacts to the private sector (which was funded mainly by out-of-pocket (OOP) spending and staffed for the most part by off-duty government doctors engaging (legally) in DP), causing private healthcare to play a critical role in the health system “equilibrium” in Sri Lanka. Additionally, government healthcare expenditure had gradually decreased from 62 per cent in 1953 to 48 per cent in 1980 (and to 42 per cent in 2015), as per figure 5.2. This increased the

⁵⁷⁶ P22: Policy, Sri Lanka.

⁵⁷⁷ P04: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵⁷⁸ Dr Fernando then became the Director of Health Services, and finally, Secretary of Health. After his retirement he worked for over five years with WHO in Geneva: The estimated number of medical officers was 1,655 in 1978.

⁵⁷⁹ IRIS: WHO No. 248, The World Health Assembly, May 1978, 407-8. Even in 1960s, the cadre would have had to increase by 127 percent to meet the standard requirements of the population, but the MoH had less than half of that number in service, as presented in chapter 4.2.

portion of OOP spending significantly – to as high as 48 per cent (figure 5.4). However, according to the Alma-Ata Declaration, health costs needed to be affordable for both the government and the community:

Primary health care is essential health care...made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford.⁵⁸⁰

Despite the expectations raised by the Alma-Ata Declaration and its recommendations, people found themselves overburdened by significantly higher OOP expenditure., J.R. Jayewardene's government in 1977 signed an agreement with the IMF allowing trade liberalisation, currency devaluation, the removal of price controls, welfare cuts, and privatisation.⁵⁸¹ As a result, DP (and the abolition of user fees) was introduced. This subsection argues that the 1977 government (and subsequent governments) dismantle the public healthcare system through both continued underinvestment and private-sector growth by indirectly incentivising government medical professionals.

In developing countries, physicians work fewer hours than they are contracted to in order to attend to their private practice (Chaudhury et al., 2006), and the government's capacity to implement policies and enforce regulations is low (García-Prado and González, 2011). Sri Lanka's public health sector failed to retain doctors during working hours due to the lack of an effective mechanism to regulate DP. President Chandrika Bandaranaike herself raised the issue of this malpractice by government doctors at a cabinet meeting in 1997 (Attanayake and Siyambalagoda, 2003, p. 19).

It was observed that the administration of the government hospitals [had] been deteriorating and most of the doctors [were] not attending to their duties properly as they [were] involved in private practice during office hours. The Ministry of Health was instructed to organise several flying squads to take disciplinary action against wrongdoers. The hon. minister was also requested to discuss [the issue] with the Attorney-General to explore the possibility of taking legal action against those who engage[d] in private practice during their office hours and at their official quarters.

This cabinet decision resulted in the setting up of a flying squad unit at the MoH in 1997 and the issuing of a Ministry circular in 1999 completely prohibiting any engagement in private practice by public-sector doctors during working hours (Attanayake and Siyambalagoda, 2003).⁵⁸² Yet, these measures were unable to regulate malpractice by government doctors due to pressure from the trade unions. The other consequence of DP was the higher utilisation of private healthcare, which led to an increase in OOP

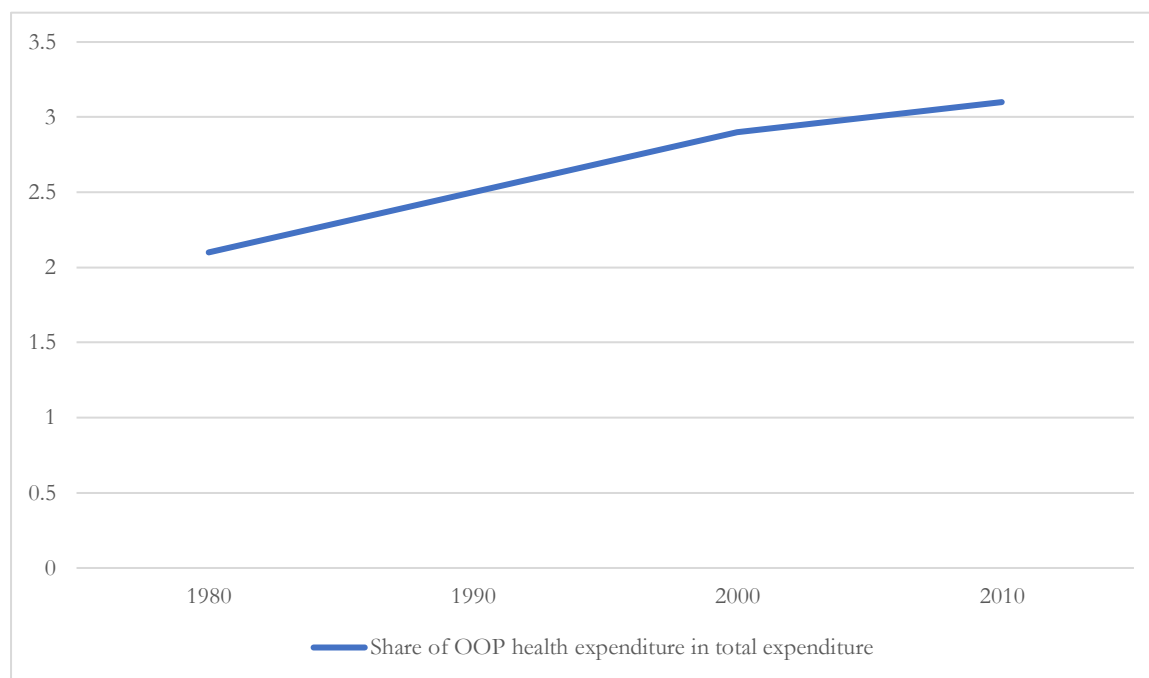
⁵⁸⁰ IRIS: The declaration of Alma-Ata. World health 1988; Aug-Sep: 16-17, section 6.

⁵⁸¹ IMF eLibrary: An Overview of Economic Developments in Sri Lanka, 1996, International Monetary Fund. The reforms were supported by arrangements with the IMF; a one-year standby arrangement (December 1977–December 1978) was immediately followed by an extended arrangement (January 1979–December 1981). For IMF-enforced structural adjustment and public spending on health in lower income countries, see Kentikelenis (2015). For impacts of different IMF and WB policies on health in developing countries, see Sobhani (2019).

⁵⁸² The main aim of the flying squad was to detect illicit practices taking place in state hospitals. Due to the COVID-19 pandemic, this study was unable to access the primary information available at the Investigation Unit (IU) of the MoH, Sri Lanka. As Attanayake and Siyambalagoda (2003) indicated, the IU has primary documents related to DP. When the researcher contacted the IU, a senior officer also confirmed that they have not only Ministry circulars about enabling and regulating DP but also material relating to incidences of malpractice, regulation issues and so on. The officer also mentioned that there were many occasions when investigating officers were forced to turn back from investigations following threats of trade union action. For issues with the flying squad, see Wickremasekera (2018). Though those materials are highly confidential and secured documents, the researcher has access to them as a result of his official capacity at the MoH, Sri Lanka.

expenditure – Pallegedara and Grimm (2009) reported that OOP for health increased from 2.3 per cent of total household expenditure in 1990 to 3.5 per cent in 2000 (figure 5.4). The consequences of this are that patients' health needs may not be met if the doctor is unavailable when they visit the public facility. Alternatively, they may end up paying large OOP sums for care in the private sector, or they may instead not receive healthcare at all due to their inability to pay for private treatment. Another possibility is that they will opt for self-medication, which has severe repercussions mainly on AMR.

Figure 5.4: Share of OPP health expenditure in total household expenditure, 1980-2000



Source: (Rannan-Eliya and Sikurajapathy, 2009; Pallegedara and Grimm, 2018).

Two more adverse effects were caused by DP. First, to compensate for relatively low salaries, many clinicians had been combining salaried public-sector clinical work with a fee-for-service private clientele to meet their survival needs.⁵⁸³ This had contributed to rivalry among practitioners to gain maximum profits, which in turn had led to the overprescription of drugs, especially antibiotics – an approach that has a direct impact on AMR.⁵⁸⁴ These aspects reflected the inability of the government to ensure adequate salaries and working conditions, which made it difficult for medical officers to practise only in the public sector. Second, DP had become a gateway to the public sector, allowing the referral system to be bypassed. This then had an impact on vertical inequity (the unequal treatment of unequals) by limiting poor people's access to public-sector services, and this continues to the present day.⁵⁸⁵ The above findings may indicate that Sri

⁵⁸³ According to De Silva et al. (2013, p. 4), a physician in Australia is paid approximately 30 times more than a similarly qualified counterpart in Sri Lanka.

⁵⁸⁴ For competition among private providers, see Attanayake and Siyambalagoda (2003).

⁵⁸⁵ Sri Lanka's MoH (2008, p. 74) argued that the majority of service receivers belonged to the lowest stratum of society, with an income per person per day for all service receivers equal to just USD 1.2, with a standard deviation of around USD 1. However, most of the higher strata of society received higher priority in public health services;

Lanka, which provides free healthcare, should have regulated DP to increase efficiency and quality of care to a level similar to that of high-income countries that have free healthcare, such as the UK and Germany (García-Prado and González, 2011). Even though Sri Lanka offers free healthcare, the costs are divided between the government and the people, and so as a next step, it is necessary to assess the impact of the removal of the UF.

5.3 Abolition of the user fee

A user fee (UF) is a direct payment made at the time of health service use by the user. As Gilson and McIntyre (2005) argued, while removing fees has the potential to increase service utilisation and access, hasty, politically driven decisions with no prior preparation can lead to unintended effects, including deterioration in the quality of care due to lack of funds, excessive demands on health workers, and depletion of drug stocks. This may indicate that removal of the UF – a direct payment made at the time of health service use by the user – would impact AMR directly through a shortage of antibiotics, and indirectly through a decline in the quality of care. As mentioned in chapter 4, a form of UF (25-cent stamp) for treatment at public hospital outpatient departments (OPDs) was introduced by Mrs Bandaranaike’s government in the early 1970s, and it was abruptly abolished by Jayewardene’s government in 1977 (WHO, 2017b, p. 3). A UF of 25 cents in Sri Lankan currency (1 pound sterling was equal to 15 Sri Lankan rupees in 1972) was a nominal fee by that time; previous scholars and interviewees involved in this study called it a “token fee” or the “25-cent fee”.⁵⁸⁶

for instance, only family members of doctors were given the COVID vaccines – a situation about which staff in other categories protested (Colombo Page, 2021).

⁵⁸⁶For the user fee see chapter 4.2.

Table 5.6: Summary of subcategories and findings related to the abolition of the UF

Category	Subcategories	Findings
Actors	Political involvement	<ul style="list-style-type: none"> ▪ Government economic policy ▪ Election promise
	Agendas of international agencies	<ul style="list-style-type: none"> ▪ WHO's primary healthcare concepts of increasing access to health ▪ WB's sustainable financing model encourages a UF system
Context	Background to UF	<ul style="list-style-type: none"> ▪ Reduced unnecessary outpatient visits ▪ Fee – token, nominal and not the recovery cost ▪ Prescriber had the right to waive the fee if necessary
	Health sector perception of UF abolition	<ul style="list-style-type: none"> ▪ Firstly: reduction in work relating to UF administration ▪ Later: increase in work due to overcrowding
	Political nature	<ul style="list-style-type: none"> ▪ Criticised by the opposition ▪ Politically sensitive
Effects	Relationship between UF and disease burden	<ul style="list-style-type: none"> ▪ It increased the disease burden because of the reduction in per capita visits and the serious illnesses missed ▪ The disease burden was not affected as hospital admissions remained the same
	Overcrowding	<ul style="list-style-type: none"> ▪ Free healthcare ▪ Inadequate expansion
	Debate on healthcare: consumption and investment	<ul style="list-style-type: none"> ▪ Overconsumption ▪ Investment
	Health financing reforms	<ul style="list-style-type: none"> ▪ Financial resources ▪ Missed opportunity

Source: Interview findings of the sample as described in chapter 1.7.

5.3.1 Actors in the abolition of the user fee

Three interviewees recognised that the abolition of the UF was one of the pledges made as part of Jayewardene's 1977 election campaign and that his subsequent government's economic policies also supported it.

The ruling government and its economic policies were the main force behind the abolition of the user fee, and the government did not break the promise given during the election. [P16]⁵⁸⁷

One interviewee considered the influence of WHO's primary healthcare (PHC) concept in the abolition of the UF.

The WHO's primary healthcare concepts during the 70s, mainly the access to healthcare, had a link to the abolition of [the] user fee, but no financial or technical assistance was received from any external organisations. [P01]⁵⁸⁸

Another interviewee pointed out that the WB's view was that there needed to be a sustainable healthcare financing system in which a UF was one of the components.

The World Bank has been pushing the government to introduce a user fee or health insurance module since the late 1980s. It came in many forms such as sustainable healthcare financing or financial reforms. [P23]⁵⁸⁹

⁵⁸⁷ P16: Policy, Sri Lanka.

⁵⁸⁸ P01: Policy, pharmaceuticals, Sri Lanka.

⁵⁸⁹ P23: Policy, pharmaceuticals, Sri Lanka. For the WB's view of government healthcare spending, see footnote 12.

5.3.2 Context of the abolition of the user fee

Three interviewees stated that the UF had been a nominal fee, but that it had reduced unnecessary outpatient visits.

Then it [the token fee] came back in the 1970s. We can't give everything free, and also thinking that people unnecessarily come when it is free healthcare..., [a] 25-cent stamp [was introduced] as a charge for OPD treatment. [P08]⁵⁹⁰

This was not a recovery of cost for the services and was straightforward, just a token fee. I mean it's just like get[ting] on the bus, you [have] got to pay the bus fare. And as a result, I mean, if you run a bus service, everybody would just be going by bus, [but] paying for the bus ticket thing, you sort of make people...take some responsibility. [P10]⁵⁹¹

This 25-cent fee is a stamp that had to be fixed into the OPD chit. When it was introduced, there [was] quite a [drop in the] number of OPD patients. But later on, they got used to it and then the OPD went, more or less, to the dormant levels. [P01]⁵⁹²

The access to healthcare was not affected by the UF as expected. One interviewee said that the abolition of the UF was one of the downsides of the reformed healthcare provision, and the UF had not impacted access to health since the doctor or prescriber had had the right to waive the fee if necessary.

I think one of the biggest disadvantages of this assembling of the health services was the taking away of the 25-cent stamp that quantified the sense [that] there wasn't a major barrier to...access. For example, the doctor or the prescriber had the chance of saying no stamp was needed...We got used to this, because when we used to look at a patient, and sometimes we looked at them and you could see that they were wearing clothes that were too big for them (obviously borrowed clothes)..., we could then write off saying no stamp needed so that they could come to the clinic, without buying at 25 cents. Also, it has to be realised that this 25[-cent] stamp was [equivalent to] the minimum bus fare at that time. So, it wasn't a big thing. Also, the 25-cent stamp was not applied for preventive services. You did not have to pay for the antenatal clinic, Well Baby Clinic or anything. It was not a barrier to access. The final thing was you didn't have to pay anything [for] hospital admission. [P10]⁵⁹³

The political nature of the UF was highlighted by one interviewee. It had been claimed by the United National Party (UNP) opposition between 1970 and 1977 that a UF system was really an attempt at privatisation and the abolition of free healthcare.

This is a complex issue. So, when the 25-cent stamp was insisted upon, people did not like this at all. And some of the political commentators have said that the changeover from the Sri Lanka Freedom Party to the United National Party in 1977 was contributed to by people saying, "we can go to the hospital – we had to pay for it". But a minority realised that the payment was very token... Then, of course, it became a political issue, and after the next elections in 1977, it was abolished. [P10]⁵⁹⁴

This interviewee also said that the UF was a politically sensitive issue, and consequently, none of the governments after 1977 had attempted to reintroduce any form of the UF system; it was not a politically attractive option.

The abolition of any form of UF in the health sector was welcomed initially not only by the general public but also by the health sector. As another interviewee commented, the negative impact of this change

⁵⁹⁰ P08: Policy, AMR, Sri Lanka, WHO.

⁵⁹¹ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵⁹² P01: Policy, pharmaceuticals, Sri Lanka.

⁵⁹³ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵⁹⁴ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

came to light only gradually, and an attempt to reintroduce a UF was not successful since it was a politically delicate issue.

The OPD staff [were] happy that they did not [have] to do the extra work any longer to maintain procedures [relating to the] 25-cent stamp work. It was good news for folks as it stopped people going [to the] post office before going to treatment. Later, the public health sector realised that services [were] overused unnecessarily, and they unsuccessfully attempted to introduce some sort of fee. [However, no] government [would] touch...this as it would be another political suicide for them. [P16]⁵⁹⁵

5.3.3 Effects of the abolition of the user fee

One interviewee claimed that Sri Lanka had missed out on identifying serious diseases at an early stage as a result of the UF system before 1977, which reduced per capita healthcare consultations.

So, now if you look at indicators of delivery of [the] healthcare system, if people use [the] healthcare system more, that means more healthcare deliveries. So that's why you go by the per capita visiting of healthcare institutions to compare countries [in terms of] how many individuals visited the health system. It's a good thing when people come to the system: you identify people at risk of...disease not only [as] individual[s] [but] also...the community and health system. Now we are trying to do the screening and get the patients identified early. Our system is more people are coming through the system, which is an advantage. We lost the advantage during the 1970s due to the user fee. In this situation, people started to come in when they developed a complication or a serious issue. It is costly. [P08]⁵⁹⁶

Though the UF had reduced the OPD visits drastically, one interviewee argued that it had never affected the disease burden of the country.

The OPD attendance dropped by one-third because of these 25 cents. Then this must have had a deleterious effect on healthcare. Did people then in that particular case delay going to the hospital [with the result] that they became seriously ill? If...people delayed going into the hospital, then hospital admissions [which were free] would have increased, but in this particular situation, the hospital admissions remained static. And I think what that demonstrated was the enormous amount of redundancy and wastage that [there was]. So, this is one of the sorts of experiments of healthcare, which showed that providing free services can be unnecessary or it can be a burden, and there must be a responsibility, right, for both the patient and [a successful] healthcare...system. [P10]⁵⁹⁷

Abolition of the UF, interviewees highlighted, had a direct impact on overuse, which has led to the health system being overstretched.

It's free entry now. Our system is overburdened now. Everywhere it is overcrowded, there is a long waiting time for OPD services, and wards are overcrowded – you can see patients on the floor. In some units, the bed occupancy ratio is more than 150 per cent. [P16]⁵⁹⁸

One interviewee argued that overcrowding was a system issue caused by services not being expanded adequately to meet demand.

I don't think the number of OPD patients increased dramatically. You can see [that] from Ministry publication[s] during that time. The question is, have health services been expanded to cater for the growing demands? So, the overcrowding is a result of the failures of the current system. [P05]⁵⁹⁹

⁵⁹⁵ P16: Policy, Sri Lanka.

⁵⁹⁶ P08: Policy, AMR, Sri Lanka, WHO.

⁵⁹⁷ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

⁵⁹⁸ P16: Policy, Sri Lanka.

⁵⁹⁹ P05: Policy, Sri Lanka, WHO.

When asked about who was responsible for the overuse of healthcare resulting from the abolition of the UF, most of the participants claimed that the government and policy-level health officials bore the most responsibility. One participant commented that the WB had intervened, articulating its point of view in the *World Development Report 1993: Investing in Health*, which successfully changed the ideology of policymakers about health from utilisation to investment.

We, [the] Health Ministry, were blamed for overutilisation of healthcare; even the local treasuries looked at [this] (within...inverted commas) “consumption”. But that famous World Bank publication in the 1990s, *Investing in Health*, that changed the whole attitude. Because of this new idea, when we went to the Treasury for our annual pilgrimage, the Treasury secretary...said we don’t consider that health is...consumption; now we consider health as an investment. Now...the people will become healthier, and they will be more productive economically, so people should invest [in] health. So, the World Bank dropped that issue and tried to get rid of the free healthcare services. [P01]⁶⁰⁰

It’s an enormous challenge to a country to maintain free healthcare...but it’s economically profitable, with increased production due to a healthy labour force. [P15]⁶⁰¹

A subtheme that was raised by several interviewees was the failure of governments to make reforms to health financing, which they considered a serious issue in the region.

The increasing cost of healthcare has begun to exert financial pressure on government budgets in the developing world, where the demands being placed on public healthcare provisioning are bound to rise significantly. However, the inability of the government to identify adequate financial resources has made healthcare financing an important policy concern. [P12]⁶⁰²

One interviewee argued that the 1977 Jayewardene government had missed a golden opportunity to introduce an effective UF system to prevent overutilisation and generate substantial revenue for the system:

The 1997 JR [Jayewardene] government abolished the fee system without a detailed review. [It] missed a golden opportunity to reform the health financing system to prevent this catastrophe of overcrowding and overutilisation; we could have generated sufficient funds to run the system properly. [P10]⁶⁰³

5.3.4 Discussion of the abolition of the user fee

The above results show the actors, context and effects of the abolition of the UF in 1977, which had direct and indirect effects on AMR. The data show, too, that the removal of the UF was also influenced by the “Health for All” concept as well as by the WB’s health financing model, which proposed that governments “charge users of government health facilities”.⁶⁰⁴ In the 1970s, welfarism had suffered a worldwide setback, with investment in the social sectors, especially health, being viewed as unproductive

⁶⁰⁰ P01: Policy, pharmaceuticals, Sri Lanka.

⁶⁰¹ P15: Policy, WHO.

⁶⁰² P12: Policy, WHO.

⁶⁰³ Policy, pharmaceuticals, Sri Lanka, WHO.

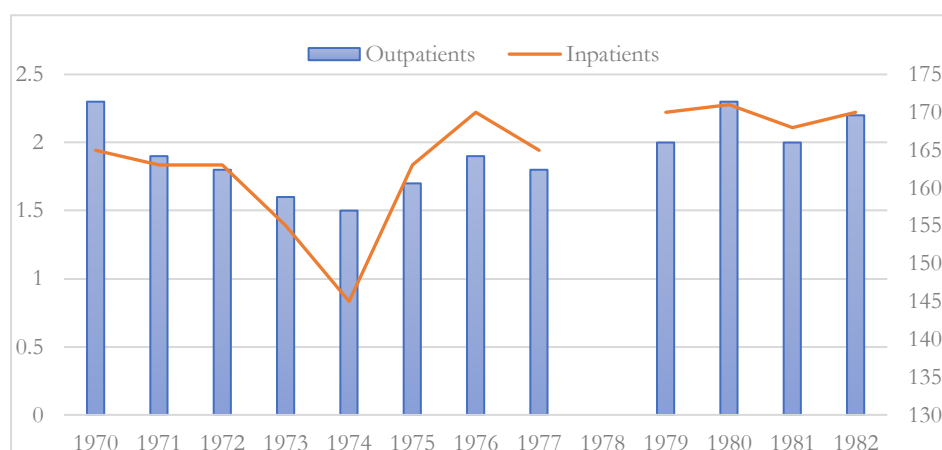
⁶⁰⁴ World Bank Digital Archive (WBDA): PUB 6563, *Financing health services in developing countries: An agenda for reforms*, 1987, 3. According to the United Nations Development Programme (UNDP), a key role for sustainable health financing is to support health systems to achieve universal health coverage by reducing health inequities and minimising financial hardship on the poor (UNDP, 2020). As WHO (2000, p. 95) defined, the purpose of health financing is to make funding available, as well as to set the right financial incentives for providers, to ensure that all individuals have access to effective public health and personal healthcare.

(Baru, 1994).⁶⁰⁵ That influenced President J.R. Jayewardene to reduce the social care budget, including health, as per figure 5.1. In 1979 the regional director of SEARO, Dr V.T.H. Gunaratne, who had previously led the Health Department of Sri Lanka, claimed that annual government health expenditure had been lowest in 1978.⁶⁰⁶ Sri Lanka, according to Dr U. Ko Ko, a regional director at SEARO in 1982, had been seeking to review alternative financing options such as various types of payment schemes.⁶⁰⁷

A policy review of the financing of healthcare was being undertaken following the completion of a broad study of health costs and financing alternatives. Issues such as the shortfall in the recurrent budget resulting from past increases in capital expenditure were being studied. A wide range of alternative options was under review, including payment schemes and various types of health insurance.⁶⁰⁸

Though some regional countries have had successful results with a UF (for instance, Thailand's 50-baht system), this chapter argues that the reason Sri Lanka has never attempted to reintroduce a UF system as a sustainable solution to rising healthcare costs is that it appears unlikely to bring any tangible economic benefits that would justify the associated political cost.

Figure 5.5: Association between user fee and inpatient and outpatient care from 1970 to 1982



Source: Rannan-Eliya and De Mel (1997) and reports of the Central Bank of Sri Lanka. Notes: Inpatients per 10,000 population; outpatients per capita

MacNay et al. (2004) claimed that the provision of free public healthcare stood out as one of the factors behind the high coverage and good health outcomes in a low-income setting in Sri Lanka. However, WHO (2010) warned that the abolition of and exemption from the UF would have a significant impact on both the demand and supply of health services. After the abolition of the UF, as this study identifies, the resulting increased outpatient visits (figure 5.5) led to significant overcrowding. Despite this, governments from 1970 failed to increase hospital beds to match the growing demand for inpatient care, as figure 5.6 indicates. The country's health delivery system was significantly affected by the economic policies regarding

⁶⁰⁵ Welfarism is the belief or principle that social welfare depends (positively) only on individual welfare (or utility) levels. For the differences between utility and welfare, see Ng (2000). According to chapters 3 and 4 of the theses, in general SLFP-led governments spent more money on social welfare.

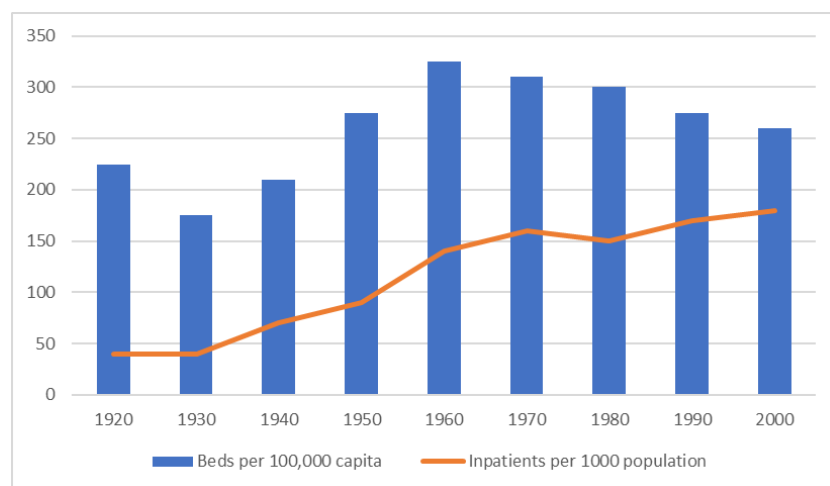
⁶⁰⁶ IRIS: SEA/RC32/2, Annual Report of the DG of SEA, 1978-79, 151.

⁶⁰⁷ Dr Ko served as the RD for SEA for 13 years from 1981.

⁶⁰⁸ IRIS: SEA/RC36/2, Annual Report of the DG of SEARO, 1982-83.

the healthcare of the 1977 government: the reduction in the government health budget, the loss of the UF income (even though small) and the effects of the abolition of the UF (especially overcrowding at outpatient visits). Having failed to take advantage of the “golden opportunity” to introduce health financing reforms when replacing the UF, the government unsuccessfully attempted to transfer outpatient care to the private sector by enabling DP, which has proved unproductive, as discussed in subsection 5.2.

Figure 5.6: Beds and inpatient utilisation, 1920–2000



Source: Rannan-Eliya and De Mel (1997). Notes: Beds per 100,000 capita; inpatients per 1,000 population

Although the UF helped to keep down the number of outpatient visits, it did not affect the detection of serious illnesses, since hospital admissions (figure 5.6), which may be considered as a proxy for disease burden, remained low.⁶⁰⁹ In contrast, in Malawi, according to Watson et al. (2016), UFs for outpatient healthcare services presented a barrier to patients accessing healthcare and reduced the detection of serious infectious diseases such as HIV, tuberculosis and malaria. Additionally, a 25-cent UF system did not prevent access to healthcare by the poor. This was dependent on the mercy and understanding of the provider rather than on a proper safety net system. Smith (2018) also recognised that Sri Lanka had failed to implement a system of explicitly targeting specific population groups, especially underprivileged people, during the UF era of the 1970s. A UF system can feasibly be introduced without affecting disease load. However, it needs to contain effective safety net mechanisms to protect not only underprivileged people, but also the general public from financial hardship during a catastrophic illness.

In broad terms, the politically driven removal of the UF impacted negatively on AMR in Sri Lanka owing to a reduction in the quality of care, overcrowding, higher demand for services, and a lack of government funding. Though the abolition of the UF led to an increase in the use of antibiotics because of a rise in health-seeking behaviour and greater utilisation of services, it improved access to healthcare, which was one of the elements of the “Health for All” concept, as discussed in the previous subsection (5.2). Finally, imposing UFs on antimicrobials would be one potential way to curb antimicrobial use, as Van

⁶⁰⁹ All admissions to public hospital were free of charge in Sri Lanka from 1951 onwards.

Boeckel et al. (2017) argue. However, judging by the evidence seen in this chapter, the likelihood of a UF or service cap being introduced to limit antibiotic use in Sri Lanka is extremely small, given that it would have a high political cost. Faced with the failures of the system at the time, J.R. Jayewardene's government was forced to embark on extensive decentralisation in accordance with the 13th Amendment to the Constitution that had created the provincial council system. This will be discussed in the next chapter.

5.4 Conclusion

This chapter assesses three main health policy milestones in Sri Lanka between 1977 and 1987. The 1997 government started to navigate away from the 1970-1977 government-controlled economy to a fully liberalised economy. This chapter argues that the governments after 1977 through their economic policies dismantled the public healthcare system through both continued underinvestment in healthcare and private-sector growth by indirectly incentivising government medical professionals by abolishing UF and reintroducing DP without analysing the health system. Though the government intended to increase the access to doctors through DP, this measure in fact led to easier access to the private sector than to public-sector healthcare. Accordingly, out-of-pocket health expenditure for health increased as people sought private-sector treatment. Less regulated DP resulted not only in a low availability of doctors in the public sector but also in undue competition among the doctors for their share in the private sector. Therefore, doctors tended to prescribe more antibiotics irrationally to ensure quick recovery from illness in order to attract satisfied patients and maintain their client base. This chapter argues that the abolition of the UF, which is found to be an effective tool to reduce unnecessary hospital visits without affecting the disease burden, had a significant impact on both the demand and supply of health services in Sri Lanka. It demonstrates that it led to overcrowding due to the high demand for healthcare that could not be bridged by the government increasing hospital beds. Overcrowding of hospitals has a direct relationship not only with healthcare-associated infections but also with reduced quality of care. Such events increase infectious diseases and consume more antibiotics.

The HFA initiative received the highest level of political support from Sri Lanka, even though a form of PHC system had already been established there. The new primary healthcare structure, which combined preventive and curative services, was successful in expanding the existing public health system (health unit) that worked on preventive services. Accordingly, preventive care was neglected as doctors in this system concentrated on private-practice-based patient care services. The proposed referral system failed to prevent people from bypassing primary care facilities, which has led to the overcrowding of large institutions and the underutilisation of PHC. As experienced by Sri Lanka's health sector in the 1960s, the increasing population and concomitant health demands are a great challenge for setting up cadre norms, and it has not yet been possible to achieve the cadre norms set by this initiative. Relevant structural changes could also not be implemented due to insufficient financing for healthcare, especially for PHC, which hindered activities of the HFA initiative in Sri Lanka.

Though all these initiatives helped to increase access to healthcare, the government was unable to achieve the expected efficiency, effectiveness and quality in the healthcare delivery system. In terms of AMR, these policies led to an inappropriate overprescription and self-prescription of antibiotics and increased health-seeking behaviour. The reduction in government funding for preventive healthcare, the dismantling of the PHC and hospital systems, and the existence of unregulated private healthcare also appear to have negatively impacted AMR in many ways, leading to a rise in infectious diseases, issues in diagnosing bacterial infections, and inappropriate use of antibiotics. Still, in the 1980s, it was not too late for the government to find the right strategies to limit the damage and achieve the efficacy, effectiveness, and quality of healthcare at primary, secondary and tertiary levels. The following chapter will investigate how the government faced those challenges over the subsequent decades to cater for the rising demand for healthcare – through devolution of health services in 1988, attempted healthcare reforms in 1992 and 1996 and a strategising health master plan from 2007 to 2016.

Chapter 6. Health policies in Sri Lanka from 1987 to 2017: Devolution, Task Forces and Health Master Plan

As the last chapter has shown, after 1977 Sri Lanka underwent a rapid change in the structure of healthcare following the abolition of the user fee (UF), the reintroduction of dual practice (DP) and the adoption of the Alma-Ata “Health for All” (HFA) concepts. This chapter examines and identifies health policies in Sri Lanka from 1987 to 2017 that are relevant to the management of antimicrobial resistance (AMR). It ends in 2017 when the National Strategic Plan for Combating AMR in Sri Lanka was launched. This chapter will study the policy process of the devolution of healthcare, Presidential Task Forces (PTFs) and the first Health Master Plan (HMP1) (table 6.1). Previous studies have assessed the changes and outcomes relating to devolved areas such as education, agriculture and the finance sector (Aturupane, 2017; Gunawardena, 2017; Marambe et al., 2017; Nguyen, 2017), with a limited study shedding light on the whole devolution process (Bagchi, 1988; Perera, 2001). In *A Preliminary Assessment of Sri Lanka’s Health Sector and Steps Forward*, a joint study by the government of Sri Lanka (GoSL) and the World Bank (WB), Hsiao and Li (2000) seek to assess the “Reorganization of the Central and Provincial Health Services” and the work of PTFs with the help of available literature. However, this study placed little emphasis on the negative effects of those initiatives. While Margaret Jones and Chandani Liyanage (2018) attempted to assess the perceptions of traditional medicine practitioners about HMP1 in terms of policy and practices, a former Secretary of Health of Sri Lanka, Dr Reggie Perera (2015), endeavoured to give an account of his experience of the formulation of the Health Master Plan (HMP). This chapter will examine the dynamics of those policies in terms of context, actors and effects of those initiatives from policy perspectives. Similarly, to the previous chapter, this chapter also draws upon findings from qualitative interviews with experts in health policy, pharmaceuticals and AMR who were working or had worked in Sri Lanka and/or WHO settings.⁶¹⁰

The major policy milestones in the health arena in Sri Lanka are presented in chronological order in figure 6.1 below, and categories and findings are identified under the three main headings of the modified policy triangle framework (figure 1.2), as described in the first chapter. With the help of primary and secondary literature, this chapter analyses, at the end of each subsection, the effects of policy changes and developments for the years in question.⁶¹¹ As previously, research was hampered by travel restrictions and archive closures resulting from the COVID-19 pandemic, which prevented access to several data sets kept at the Ministry of Health (MoH) and the National Archives of Sri Lanka (SLNA): ministry circulars and confidential MoH internal communications from 1987 to 2017, gazette notifications and parliamentary debates, and newspaper articles for the same time period. Despite this, the chapter has sought to make the best possible use of the available evidence to analyse the research findings effectively.

⁶¹⁰ Selection criteria and characteristics of the interviewees are described in chapter 1.7.

⁶¹¹ See chapter 1.7 for the data collection techniques.

Table 6.1: Policy milestones related to AMR in Sri Lanka, 1987–2017

Year	Policy milestones
1987	Devolution of healthcare under the 13th Amendment to the constitution in 1987
1992	The presidential task force for health in 1992 (PTF1)
1997	The presidential task force for health in 1997 (PTF2)
2007	Health master plan 2007-2016 (HMP1)
2015	National Medicines Regulatory Authority (NMRA) Act*
2017	National Strategic Plan for Combating AMR in Sri Lanka 2017-2022*

*These will be discussed in the next chapter.

6.1 Devolution of healthcare under the 13th Amendment to the Constitution in 1987

In 1987, according to the 13th Amendment of the Sri Lankan Constitution, the central government’s power in relation to healthcare was devolved to the newly established provincial councils (Mendis, 2017).⁶¹² With this devolution, a substantial portion of the power vested in the MoH, under a cabinet minister, was transferred to the provincial ministers of health in the eight provinces (later to become nine provinces).⁶¹³ As a result of this process, all the primary healthcare (PHC) and preventive work and management of some of the curative institutions were handed over to the provinces (Attanayake, 2008). As figure 6.1 illustrates, each provincial health department, headed by a provincial director of health services (PDHS), and each health district, led by a regional director of health services (RDHS), is responsible for primary and secondary levels of curative care and all preventive services (Fernando, 2000, pp. 15-16). The central MoH was responsible for stewardship functions such as policymaking, development of guidelines, programme monitoring and technical oversight, the purchase and distribution of drugs and consumables, human resources training and deployment (for the provinces as well as for the central administration), and the operation of tertiary and a few other selected hospitals.⁶¹⁴ Hence devolution changed the healthcare governance system in the country from a central MoH-led system to a combined central and provincial MoH system.⁶¹⁵ The healthcare governance of countries, as Brigand (2018) argues, impacts heavily on achieving universal healthcare or health coverage (UHC), which directly links to AMR through the full spectrum of essential and quality health services including health promotion, preventive healthcare, treatment, rehabilitation and palliative care across the life course.⁶¹⁶

⁶¹² See also the constitution of the Democratic Socialist Republic of Sri Lanka, published by the parliamentary secretariat, 2021.

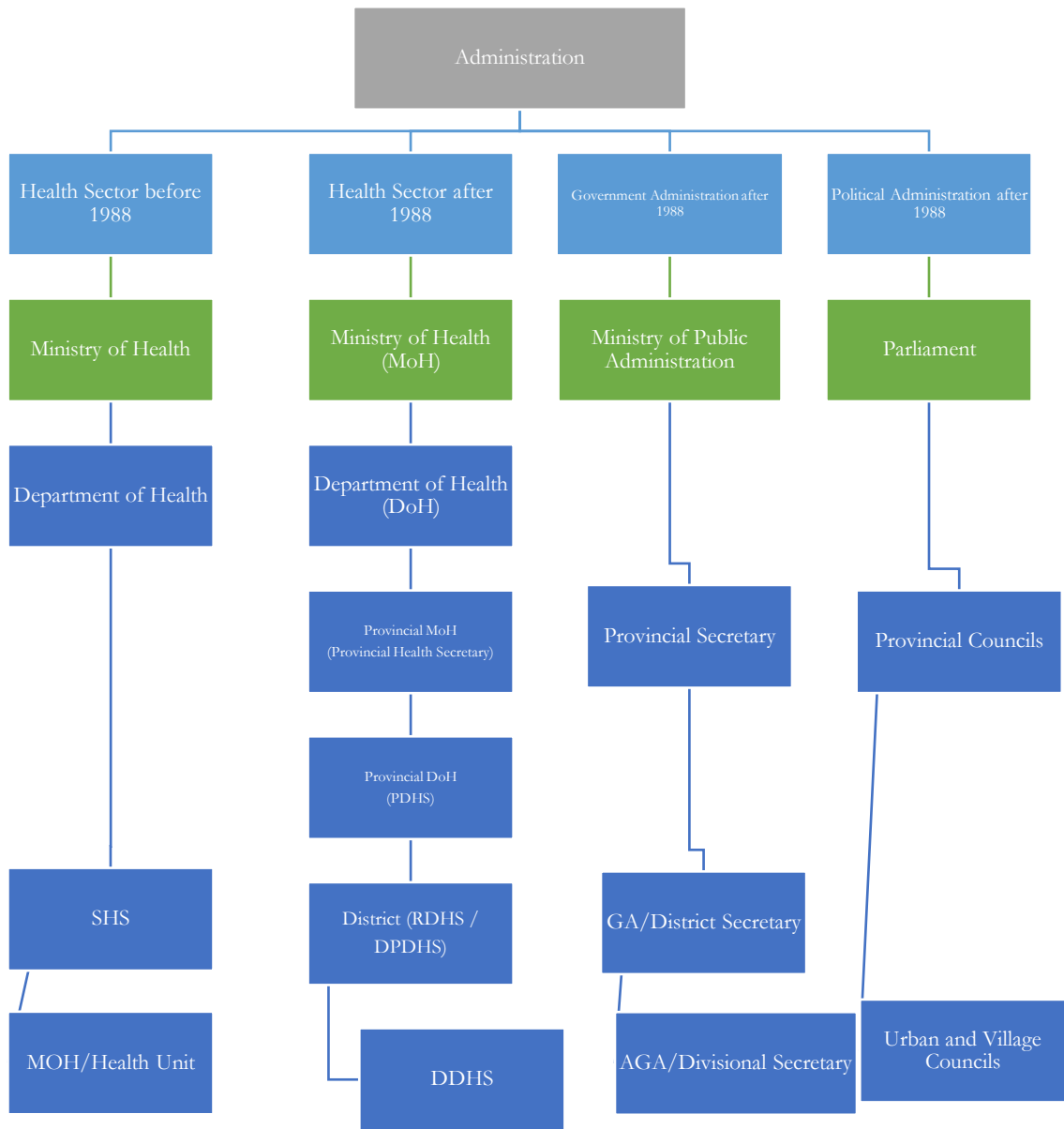
⁶¹³ SLNA: Provincial Councils Act No. 42 of 1987.

⁶¹⁴ As mentioned in the last chapter, although the system of administration under consideration was one of multi-tier governance with eight elected provincial councils “within the unitary state of Sri Lanka” as in a federation, the 13th Amendment to the constitution spells out at some length the powers and functions of the provincial councils vis-à-vis the centre.

⁶¹⁵ According to the WHO, health sector governance refers to “a wide range of steering and rule-making related functions carried out by governments/decision makers as they seek to achieve national health policy objectives that are conducive to universal health coverage” (Birgand et al., 2018).

⁶¹⁶ UHC means that all individuals and communities receive the health services they need without suffering financial hardship. For the definitions and components, see Arendt (2012); Maeda et al. (2014); WHO (2018; 2010).

Figure 6.1: Health, government, and political administration before and after devolution



Sources: Cooray (1990); Fernando and Cooray (1990); MoH and JICA (2003). Notes: DPDHS: Deputy PDHS; MOH: Medical Officer of Health; SHS: Superintendent of Health Services; GA: Government Agent; AGA: Assistant GA.

Table 6.2: Categories and findings relating to devolution of healthcare

Category	Subcategories	Findings
Actors	Contribution from India, ministry officials and WHO	<ul style="list-style-type: none"> ▪ Devolution was proposed by India as a solution to the ethnic crisis ▪ Health Ministry officials assisted in formulating and implementing the process ▪ WHO provided minor assistance
Context & content	Devolution as a part of ongoing decentralisation of health services	
	Process	<ul style="list-style-type: none"> ▪ A sudden and unexpected event ▪ Health officials not consulted ▪ Challenge to set clear terms of reference
	Behaviours	<ul style="list-style-type: none"> ▪ Loss of control over provinces by Health Ministry ▪ Interference in central ministry work by the provinces
Effects	Adding an extra layer of health administrators	<ul style="list-style-type: none"> ▪ Easy to communicate with the whole district ▪ An extra burden on the system ▪ Reduced efficiency in conveying messages ▪ No necessity for provincial councils
	The concentration of power in the provinces	<ul style="list-style-type: none"> ▪ Not real decentralisation since powers in the districts were transferred upwards ▪ Increased participation in decision-making
	Authority of provinces	<ul style="list-style-type: none"> ▪ Risk of going against central government policies ▪ Advantage of having own provincial policies based on provincial needs
	Issues of provincial health planning	<ul style="list-style-type: none"> ▪ Due to a lack of qualified planning officers ▪ Based on the requests from the feeding organisations
	Underfunding of provincial health services	<ul style="list-style-type: none"> ▪ Low own income generation by the provinces ▪ Inadequate funding from central government to provinces ▪ Large hospitals in the provinces were taken back under central ministry as provinces could not sustain health services

Source: Interview findings of the sample as described in subsection 1.7

6.1.1 Actors in health devolution

India's significant influence over the devolution question was mentioned by four interviewees, and it was considered an unsuccessful political solution for Sri Lanka's ethnicity-related problems.

We never should have gone for that because we were doing very well. Ours is a very small country with a good network of rules. There was no rhyme or reason...The Indians noted this as a solution to the ethnic problem – now [a] big mess...we did not need this [devolution]. [The] Health Minister was aware. No question of consulting the technical arms of the government. It was [a] political decision [of the Indian Prime Minister] Rajiv Gandhi. This was thrown [up] by India because [it was] a home-grown solution. They have this system; it is a vast country. They know the job. [P01]⁶¹⁷

One interviewee reported that reorganising the health system in accordance with the devolution of power was accomplished through the work of the MoH; another suggested that the assistance given by international agencies in the devolution of health was minimal.

It was basically the work of the Ministry of Health...reorganising the health system according to the devolution package...We were given the format of the proposed administrative structure of the provincial councils, [and] we arranged the health component accordingly. [P21]⁶¹⁸

⁶¹⁷ P01: Policy, pharmaceuticals, Sri Lanka.

⁶¹⁸ P21: Policy, Sri Lanka, WHO.

From the WHO, they might have got a little bit of input, or some workshops. The WHO money [was] very little. [P01]⁶¹⁹

However, one participant argued that the WHO had provided technical assistance and health workforce training relating to the process of devolving health.

WHO extended their support...it was technical assistance and capacity development on the provincial level. [P16]⁶²⁰

6.1.2 Context and content of devolution of health

Four interviewees expressed their views on the type of decentralisation, and how it was adopted into the system. One participant commented that since this was about mainly political aims, it did not receive the fullest support from officials. However, health was one of the components which were intended to empower the population on the periphery.

Decentralisation is a management tool. In management, decentralisation is looked at very positively. You know you have different ways of decentralisation. You can start with de-concentration, in that you can delegate the work. This decentralisation is devolution, so what clearly happened in Sri Lanka was devolution in the modality under decentralisation, which is basically political power. Devolution is a little different. It is not the de-concentration or delegation [but] the political process. So, under that, health was identified as one component. So, this decentralisation was aimed to make them access the services [on] their doorstep. This is to empower the people [on] the periphery to [make] decisions [for] their people because the administration is close to them, at the point of decentralisation. Conceptually, it is good. As the entire [aim] was to make political decisions, it did not receive the expected support from the official[s]. [P08]⁶²¹

Another interviewee stressed that decentralisation of the health system was not a new concept – it had been initiated in 1953 – and Sri Lanka had attempted to reorganise the system in the late 1980s using the WHO's model of PHC.

Sri Lankan health was centrally managed under the civil medical department and subsequently the Department of Health and Sanitary Services until the Health Act of 1951, where the central powers were given to the SHS's [Superintendent of Health Services] divisions...When then the provincial [system] came [in], they appointed provincial directors, regional directors. The MOH [medical officer of health] is supposed to coordinate with the divisional coordinating committee at the divisional secretariat level under the restructuring process of WHO's PHC model. [P01].

When asked about their individual experiences with the 1987 healthcare devolution process, two interviewees considered that the government's directive had been sudden and that making changes to an existing system that had evolved within the PHC model had proved a difficult task.

We were suddenly and unexpectedly told to make the preparations for decentralisation according to the 13th Amendment of the Constitution. We did not have sufficient time for consultation with stakeholders. [P21]⁶²²

The health sector was never consulted on this devolution thing. So, to fall in line, we have established the provincial and the regional directors. [P01]⁶²³

⁶¹⁹ P01: Policy, pharmaceuticals, Sri Lanka.

⁶²⁰ P16: Policy, Sri Lanka.

⁶²¹ P08: Policy, AMR, Sri Lanka, WHO.

⁶²² P21: Policy, Sri Lanka, WHO.

⁶²³ P01: Policy, pharmaceuticals, Sri Lanka.

In terms of practicalities, it was not easy, according to one interviewee, as the terms of reference needed to be clearer for the smooth functioning of the process.

There were three lists. We called them the decentralised list, [the] centralised lists (or central component) and [the] concurrent component. There [was] a lot of confusion in this. There [were] things...to put in the decentralised [lists] like public health, for which we have centralised policies. When it [came] to the centralised component such as training and education, you know...any decentralised efficiency [went] down. [P08]⁶²⁴

Moreover, there was a reference to how the central government and the provinces had accepted change during the period of transition. One interviewee said that central MoH officers felt disconnected from the periphery.

Ministry officials felt that they were disconnected from the activities of the provinces and districts due to devolution. They were shocked and sad, but later things became normal. [P21]⁶²⁵

Another interviewee flagged up attempts by the provincial health authorities to block work by the central ministry in the provinces.

There was a day when the provincial directors thought that they were not under the central Ministry of Health. I remember one fellow objected to a head office officer inspecting a provincial institution. [P01]⁶²⁶

6.1.3 Effects of health devolution

One interviewee claimed that the peripheral health system had benefited by the addition of an extra medical administrator, which increased the resource pool at the provincial level, allowing the central MoH to connect with the province through the PDHS rather than having to contact several RDHSs.

It created another layer of health administration. That means we have got more people to plan, organise, monitor and evaluate the work in the periphery. The PDHS became the focal point of the health activities of the province, which made it easy for the centre to contact one person to deal with a large geographic area. [P22]⁶²⁷

Three interviewees then argued that creating additional layers of health administration had become an extra burden on the system. One interviewee claimed that this was an unproductive exercise to govern a small country.

On the negative side, you know the people in the head office were not very happy about it because we felt that there was no need, especially in the case of the health sector. Yes, we felt that this was an additional expenditure. And we are putting [in] so many layers and they said [it was for] the smooth running of [our] (small) country. We still [have] no need for this, these changes. See the quantum of these people and the cost of maintaining them. Ministers are there, the provincial secretaries are there, the provincial chief secretaries, and they are there to be found accommodation, salaries and many more. Really unnecessary...like a white elephant. [P01]⁶²⁸

Another interviewee claimed that the efficiency of messages was reduced when there was an additional layer of communication through which to go.

⁶²⁴ P08: Policy, AMR, Sri Lanka, WHO.

⁶²⁵ P21: Policy, Sri Lanka, WHO.

⁶²⁶ P01: Policy, pharmaceuticals, Sri Lanka.

⁶²⁷ P22: Policy, Sri Lanka.

⁶²⁸ P01: Policy, pharmaceuticals, Sri Lanka.

When it comes to centralising components such as training and education, when it transmits [messages] to the periphery [through the provincial system], efficiency goes down. [P08]⁶²⁹

One interviewee argued that devolution caused a concentration of powers to the provinces from the district level. Therefore, it was not really decentralisation and led to an inequitable distribution of power within the province.

[As a result of devolution, power] was more concentrated at the provincial level, so we called it decentralisation, but...is this [decentralisation], which has given powers from the district-level administration...[and] concentrated [them at] the provincial level? Earlier it was more powers to the periphery, but devolution [has] take[n] effect...the other way around. Equity and access are the important components of a healthcare delivery system. The negative thing in devolution is that the disparities of equity have gone up. [P08]⁶³⁰

On the other hand, the same interviewee argued that the positive feature of devolution was the participation of the community in decision-making in healthcare.

You can argue both ways, the decentralisation was a good thing as, [in a] healthcare system, people and stakeholders should get [to make the] decisions. [In] healthcare we always call [for] community engagement. [It] is very important in decision[s]: making use of them, and [what] they want [it]. So that process is easy. [P08]⁶³¹

The hazards of devolution were highlighted by two interviewees. The provincial governor is the supreme authority on accepting or rejecting guidelines and staff appointments received from the central government.

We [centre] get policy decisions and send out guidelines as circulars and letters to the provinces but adapting [them] to the provincial system is vested in the governor and chief minister of [the] province according to the 13th Amendment. Concurrence of [the] governor is mandatory for [the] appointment of the administrative posts such as PDHS and RDHS...[The] governor could appoint any medical officer for those posts as [he] wishes and reject anyone appointed from the centre for those posts. It is extremely dangerous. [P16]⁶³²

Nevertheless, one interviewee considered that the ability of the provinces to formulate their own provincial (federal) policies was a positive move.

Even in India health is a devolved subject and [the] federal government[s] make their own policies for health issues. It is a good thing sometimes, as they know their own problem[s]. [P24]⁶³³

Three interviewees identified a lack of capacity of the provinces as an important factor that hindered the successful planning and implementation of work. One interviewee claimed they were unable to perform effective provincial health planning as they did not have enough human resources to follow the basic steps of planning.

Only a limited [number of] provincial health departments and RDHS offices have specialist or medically qualified planning officers. Planning officers, recruited from the planning service, are normally engaged in routine data collection. So, district plans are based on the routinely prepared

⁶²⁹ P08: Policy, AMR, Sri Lanka, WHO.

⁶³⁰ P08: Policy, AMR, Sri Lanka, WHO.

⁶³¹ P08: Policy, AMR, Sri Lanka, WHO.

⁶³² P16: Policy, Sri Lanka.

⁶³³ P24: Policy, WHO.

requests made by the head[s] of institutions. Then [the] provincial plan normally takes the form of an aggregation of district plans. It is totally inappropriate. [P22]⁶³⁴

Insufficient funding to maintain provincial health was considered a major issue by most of the interviewees. According to them, the central government intentionally underfunds the provinces (which do not have a substantial revenue), which then cannot maintain the hospitals and preventive health activities. One interviewee claimed that a lack of funding in the provinces led to a weakening of hospitals and ultimately to some hospitals being reabsorbed into central ministry control.

The government allows [the] weakening [of] the provincial health services and then take[s] major hospitals back to the central Ministry of Health. It's not a good trend. [P20]⁶³⁵

6.1.4 Discussion of the devolution of health

According to multiple authors, the GoSL attempted healthcare devolution when there was little concrete evidence of the likely success of resource allocations to devolved units (Attanayake, 2008; Cooray, 1990; Walt and Gilson, 1994).⁶³⁶ At the inception of the devolution process, Bagchi (1988) flagged up the asymmetry of resource distribution between the central government and the provinces. In 1992, a positive outcome of devolution was noted by the regional director (RD) of South-East Asia (SEA), Dr U. Ko Ko, who said that “a new blueprint for the development of its [Sri Lanka’s] PHC services” had successfully “dovetailed into the decentralized district-level socioeconomic development programme”.⁶³⁷ Nevertheless, many scholars highlighted the fact that the finance commission, which was set up for effective allocations of budget to the provinces, had failed to fund provincial activities (Abeykoon, 2019; Aturupane, 2017; Gunawardena, 2017). The MoH statistics (figure 6.2) also indicate that the government reduced funding to the provinces from 45 per cent (1990) to 35 per cent (2010) of the total health expenditure and maintained preventive care expenditure as low as under 5 per cent (MoH, 2018). Even the HRH provided to the provinces from the central government were insufficient, according to Attanayake (2008) and Alwis et al. (2018). This subsection identifies two other important factors in the failure of this endeavour. First, rather than being a deliberate attempt to reform the organisational structure of public services, the roots of decentralisation in Sri Lanka lay in a political manoeuvre, under external pressure, to devolve power to the provinces. Second, bureaucrats at the central MoH had not fully supported the process from its inception, which led to problems relating to the allocation of resources, especially funding and human resources.⁶³⁸ Against this background, though the general argument for decentralising healthcare was that it would

⁶³⁴ P22: Policy, Sri Lanka.

⁶³⁵ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

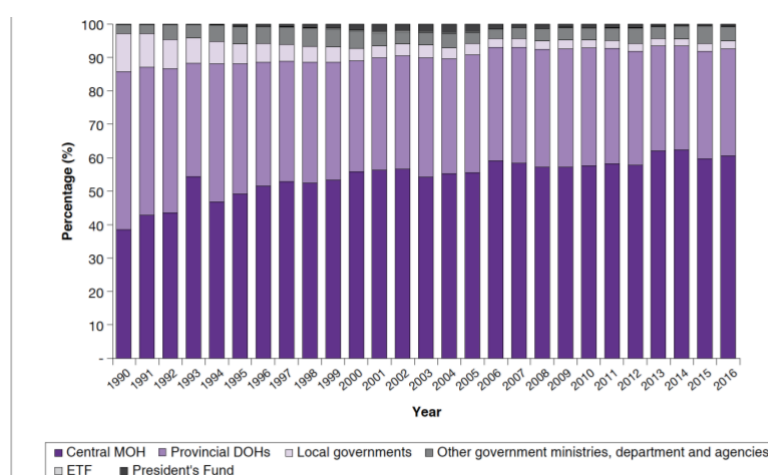
⁶³⁶ Most countries struggle to find a balance between localism and centralisation within health services and there is no right answer, with most systems opting for a mixed approach (e.g., high volume and common activities tend to be organised locally and lower volume/expensive activities tend to be organised regionally or nationally. Common infrastructure, for example, blood supply, may also be organised nationally).

⁶³⁷ IRIS: SEA/RC36/2, Annual Report of the Regional Director, SEARO, 1982-83, X.

⁶³⁸ Most of the public health and clinical specialist posts in the provinces remain vacant even now. For the distribution of HRH, see *Annual Health Bulletins* of Sri Lanka from 2007 to 2018, and for the specialist post vacancies, see annual transfer lists of specialists from 2015 to 2020 available at www.health.gov.lk.

improve service quality, efficiency, and equity (Attanayake, 2008), this chapter argues that the government was unable to achieve any of these aims through the provincial structure because of inadequate resources. First, the provinces failed to gain greater service efficiency through better planning, monitoring and management systems within a decentralised structure owing to a lack of human resources. Second, the quality and efficacy of PHC and preventive services had deteriorated because of a lack of funding. Third, the central MoH had absorbed the main provincial hospitals back under Ministry control while dismantling the provincial hospital system.⁶³⁹ Finally, local communities tended to seek better services at central government-run tertiary hospitals by bypassing the PHC services, which led to overcrowding of the larger hospitals and underutilisation of PHC in the provincial setting.⁶⁴⁰

Figure 6.2: Health expenditure by financing sources (%) 1990-2015



Source: Amarasinghe et al. (2018). Notes: ETF: Employees' Trust Fund

As Ramasamy (2020) argued, the devolution process transferred more responsibility to the (provincial) political level, where lack of governance, irregularities and corruption were high. This subsection also finds two other significant disadvantages of the politicisation of the provincial health system. First, as I experienced, the provincial political authorities not only made irregular appointments, but also refused to accept appointees from the central government for medical administrative posts, and that practice has become a fundamental threat to governance.⁶⁴¹ Second, due to irregularities in resource allocation, as mentioned by Ramasamy (2020), and a lack of qualified efficient planning officers, the likelihood of an equitable distribution of money, even in the provinces, was non-existent. For instance, as

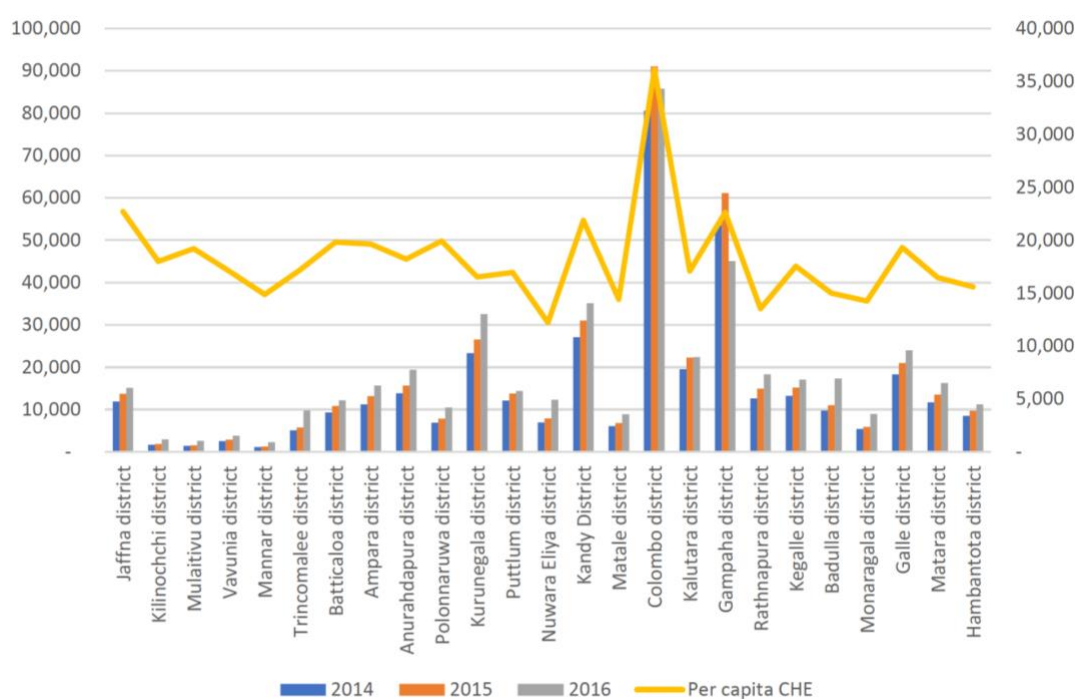
⁶³⁹ Details concerning the taking back of District General Hospital, Chilaw, North Western Province, to the central MoH, are available at the MoH, but this study could not access it due to the travel restrictions and closure of libraries due to the current pandemic.

⁶⁴⁰ For the bypassing of small institutions and the overcrowding of large hospitals, see Delpachithra and Jayasinghe, (2001); Govindaraj et al. (2014); Withanachchi and Uchida (2006).

⁶⁴¹ When the researcher worked as the director of tertiary care services (TCS) of the MoH (who manages administrative grade appointments), two provincial directors appointed by the Public Service Commission (the highest appointing authority in the country) were rejected by the respective provincial governors.

shown in figure 6.3, the distribution of per capita health expenditure between the districts (Colombo, Gampaha and Kalutara) of the Western Province showed a gross disparity, in which Colombo district received a substantially higher level of funding.⁶⁴² The central government both allocates money inequitably between the provinces, and invests more money in central ministry institutions. Accordingly, the poorly designed and hastily implemented devolution process in Sri Lanka resulted in serious consequences for the health service delivery system. Aware of these issues, Prime Minister R. Premadasa, not a supporter of the devolution policy, identified a problematic centralisation process within the province: the concentration of powers at provincial level which had earlier been at divisional level during the District Development Council (DDC) era.⁶⁴³ After becoming president of the country, he appointed a presidential task force (PTF) to formulate a national health policy and redistribute the power to divisional level.

Figure 6.3: THE (million Rs) and average THE per capita (Rs) by district, 2014-2016



Source: MoH (2018). Notes: THE: Total Health Expenditure

6.2 The first Presidential Task Force (PTF1) for health, 1992

A PTF was appointed by President Ranasinghe Premadasa in 1992 to examine the then system of healthcare, the proposed PHC model, the roles of both private practice and the private sector as well as of the Ayurveda sector, and the responsibilities of the provincial councils and divisional secretaries, and from

⁶⁴² There are elements of national infrastructure (government, finance, international airports, etc.) that might require additional funding in Colombo, which is the capital of Sri Lanka.

⁶⁴³ The DDC was described in the last chapter under subheading 5.1.4.

this, to formulate a national health policy for Sri Lanka (figure 6.4).⁶⁴⁴ PTF1 initially consisted of nine members, chaired by Professor Earle Fonseka, Professor in Community Medicine of the University of Colombo, but it was increased by an additional seven persons three weeks later.⁶⁴⁵ Through its assessment of the country's health challenges, PTF1 worked on the development of national health policy. Since health policy has a direct impact on AMR, an examination of the involved actors, context, content and effects is required.

⁶⁴⁴ Ministry of Health Records (MHR), Sri Lanka: *Economy and Health, Taking Sri Lanka towards the global best*, Draft Commission Report, February 2005.

⁶⁴⁵ For members of PTF1, see WHOAG: Technical 3 EDM1 JKT 4, *Report of the PTF on formulation of a national health policy for Sri Lanka*, 7 July 1992, IX.

Table 6.2: Term of Reference (TOR) of the Presidential Task Force, 1992

No	Proposed components of health policy would:
1	meet the health issues and challenges that Sri Lanka would face in the next decade
2	emphasise preventive health and the amelioration of environmental factors which are detrimental to health
3	maximise utilisation of available health manpower and facilities by rationalising their deployment and management in the public and private sectors
4	reduce morbidity from leading controllable causes and emphasise nutritional aspects of PHC such as reduction in low birth weight of newborns, reduction in micronutrient deficiencies etc.
5	consider resource constraints.

Source: Report of the PTF on formulation of a national health policy for Sri Lanka, 07 July 1992

Table 6.3: Categories and findings of PTF1

Category	Subcategories	Findings
Actors	Presidential concept of empowering the divisional level	<ul style="list-style-type: none"> ▪ PTF appointed with experts in healthcare
	Concept of the WHO national health policy	<ul style="list-style-type: none"> ▪ Provided technical expertise
Context & content	Intention of PTF1	<ul style="list-style-type: none"> ▪ To develop a health policy ▪ on healthcare reforms mainly in public health ▪ To transfer the power back to the divisional level
Effects	Report of PTF1	<ul style="list-style-type: none"> ▪ Not the health policy or collection of health policies as per TOR ▪ Considered as a guide to decision-making
	Recommendations of the report	<ul style="list-style-type: none"> ▪ Some not implemented: regulation of private practice ▪ Implementation delayed: Health Master Plan (HMP) and National Medicinal Policy ▪ Implemented: Deputy Director of Health Services (DDHS) system established several directorates at the medical officer of health (MOH) and provincial epidemiologist posts
	Effects of DDHS system	<ul style="list-style-type: none"> ▪ Empowerment of the divisional level ▪ DDHS was unable to utilise the delegated authority without supportive staff ▪ The hierarchical conflict between administrators at the vertical and horizontal level

Source: Interview findings of the sample as described in subsection 1.7

6.2.1 Context and content of PTF1

According to three interviewees, this was the most significant attempt made at developing a comprehensive health policy. It was highlighted that PTF1 had very clear terms of reference and a format for the expected health policy. One interviewee stated that the endeavour was mainly focused on healthcare reforms in public health.

That [was] really focused not only on administration [but] on health sector reforms and how to address health issues at that point of time. They came up with a set of indicators also in all the health sectors, immunisation, and maternity care – all those things were taken into consideration – and set up targets and how we [were] going to pull them [off]. So, it [did] mainly focus on improving public health. I think [that's] when we first discuss[ed] the manufacturing of medicines. [P08]⁶⁴⁶

⁶⁴⁶ P08: Policy, AMR, Sri Lanka, WHO.

One interviewee argued that the unstated intention of President Premadasa was to give power back to the divisional level as previously proposed by the National Health Development Council.

Then-President Premadasa was opposed to this idea of provincial councils who wanted to [give] power back to the divisions through the task force...Because...the provincial councils and other political structures were not working with the district, district secretaries [administrative body]. Then came another round of decentralisation. It gave a lot of power to the GA [government agents] and the AGS (assistance government agents) – at that time [there were] no divisional secretaries. [P01]⁶⁴⁷

Although the work of PTF1 was criticised by two interviewees for the inappropriateness of the process, one interviewee stated that this process had been considered unique and extensive.

The PTF gathered 50 times for deliberation and commissioned and reviewed 22 positional papers on various topics. They also, through a press release, received important comments and suggestions from citizens at large on the status of health development and what they thought of it. They held national consultative meetings with programme managers and directors, representatives from the private sector and NGOs. While performing the field visits, they had meetings with political leaders, the Minister of Health, and secretaries of line ministries. A small working group, commissioned by the PTF, sifted through all the material collected through these processes: positional papers, submission[s] of trade unions, and policy measure[s] [that were] recommended. [P21]⁶⁴⁸

PTF1 found it necessary to restructure the provincial health organisation to implement the return of devolved powers to the divisional level. One interviewee stated that, in this regard, replacing the medical officer of health (MOH) at the health unit with the deputy director of health services (DDHS) had been proposed and then implemented.

They wanted to give the power back to the districts and divisions and proposed a DDHS system with more financial and administrative power. [P20]⁶⁴⁹

6.2.2 Actors in PTF1

President Ranasinghe Premadasa, who was against this devolution, appointed a PTF, which consisted of a group of experts, to make reforms to the system.

In March 1993...the President appointed [a] PTF with nine members, chaired by Prof Earle Fonseka. [It] consisted of various stakeholders in [the] medicine, Ayurveda and Unani, etc. sector, and this was increased by [an] additional seven persons three weeks later. [P21]⁶⁵⁰

One interviewee claimed that the WHO encouraged governments to make their own national health policy during the 1990s and provided technical assistance when necessary.

It [national health policy] was a WHO agenda item. An expert from WHO helped to perform a lot of groundwork in this forum. [P21]⁶⁵¹

6.2.3 Effects of PTF1

⁶⁴⁷ P01: Policy, pharmaceuticals, Sri Lanka.

⁶⁴⁸ P21: Policy, Sri Lanka, WHO.

⁶⁴⁹ P22: Policy, Sri Lanka. For the implementation of the DDHS system, see (Fernando, 2000). Accordingly, DDHSs were established in late 1992, with responsibility for the provision of comprehensive health services (curative and preventive) to a defined population. By 1997, 238 DDHSs had been established. The MOHs were responsible for preventive health activities only.

⁶⁵⁰ P21: Policy, Sri Lanka, WHO.

⁶⁵¹ P21: Policy, Sri Lanka, WHO; for WHO initiatives on national health policy, see IRIS: The work of WHO, 1990–91, 11–12.

The PTF1 document was considered as a guide for decision-making for the politicians, administrators, health planners, health professionals and others concerned with health and health-related activities inside and outside the government. One interviewee stated that this work was a good example of how to make a health policy.

After the Cumpston Report, this was the most significant attempt made at developing a comprehensive health policy. The way this was formulated is a good case study for all medical administrators [in] how a comprehensive health policy should be developed. [P05]⁶⁵²

One interviewee argued that PTF1 had failed to deliver the expected outcome of drawing up a national health policy.

I think the task force made a nice report with many suggestions. That was not the national policy. So, the Ministry had to appoint another committee that developed the 1996 national policy. [P16]⁶⁵³

Meanwhile, another interviewee claimed that the 1996 health policy had also not been implemented.

The 1996 health policy was not implemented. It is just a document only. [P08]⁶⁵⁴

However, a third interviewee argued that this report of PTF1 had been successful in identifying future health scenarios through assessing the existing health policies.

This was not a compendium of all health policies. PTF1 had attempted to revise and adjust the existing policies and identified new ones required in the light of the prevailing health scenario and the likely future perspective. [P20]⁶⁵⁵

Two interviewees stated that most of the recommendations of PTF1 were not paid serious attention: for instance, no policy measures were taken to regularise private practice.

They strongly suggested policy measures that would enable supervision and firm punitive action to control misuse of the private practice, but no specific actions have been taken. [P21]⁶⁵⁶

It identified the main functions of the national-level health organisations and provincial-level organisations. One of the national-level functions was, one interviewee claimed, the formulation of the Health Master Plan (HMP) for national health development, which dragged on for more than 10 years.

They suggested the Health Master Plan, which took 10 years [for] completion. It was an unproductive effort. [P16]⁶⁵⁷

The 1992 PTF, according to three interviewees, had laid the foundation for the establishment of several directorates at the MoH, such as tertiary care, primary care, and the private sector, and it suggested strengthening the provincial level by appointing provincial epidemiologists. The establishment of a national medicinal policy was also encouraged in this report – the government had unsuccessfully attempted such an endeavour in 1995 and 2005 but finally brought in the NMRA Act in 2015.

⁶⁵² P05: Policy, Sri Lanka, WHO.

⁶⁵³ P16: Policy, Sri Lanka: For the 1996 national health policy, see figure 6.7.

⁶⁵⁴ P08: Policy, AMR, Sri Lanka, WHO.

⁶⁵⁵ P21: Policy, Sri Lanka, WHO.

⁶⁵⁶ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

⁶⁵⁷ P16: Policy, Sri Lanka: The HMP will be discussed in this chapter under 6.4.

How empowerment at the divisional level applied to the administration at the micro-level was discussed. One interviewee regarded it as a real form of decentralisation.

Decentralisation of health should focus on the micro-level, but the devolution took powers back to the provinces. So, the establishment of [the] DDHS system gave the power back to the grassroots level. [P08]⁶⁵⁸

Another interviewee argued that the DDHS system had not been a successful move as the deputy directors of health services (DDHSs) had not been able to utilise the delegated authority without the support staff.

DDHSs were delegated the financial and administrative authority from [the] DPDHS [deputy provincial director of health services] ([or] RDHS), but they were handicapped without relevant administrative staff and [did not do the] expected duties. [The] DPDHSs [were] also not happy about the delegation of financial authority to them as they were the responsible authority. [P05]⁶⁵⁹

The issue of the nomenclature of RDHS and DDHS was also considered important by two interviewees.

When you translate[d] “regional” and “divisional” into the Sinhala language, the meaning was very similar. Therefore, there was huge confusion in the differentiation of RDHS and DDHS for the public. DDHSs got the maximum advantage using it, displaying [it] even at their private practice[s]. Because of this, the “RDHS” name was changed into “Deputy Provincial Director of Health Services” or “DPDHS”. But the issues were not sorted until all the delegated powers were returned to the regional director in early 2000. [P22]⁶⁶⁰

Functions of the DDHS system were negatively impacted by hierarchical attitudes, a fact that led to a conflict between administrators at the same level. One interviewee highlighted the fact that the DDHS-led local administration system had failed due to issues between DDHSs and heads of the district hospitals.

When [the] DDHS was appointed as the head of the PHC area, senior DMOs [District medical officers] also should report them. Sometimes, the DDHS was a very junior doctor. So, there were internal fights between these two groups, and DMOs attempted to deal with the regional director of health services [by] bypassing the DDHS. [P22]⁶⁶¹

6.2.4 Discussion of PTF1

The PTF was appointed to identify healthcare reforms and prepare a national health policy but could not deliver on these aims (table 6.3). After extensive work, the task force suggested carrying out a set of reforms at the national and provincial level, including the establishment of new directorates and the empowerment of the DDHS system, which had failed due to a lack of resources and conflicts with the regional system. While this has adversely affected AMR by causing a deterioration of the healthcare system, the failure to implement a national medicinal policy dealing with the use, supply and monitoring of pharmaceuticals, including antibiotics, has also negatively impacted AMR.

⁶⁵⁸ P08: Policy, AMR, Sri Lanka, WHO.

⁶⁵⁹ P05: Policy, Sri Lanka, WHO.

⁶⁶⁰ P22: Policy, Sri Lanka.

⁶⁶¹ P22: Policy, Sri Lanka.

Table 6.4: The main functions of the national-level health organisation identified by the 1992 PTF

No	Main functions
1	Converting policy into operational guidelines including technical, administrative, and financial specifications for buildings, equipment, drugs, manpower, etc.
2	Formulation of the master plan for national health development
3	Monitoring and evaluation of the implementation of policies, programs, services, etc
4	Technical support for management of services
5	Legislative matters
6	Professional education, basic and in-service training of health personnel
7	Medical and health systems research
8	Coordination with the other government sectors, private sector, major development projects, etc.
9	Procurement of drugs and equipment

Report of the PTF on formulation of a national health policy for Shri Lanka, 7 July 1992

It is worthwhile assessing how PTF1 achieved President Premadasa's aim of transferring power back to the districts. According to Hsiao and Li (2000), the PTF1 report argued that there were two main options for shifting power to the provincial councils (PCs). First, disband and redeploy the district organisational structure. Or second, unnecessarily lengthen the chain of command and cause delays in the decision-making process. Therefore, PTF1 suggested taking the delivery of healthcare closer to the people through the divisional health structure by empowering the DDHSs. That enabled inter-sectoral coordination with other government stakeholders in the area. However, PTF1 failed to identify two important problems with the DDHS system which were to result in its quick collapse. Firstly, though the DDHS was vested with the necessary financial and administrative powers, there was inadequate support from officers such as accountants and clerks. Because of this, the expected work could not be carried out. Secondly, the system began to fall apart when senior medical officers attempted to bypass the local DDHS system and deal directly with the regional director. Ultimately, these issues contributed to the natural demise of the DDHS system, which was replaced by the current MOH system.

Table 6.5: Broad recommendations of PTF1

Level	Broad areas of recommendations
Centre	<ol style="list-style-type: none"> 1. Policy development 2. Health planning, monitoring and evaluation (HMP) 3. Information systems development and utilisation 4. Management development 5. Human resource development and management 6. Research for health development 7. Health and health-related legislation and enforcement 8. Financing
Province	<ol style="list-style-type: none"> 9. Develop a comprehensive provincial health plan closely linked with budgeting based on decentralised divisional health plans. 10. Ensure effective implementation of these plans through divisional health organisations, base and general hospitals through an inter-sectoral approach. 11. Design information systems and monitor service provisions and submit periodic reports to the national level and the user level in the divisions. 12. Coordinate with other government sectors, the private sector and the NGOs. 13. Undertake in-service and continuing education programs.

Source: WHOAG: Technical 3 EDM1 JKT 4, Report of the Presidential Task Force on formulation of a national health policy for Sri Lanka, 7 July 1992.

As this subsection identifies, PTF1 attempted to develop a comprehensive guide for health sector development covering most of the main themes. It even elaborated on health financing strategies emphasising the importance of earmarked tax.⁶⁶² However, PTF1 did not deliver a national health policy according to the WHO framework, even though it was supported by the WHO’s representative in Sri Lanka and technical experts.⁶⁶³ Therefore, the MoH had to try again and appoint a committee to prepare a national health policy (NHP). Subsequently, this NHP (appendix 4) was approved by the Cabinet of Ministers. Nevertheless, it was not highly acknowledged by the ministry officials. The NHP identified the importance of the development of a national drug policy for the rational use and distribution of drugs that would have positively impacted AMR in Sri Lanka, though the government failed to develop and implement it for two decades.

This subsection accepts Hsiao and Li’s (2000, p. 52) argument: “of the many recommendations in the PTF1 report, some have been implemented, others are in the pipeline, and several are being held in abeyance”. The present subsection also points out that, although the various directorates were established promptly within the MoH, the implementation of suggestions from PTF1 and the NHP was not addressed. For instance, the implementation of an HMP (appendix 3) and a national drug policy for the rational use and distribution of drugs (appendix 4) had dragged on for more than 13 and 25 years respectively. The MoH also had yet to complete the information systems (number 3 of table 6.3) such as the human resources management system (HRMS) and the patient information system (PIS). The latter suggestions are the key pillars in AMR through control, monitoring and evaluation of antibiotics use. By delaying the implementation of important policy initiatives, this subsection argues, the government failed to contain AMR effectively and efficiently. One of the reasons for the poor outcome of the PTF1’s recommendations

⁶⁶² WHOAG: Technical 3 EDM1 JKT 4. Earmarked tax is a “health tax”, where the revenues can be spent only on public healthcare. For the economics of earmarked tax, see Buchanan (1963).

⁶⁶³ Ibid. Dr Aung Myint, the WHO’s representative in Sri Lanka, was a member of the PTF1.

was the death in 1993 of President Premadasa, who had spearheaded the 1992 PTF. The regime changed in 1995, and President Chandrika Bandaranaike appointed another PTF for health in January 1997.

6.3 The second Presidential Task Force for health, 1997 (PTF2)

The terms of reference of PTF2 on health – chaired by the Minister of Health, A.H.M. Fowzie, and comprising 22 members – was to recommend how to respond to the changing demands on the healthcare system based on the 1996 NHP (Hsiao and Li, 2000).⁶⁶⁴ PTF2 worked through 14 committees (figure 6.8), which met several times, co-opted additional experts, and also made use of the 1992 PTF report and various research reports (Dalpatadu, 2011). It is important to study PTF2 not only due to the 1996 NHP and the focus of PTF2 committees on the management of pharmaceuticals, which had a direct relationship with AMR, but also due to other related factors which had an indirect impact on AMR.

Table 6.6: Categories and findings of PTF2

Category	Subcategories	Findings
Actors	Drive for a PTF	<ul style="list-style-type: none"> ▪ Public request ▪ A personal decision by the political authority based on the request of close allies
	Composition of PTF2	<ul style="list-style-type: none"> ▪ Full of academics without expertise in healthcare ▪ No health sector experts ▪ Close friends of the President
Context & content	Work of PTF2	<ul style="list-style-type: none"> ▪ Not as extensive as previous PTF, and ▪ focused on hospital care, though the task was to suggest comprehensive reforms ▪ Involving inadequate communication with MoH ▪ MoH officials were suspicious about the work
	Communication gap	<ul style="list-style-type: none"> ▪ A lack of communication with the MoH ▪ MoH officials were suspicious about the work ▪ Work was not supported by MoH
Effects	Implementation of the work	<ul style="list-style-type: none"> ▪ Reform secretariat ▪ Nothing implemented immediately
	Major outcomes	<ul style="list-style-type: none"> ▪ Upgrading of identified small hospitals into secondary hospitals ▪ Separation of the department from the MoH did not last long ▪ Unsuccessfully attempted to introduce a new health act

Source: Interview findings of the sample as described in subsection 1.7

6.3.1 Actors in PTF2

Three interviewees considered that appointing a higher-level committee for healthcare reforms was significantly driven by public demand. However, two interviewees argued that it was a more personal decision by the political authority, based on the request of close allies.

It [was]...top secret at that time. Two leading couples, prominent health professionals, who were very close friends of President Chandrika, [at] the dinner table requested the President to establish a fresh task force for health reforms. On the following day, a task force [was] appointed that was full of

⁶⁶⁴ Appendix 4.

academics. One of the lady academic[s], Professor [name], who was at that dinner table, was nominated as the secretary. [P22]⁶⁶⁵

Unfortunately, yeah, it was her [President Chandrika's] kitchen part of her kitchen cabinet who led this initiative. Dr [name] was not familiar with this work. [Name] was in the physiology department if I remember correctly, because of the close association of Professor [name], who was a very [close] political ally of President Chandrika. [P01]⁶⁶⁶

The composition and expertise of PTF2 were questioned by three participants. They said PTF2 was full of academics who were not aware of the country's health system.

I made a presentation with transparencies. People need to know what's the base hospital. As a director [name of the post], I explained everything. So, it came out with the actual conceptual thinking as there was no definition of hospitals. They [PTF] only went by bed capacity. That was not right because at that time I remember Matara [Hospital] was the biggest general hospital, with 800 beds, and we had a teaching hospital in Kalubowila with 600 beds. So how can you go by the beds? we argued on this and said no, we must come up with a different definition. And we came out with the structure. If you call the base hospital, these are the things that should be there, and these are the things for the teaching hospital....So, because they want to have one big hospital in a divisional secretary area, that was an enormous number, but we argued that one hospital in a district [was enough]. [P08]⁶⁶⁷

Two interviewees expressed doubts about the contribution and dedication of PTF2. One of them stated that the President was absent from some of the meetings without prior notice.

I remember I went to the task force meeting. It was to be chaired by President Chandrika. As she could not come, it was chaired by the President's secretary, Mr Balapatabandi. [P08]⁶⁶⁸

6.3.2 Context and content of PTF2

When asked about the process, two interviewees stated that it was a set of activities similar but not as exclusive and extensive as the previous PTF.

...the PTF work[ed] through 14 committees with wider representation and had met several times and co-opted additional experts. However, the work is not as extensive and exclusive as the previous one. They also made use of the PTF report of 1992 and looked at various research reports. The reports of the 14 committees were looked at by the PTF members with submissions from the trade unions, professional associations and the public. To discuss proposals, they also had several meetings chaired by...HE [Her Excellency] the President or the Minister of Health. [P23]⁶⁶⁹

The work of PTF2 was noted as ambiguous by three interviewees, as the task of PTF2 was to suggest comprehensive reforms, but it focused mainly on hospital care.

They [PTF2] were talking about the health sector reforms, and for health sector reforms again there was a committee appointed. They basically focused on secondary and tertiary care. That's where you came up with base hospitals and district general hospitals. For which I really worked closely with them as the director [post]. . . So, we identified 23 hospitals for 23 districts, and we upgraded them into two phases: a base hospital, and a district general hospital. This district general hospital concept also came with that idea. Before that, there was no such concept, and we call[ed] it "general hospital". [P08]⁶⁷⁰

⁶⁶⁵ P22: Policy, Sri Lanka.

⁶⁶⁶ P01: Policy, pharmaceuticals, Sri Lanka.

⁶⁶⁷ P08: Policy, AMR, Sri Lanka, WHO.

⁶⁶⁸ P08: Policy, AMR, Sri Lanka, WHO.

⁶⁶⁹ P23: Policy, pharmaceuticals, Sri Lanka.

⁶⁷⁰ P08: Policy, AMR, Sri Lanka, WHO.

Most of the interviewees stated that Ministry officials were suspicious about the work of PTF2 and did not extend genuine support to the PTF2 work or to the implementation of its plans. The main cause, according to interviewees, was a lack of communication between PTF2 and the Ministry officials.

6.3.3 Effects of PTF2

When asked about the effects of the 1997 PTF, four interviewees said that no major changes had happened immediately, and some recommendations, such as upgrading hospitals, had been implemented via a special secretariat.

Nothing happened, it was never implemented, till we introduce[d] the Health Master Plan in 2006. There was the health sector reform secretariat. The DGHS was appointed as the secretary. [P01]⁶⁷¹

The 1997 task force implemented only upgrading hospitals, you know, one of the hospitals identified from a district to [the] level of a base hospital and DGH [district general hospital], that was [the] only reform implemented. By this project, we developed Monaragala, Ampara, and Hambantota hospitals, and we got 1 million rupees to start a hospital, and then annually. [P08]⁶⁷²

One of the recommendations of PTF2, the separation of the department from the Ministry, according to two interviewees, was welcomed by most of the administrators, who later realised that it was not easy for them to work in isolation from each other.

Initially, they wanted to have a separate [department of health] outside the organisation [the Ministry of Health]. The department was then established separately from the Ministry. While working, each of them perceived that the head cannot work without the neck and amalgamated again. [P08]⁶⁷³

Some recommendations of PTF2 were considered inappropriate by four interviewees. One interviewee stated that PTF2 had unsuccessfully attempted to introduce a new health act which was not important at that time.

They wanted a new Health Services Act and something which was never implemented. There was no reason to have a new act, it was an unnecessary exercise. [P01]⁶⁷⁴

6.3.4 Discussion of PTF2

According to the interview findings (table 6.4), PTF2 was set up prematurely by the President at the request of her close allies in academic circles, and it was not therefore able to carry out a proper analysis or make sound recommendations. As stated by Hsiao and Li (2000, p. 46), PTF2 was initiated due to deficiencies in healthcare delivery being highlighted by the media and the 1997 report of the Central Bank. This chapter argues that the appointment of PTF2 did not follow the formalities, and the trigger was in fact a request from the President's close allies, meaning that PTF2 did not have its origins in the appropriate health and social contexts. However, interviewees appeared to support the conclusions of Hsiao and Li (2000, p. 11) that a consistent failure by PTF2 "to adequately consult or work closely with MoH and other

⁶⁷¹ P01: Policy, pharmaceuticals, Sri Lanka. A health sector reform secretariat formed in 1998 to coordinate and facilitate the implementation of the recommendations made by PTF2 (Dalpatadu, 2011). This was headed by a former Secretary of Health and supported by four honorary consultants. This chapter was not able to access the details of the health sector reform secretariat, which are available at the planning unit of the MoH.

⁶⁷² P08: Policy, AMR, Sri Lanka, WHO.

⁶⁷³ P08: Policy, AMR, Sri Lanka, WHO.

⁶⁷⁴ P01: Policy, pharmaceuticals, Sri Lanka. A committee was formed to work on the legislative framework for health care (table 6.5).

health sector stakeholders had created a situation in which day-to-day implementation of any reforms [was] likely to be resisted by health sector stakeholders”. This calls into question the commitment of the head of state, but President Chandrika Bandaranaike also attempted to regularise private practice based on the findings of this taskforce.⁶⁷⁵ PTF2 and related committees consisted mainly of academics who did not have the expertise or skill mix to understand Sri Lanka’s complex healthcare system. Because of this, PTF2 was unable to perform the proper health system analysis required to make sound recommendations.

Table 6.7: Major recommendations of the PTF2

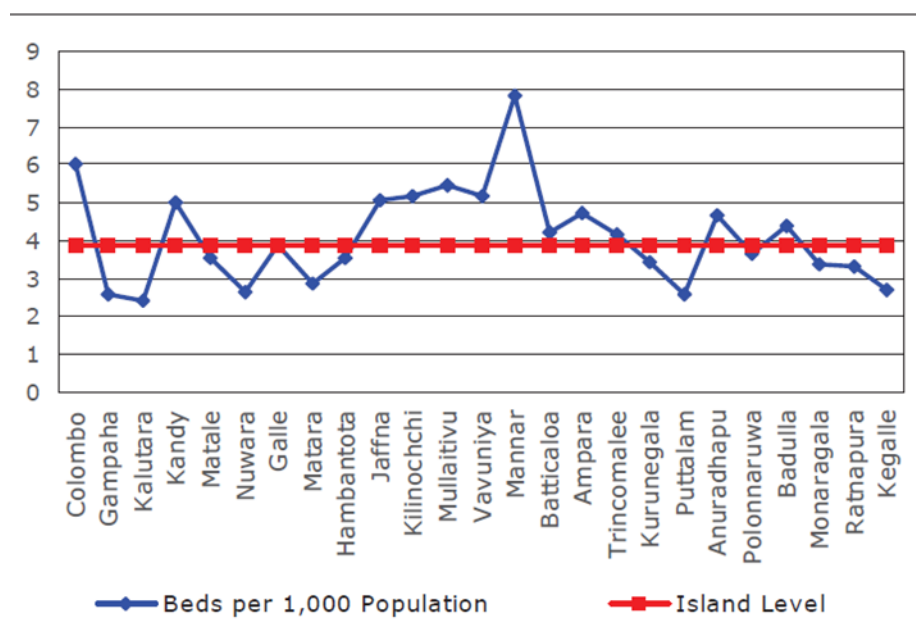
No	Recommendations
1	Reform the organisational structure to improve efficiency and effectiveness, especially in the context of devolution
2	Establish mechanisms to provide care based on needs, set priorities and allocate resources equitably
3	Increase accountability and responsibilities of provincial governments, health institutions, and individual providers
4	Develop alternative financing mechanisms, including resource sharing between private and public sectors, and between allopathic and non-allopathic sectors
5	Improve preventive and curative services to populations of special need (e.g., the elderly, disabled, and mental distress)
6	Improve hospital services in the districts in a planned manner
7	Develop health promotional programmes using a formal education system and the media
8	Rationalise human resource development and emphasise career development

Source: (Hsiao and Li, 2000, p. xiv).

Most of the reform proposals, other than the division of the Health Ministry into a Department of Health Services and a separate supervising ministry, were not welcomed either by line ministry staff or by public-sector unions. The implementation of most of the recommendations of PTF2 (table 6.7) was either delayed or has not happened yet, as per the findings of chapter 5 of this study and previous literature, for several reasons. Firstly, the government failed to improve efficiency and effectiveness in the context of devolution (see chapter 6.1), nor were resource allocations equitable between or within provinces (see figure 6.3). Secondly, provincial governments could not take on more responsibilities as the central government has utilised one-third of the health expenditure for the last three decades (see chapter 5.3). Thirdly, Sri Lanka has not developed alternative financing mechanisms, including resource sharing between private and public sectors (Govindaraj, et al., 2014; Rannan-Eliya and De Mel, 1997; Smith, 2018; WHO, 2017b). Fourthly, establishing preventive and curative services to populations of special need (such as disabled and elderly) has not yet been fully implemented (Peiris-John et al., 2013; Samaraweera and Maduwage, 2016). Fifth, although PTF2 suggested improving the hospital system in a planned manner, that initiative led to a pronounced misdistribution of hospitals, since many small institutions were upgraded to secondary level based on political demand and without much assessment. This resulted in a grossly inequitable distribution of hospital beds per capita across the districts (figure 6.4). Finally, after reviewing reports of the PTFs, a WB expert, according to Perera (2015), stated that the health system of Sri Lanka needed “nothing except a health master plan”.

⁶⁷⁵ See chapter 5.3.

Figure 6.4: Number of beds per 1,000 population by districts, 2014



Source: *Annual Health Bulletin* (AHB), MoH, Sri Lanka (2017).

6.4 The first Health Master Plan, 2007-2016 (HMP1)

Sri Lanka's framework for health development in the decade to 2016 was guided by HMP1, *Healthy and Shining Island in the 21st Century*, which was developed over several years with the funding support of the Japan International Cooperation Agency (JICA) and officially published in 2007 (Perera, 2015). The national health policies were translated into strategic policy directives in HMP1, which outlines the envisaged health service development and organisation for the next 10 years (MoH and JICA, 2003). Eight teams worked on the preparation of HMP1, which had five strategic objectives (table 6.7). All central and provincial ministries of health and institutions were expected to align their annual action plans with HMP1. Financial performance was reviewed regularly at the Health Development Committee (HDC) meeting and the hospital directors' meeting (Perera, 2015). HMP1 is assessed in this chapter as earlier authors (Kakkar et al., 2017; Khan et al., 2019) have argued that national policy settings and their implementation are the cornerstones of AMR management in low-to-middle-income country (LMIC) contexts. Subsequently, the MoH prepared the second Health Master Plan (HMP2) for 2016-2017.⁶⁷⁶

⁶⁷⁶ The outcome of the HMP2 cannot be assessed, as it will end in 2027.

Table 6.8: Strategic objectives and working groups of HMP1

Strategic objectives	Working Groups
<ul style="list-style-type: none"> ▪ Ensure delivery of comprehensive health services which reduce the disease burden and promote health. ▪ Empower communities towards more active participation in maintaining their health. ▪ Strengthen stewardship and management functions of the health system. ▪ Improve human resources for health development and management. ▪ Improve health financing, resource allocation and utilisation 	<ul style="list-style-type: none"> ▪ Health Sector Management ▪ Health Finance ▪ Human Resources ▪ Health Services ▪ Medical Facility and Supply Management ▪ Health Information System ▪ Indigenous Medicine ▪ Future Framework: Demand Analyses

Source: (MoH and JICA, 2003).

Table 6.9: Categories and findings of HMP1

Category	Theme	Subtheme
Actors	Contributions from international agencies	<ul style="list-style-type: none"> ▪ JICA provided financial and technical assistance ▪ WHO commitment did not stand out, since JICA's contribution was considerable
	Local participation	<ul style="list-style-type: none"> ▪ Experts from the MoH contributed greatly ▪ Some categories in the health sector were not represented ▪ Political authorities attempted to take credit
Context & content	Preparation of institutional plans	<ul style="list-style-type: none"> ▪ Based on HMP1 ▪ Directorates and departments attempted to incorporate their own plans in HMP1
	Monitoring of progress	<ul style="list-style-type: none"> ▪ Performed at the MoH at various level ▪ Not properly performed in the provinces
	Strategic objectives	<ul style="list-style-type: none"> ▪ Smart objectives ▪ Not novel objectives
	Delay in implementation of HMP1	<ul style="list-style-type: none"> ▪ Due to rapid changes of government ▪ The MoH was seeking the best plan
Effects	Health financing	<ul style="list-style-type: none"> ▪ Did not help bring about an increase in preventive health care expenditure
	HMP1 platform	<ul style="list-style-type: none"> ▪ A good resource management tool ▪ Did not improve the stagnant health system owing to the accommodation of traditional plans

Source: Interview findings of the sample as described in subsection 1.7

6.4.1 HMP1 actors

Three participants acknowledged the contribution from the government of Japan in the formulation of HMP1.

Sri Lanka requested the government of Japan in 2001 to make available technical support to prepare a master plan. The government of Japan, as usual, was gracious enough to accept the request. The JICA study laid heavy emphasis on the participation of local experts. [P01]⁶⁷⁷

One interviewee commented that the assistance from the WHO country office had not stood out because of the major contribution by JICA.

⁶⁷⁷ P01: Policy, pharmaceuticals, Sri Lanka.

The WHO country office contributed to some of the expert meetings and supported through the WHO biennial budget for implementation and capacity development in the HMP1. It was not highlighted as the JICA support was enormous. [P14]⁶⁷⁸

A lack of fair representation of, for example, academia and traditional medicine groups in the formulation of HMP1 was considered by two participants. However, most interviewees agreed that excellent work had been accomplished by the experts from JICA and Sri Lanka in the formulation of HMP1.

The Japanese team did a thorough and intense situational analysis. Nearly 25 studies were undertaken to bridge the knowledge gaps. Provincial and district stakeholders' consultations went into provincial and district issues in depth. The steering committee for the study was headed by the Secretary of Health, and a joint team from the Ministry of Health and experts from JICA (through the services of Pacific Consultants International) implemented the venture. Nearly 500 experts, both local and foreign, were involved in the preparation of the HMP. [P01]⁶⁷⁹

One interviewee flagged up an attempt by a politician to take credit, without justification, for the formulation of HMP1.

It had been progressing through [a] few governments, and in the end, one health minister [name] wanted to get all the credit to his account [for] just chairing the last lap of the formulation. We had very good health ministers, no one behave[ed] in such [a] way. However, everyone knows who spearheaded the venture. [P01]⁶⁸⁰

6.4.2 Content and context of HMP1

The Ministry developed a five-year midterm plan to implement the strategies outlined in HMP1. The problems and issues that arose in the implementation process, such as making a midterm plan, attempts by directorates and provinces to translate their traditional annual plans into the HMP, and inadequate monitoring at the provincial level, were noted by two interviewees.

When they prepared a long-term plan [HMP1], it should [have] be[en] divided into feasible time periods for easy monitoring and evaluation. As this was not done, the Ministry had to do extra work to create a midterm plan for this purpose. [P21]⁶⁸¹

Most directorates and provinces used to make annual plans by scrutinising the request[s] received through the feeding institutions or political authorities. It was irrational planning, and some directorates and provinces wanted to entertain [(sic) maintain, support financially] those plans through the master plan. Monitoring of the implementation was not perfect at the provincial level of course. The hospital directors' meeting was not geared to evaluate this process. However, the DDG [Deputy Director General] [of] Planning made an extra effort to monitor this in his capacity. [P20]⁶⁸²

When asked about the idea behind the strategic objectives of HMP1 (figure 6.8), three interviewees considered them to be SMART objectives (specific, measurable, achievable, relevant and time-bound) and to deliver the services effectively. However, one interviewee argued that those objectives were not innovative and could have been improved to gain more out of the health system.

⁶⁷⁸ P14: Policy, WHO.

⁶⁷⁹ P01: Policy, pharmaceuticals, Sri Lanka.

⁶⁸⁰ P01: Policy, pharmaceuticals, Sri Lanka.

⁶⁸¹ P21: Policy, Sri Lanka, WHO.

⁶⁸² P20: Policy, pharmaceuticals, AMR, Sri Lanka.

This is nothing new, the same wine in a different bottle. The master plan was prepared within a framework of universal health coverage which had evolved from the concept of primary healthcare. Even the strategic objectives were not novel for Sri Lanka's health [system] that had been following those for a long time and could have improved, for example, health financing [if it had] paid the least attention to a sustainable financing model with PPP [public-private partnership] or income revenue for healthcare. [P16]⁶⁸³

Most participants said that the processing and implementation of HMP1 had been delayed because of the rapid government turnovers from 1999 to 2016, and the final product was reflected in the 2015 government's manifesto.

The key elements of the HMP were reflected in the government's overall health strategy, which is given in the *Mahinda Chintana* and the ten-year development plan. [P16]⁶⁸⁴

One interviewee commented that there had been several healthcare plans that overlapped with HMP1 and that the MoH had looked for the best plan to implement.

During that time several plans came – one was the National Health Development Project (I think it was from 2013 to '17), which was a joint venture [with the] Finance Ministry. And the Ministry, we also contributed. Some contents were the same as the master plan. [The] Ministry was searching for the best plan. [P05]⁶⁸⁵

6.4.3 Effects of HMP1

One of the expected outcomes of HMP1 (figure 6.9) was to deliver an equitable and sustainable healthcare financing system. One interviewee argued that HMP1 had failed to increase the scant preventive healthcare budget.

Even though the HMP1 was driven [by the need] to allocate more funds for preventive work, it [had] failed to increase that budget for preventive health. [P16]⁶⁸⁶

HMP1 was considered an excellent resource management tool as it allowed resources to be allocated in an equitable way and progress to be monitored and evaluated effectively from various levels by three participants. However, one interviewee argued that HMP1 had been unable to improve the country's stagnant health system as it allowed traditional and outdated plans from the directorates and provinces to be accommodated.

Our system has not been moving forward for [the] last decade. Our maternity mortality, infant mortality rates and life expectancy remain more or less [the] same. All our interventions, including the master plan, haven't worked so far in the recent past. The reason was it accommodated traditional and outdated plans. [P04]⁶⁸⁷

⁶⁸³ P16: Policy, Sri Lanka.

⁶⁸⁴ P01: Policy, pharmaceuticals, Sri Lanka. *Mahinda Chintana: Vision for a New Sri Lanka* was developed by the Ministry of Finance and Planning in late 2006. It is a ten-year development framework for 2006-2016 and articulates the way forward under the political leadership of that time. For policy options of Mahinda Chintana, see Institute of Policy Studies (2007).

⁶⁸⁵ P05: Policy, Sri Lanka, WHO; MHR: National Health Development Project (2003).

⁶⁸⁶ P16: Policy, Sri Lanka.

⁶⁸⁷ P04: Policy, pharmaceuticals, Sri Lanka, WHO. According to table 6.1a, maternal and infant mortality reduced drastically, and life expectancy increased significantly from 1950 to 2010. However, maternal and infant mortality remained more or less same from 2010 to 2020.

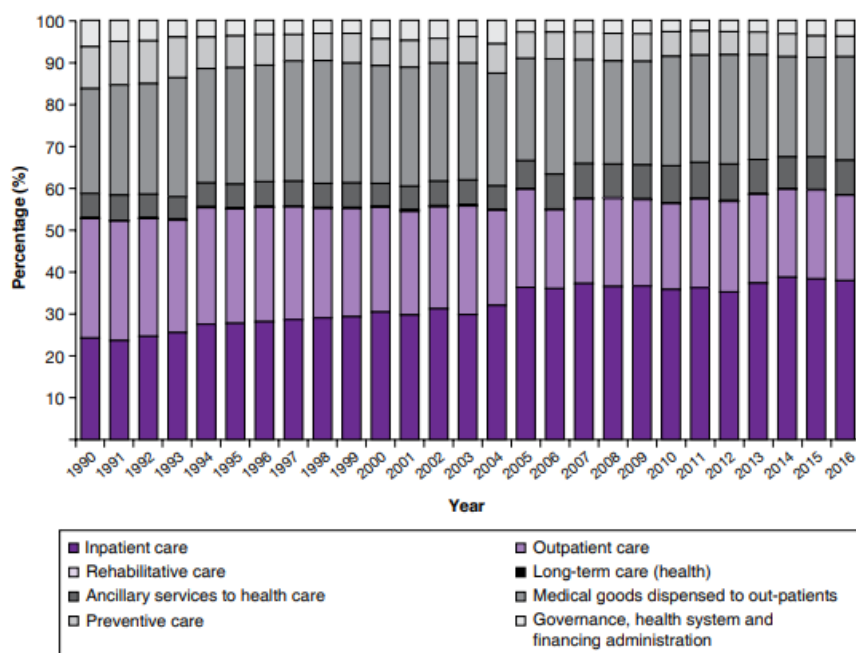
6.5 Discussion of HMP1

In general, the interviewees mentioned that HMP1, Sri Lanka's framework for health development from 2007 to 2016, was supported by JICA and Sri Lankan experts, and that the formulation was delayed due to changes of government (table 6.9). My analysis supports the findings of Perera (2015) that a WB expert flagged up the need to prepare an HMP in 1999, which was technically and financially supported by Japan through JICA, and Jones and Liyanage (2018) that traditional practitioners were not consulted in the formulation of HMP1, which was intended to cover indigenous medicine (table 6.8). However, it also finds evidence that the importance of having an HMP initially originated in the 1992 PTF report and that there was an outcry over the lack of representation of the other sectors during the formulation process. Furthermore, a limiting factor for the improvement and expansion of health services in Sri Lanka was a general inadequacy of financing in many vertical disease control programmes, as was also noted by Withanachchi and Uchida (2006, p. 20) and in the HMP itself. The MoH was unable to increase funding for disease control programmes as the proportion of the health budget available for preventive health (including vertical programmes) had been less than 5 per cent, and this had never been increased even after the implementation of HMP1 (figure 6.5). As HMP1 went through four political regimes from 1997 to 2007, this long journey heavily impacted on its content and implementation, as this chapter identifies. Firstly, it was influenced by each government in turn, and when implemented in 2007, had a flavour of *Mahinda Chintana*, the election manifesto of the 2005 government.⁶⁸⁸ Secondly, since the formulation process had continued for more than a decade and overlapped with other similar kinds of plans, enthusiasm within the health sector for the process was low amid questions about its innovativeness.⁶⁸⁹ Health officials were also unhappy about an attempt by a health minister to take the credit for formulating HMP1 himself rather than acknowledging the achievements of the Ministry and JICA experts who had worked so painstakingly and intensively on it. Against this backdrop, the failure of the government to deliver this important implementation framework on time seriously impeded progress on the country's healthcare delivery system including the mechanisms for controlling infection, which has a direct impact on AMR.

⁶⁸⁸ Also see footnote 63.

⁶⁸⁹ MHR: The National Health Development Project 2013–2017. This has some similarities to HMP1.

Figure 6.5: Current health expenditure by functions (%), 1990-2016



Source: Amarasinghe et al. (2018, p. 24).

When it came to putting the HMP into effect, the ministry considered the proposed 10-year implementation period overly long and prepared another five-year midterm plan based on HMP1 to facilitate a smooth implementation process. HMP1 was also intended to accommodate all the work of relevant directorates of the central ministry and provinces on a single platform to prevent duplication and enable equitable financial allocation and effective monitoring of progress (MoH and JICA, 2003; Perera, 2015, 2014). Nevertheless, the MoH overlooked key important facts about HMP1, and these would impact adversely on the progress of the health system. First, it had not prepared a new financial framework to bridge the increasing demand and enhance the health status of citizens. Second, the strategic objectives (figure 6.13) were too generic and not forward-looking. Third, absorbing the traditional annual plans of the provinces into this platform carried inherent risks. The context of civil war rehabilitation work doubtlessly made the implementation of HMP1 difficult, and no critical assessment of its outcomes has been produced thus far (according to table 6.10 vital health statistics improved slightly from 2010 to 2019), even though such an assessment could have been extremely helpful for the preparation of an effective HMP for 2016-2025.⁶⁹⁰

⁶⁹⁰ A final evaluation of HMP1 has not been carried out according to my knowledge.

Table 6.10: Health, economic and demographic statistics of Sri Lanka from 1980 to 2019

Year	1980	1990	2000	2010	2019
Birth rate		21	18		14.7
Death rate	7	7	6	7	6.7
Infant mortality rate	36	24	16	10	8.5
Maternal mortality rate	103	95	41	31	29
Life expectancy, male	65	68	70	72	72
Life expectancy, female	71	72	76	78	78
Total fertility rate	3.7	2.2	1.9	1.8	2.2
Population growth rate (%)		1.0	0.9	0.7	0.6
Literacy		88	90	94	95.7
GDP per capita (1990 US\$)	320	476	580	620	

Source: (Rannan-Eliya and Sikurajapathy, 2009), WHOAG: Presidential Task Force on Formulation of a National Health Policy 1992), Various reports of national health bulletin, and Department of Statistic of Sri Lanka

6.6 Conclusion

This chapter has assessed selected health policies of Sri Lanka from 1987 to 2017. As presented in previous chapters, the country's public health and hospital structure, which was based on the health unit system and the Health Service Act of 1952, was expanded and restructured during the HFA initiative.⁶⁹¹ This thesis argues that the decentralisation of healthcare, under the restructuring of the political administration, failed not only due to its political nature but also because of inadequate support from the health ministry officials. Diminishing central government funding and human resource provision to provinces also reduced the quality of the healthcare delivery at the provincially managed hospitals and weakened the PHC structure. Therefore, people tended to bypass PHC services and sought care at the higher-level institutions, leading to the underutilisation of small institutions and overcrowding of larger hospitals.

This thesis claims that devolution took the power vested at the district level (first in the DHS and then the RDHS) to the provinces and lengthened the chain of command by establishing a provincial directorate. The PTF1 attempted to return the power to the periphery by establishing a DDHS system that ultimately failed not only due to inadequate finances and resources but also because of issues between the managerial staff in the district health governance. Other suggestions of PTF1, like the establishment of new directorates within central MoH, were implemented. PTF1 also did not deliver one of the aims of the task force, a national health policy, which was subsequently developed by another expert group in 1996. Important policy initiatives such as the preparation of a strategic health plan, the National Medicinal Drug Policy (NMDP) and reform to the Medicinal Regulatory Act were also not executed.⁶⁹² Not implementing those activities impacted AMR; for instance, by strengthening the rational use and equitable supply of antibiotics via medicinal policies and regulations, the tackling of AMR could have been improved. Since the PTF2 was spearheaded by the president of the country's political allies and consisted of academics rather than administrators, it did not receive much recognition among the health ministry officials. This

⁶⁹¹ See chapters 1.2, 4.2 and 5.1.

⁶⁹² As presented in chapter 4.2, the concept of NMDP was spearheaded by Professor Senake Bibile, but was not progressed due to a lack of political support from 1975.

disconnection between the two fractions became a barrier to implementing PTF2 reforms. For instance, an attempt to regularise the DP with the support of the head of the state failed. While the hospital structure was again reformed and expanded, it did not prevent the politically motivated upgrading of small institutions to the secondary level, which led to an inequitable distribution of hospital facilities on the island.

Due to the long delay in initiating the HMP1, health officials' enthusiasm had waned, and they had little motivation to implement it successfully. Though it has established a platform for monitoring the national action plans, it is important to perform a mid-term and final evaluation to assess its outcomes, seeing that health indicators did not improve significantly during the 2010s. Low government expenditure on health, especially provincial health (including PHC), and rising OPP health expenditure also created barriers to delivering quality healthcare services in the country. Amid all these issues, however, Sri Lanka has maintained better health indicators than most of the countries in the region.

In a nutshell, the policy initiatives assessed in this chapter (and the previous chapter) impacted AMR directly via antibiotic use and supply, and indirectly by reducing the quality of healthcare and creating overcrowding that led to an irrational use and overuse of antibiotics. The next point of enquiry is how the issues related to healthcare provision in Sri Lanka and the international AMR drive after 1948 interrelate with the current management of AMR in Sri Lanka. The next chapter will therefore assess how these health policies affected the approach to AMR, the management of antibiotics, infection control, and the awareness and surveillance of AMR.

Chapter 7. AMR in Sri Lanka

As the previous chapters have shown, a significant number of Sri Lanka’s achievements in healthcare standards had been the result of the national intrinsic and targeted public policies. This chapter examines the key elements involved in tackling antimicrobial resistance (AMR) in Sri Lanka. It is based on the findings from qualitative interviews with experts in health policy, the pharmaceuticals and AMR who had worked in, or are working in, Sri Lanka and/or WHO settings. Categories and findings are presented under the AMR assessment framework (table 1.4) as described in chapter 1. The discussion section will examine the results of this chapter in the light of previous studies.

Research for this chapter was severely hampered by travel restrictions and archive closures during the current pandemic, which meant that it was impossible to access several of the relevant data sets relating to AMR, antibiotic use and consumption, etc., kept at the Ministry of Health (MoH) and the National Archives of Sri Lanka (SLNA). This included Ministry circulars and confidential internal communications of the MoH about the formulation and monitoring of the National Strategic Plan of Sri Lanka (NSPSL) for Combating AMR in Sri Lanka, gazette notifications and parliamentary debates, and newspaper articles on National Laboratory Policy (NLP) from 2000 to 2018. Nevertheless, in this chapter, I have sought to make the best possible use of the available evidence, which I was able to collect at the outset of the project, to ensure the research findings are reliable and accurate, to which this chapter now turns.

7.1 AMR policies, guidelines

Table 7.1: Categories and findings relating to AMR policies and guidelines: National AMR Action Plan and AMR regulations

Category	Subcategory	Findings
National AMR Action Plan	▪ Monitoring of the NSPSL	<ul style="list-style-type: none"> ▪ Importance for understanding AMR work ▪ Disruption during COVID-19 pandemic
	▪ Contribution from non-health sectors	<ul style="list-style-type: none"> ▪ Variation at the national and regional levels ▪ Variation between sectors
	▪ Implementation of the NSPSL	<ul style="list-style-type: none"> ▪ Level of political will ▪ Level of state funding ▪ Private sector contribution ▪ Planning procedures
AMR legislation	▪ Importance of AMR policy	<ul style="list-style-type: none"> ▪ Regulations and laws for enforcing AMR activities ▪ Impact on infection control in public and private sectors ▪ Implementation within the private sector ▪ Parliamentary procedures
	▪ Development of AMR policy	<ul style="list-style-type: none"> ▪ Policy aims ▪ Stakeholder involvement ▪ Departmental processes within the MoH

Source: Interview findings of the sample as described in subsection 1.7.

7.1.1 AMR National Action Plan (NAP)

The 2015 World Health Assembly (WHA) adopted the *Global Action Plan on Antimicrobial Resistance (GAP)*, which called on member countries to develop national strategic plans (NSPs) aligned with the *GAP* objectives to minimise the development of AMR (WHO, 2015).⁶⁹³ The MoH, Sri Lanka, also spearheaded the development and launch of the NSPSL under a so-called “One Health concept” (OHC), which, it was generally agreed, involved multisectoral collaboration encompassing human health, animal health, fisheries and agricultural sectors.⁶⁹⁴ The NSPSL, which was based on five key strategies which were aligned with the strategic objectives of the *GAP*, identified five strategic objectives (figure 7.2) Those strategies were further expressed with specific objectives and with 2-year and 5-year milestones for implementation. A National Advisory Committee on Antimicrobial Resistance, chaired by the Director-General of Health Services (DGHS) and co-chaired by the Directors-General of Animal Production, Health, and Agriculture was set up. Another NAP implementation-strengthening team was established comprising multisectoral representation to implement activities identified in the NSPSL. Focal points for all four sectors were identified. For human health, this was the Deputy Director-General of Laboratory Services of the MoH.⁶⁹⁵ This subsection will present participants’ options on monitoring and implementation of the NSPSL and the contribution of the non-health sectors to this process.

Table 7.2: Key strategies of the NSPSL

No	Strategies
1	Improve awareness and understanding of antimicrobial resistance through effective communication
2	Strengthen the knowledge and evidence base through surveillance and research
3	Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures
4	Optimise the use of antimicrobial medicines in human and animal health
5	Prepare the economic case for sustainable investment and increase investment in new medicines, diagnostic tools, vaccines and other interventions

Source: MHR: NSPSL 2017.

Three participants said that monitoring the National Strategic Plan (NSP) is important for understanding progress on AMR work. Another interviewee claimed that NSP monitoring has not been happening in Sri Lanka due to the current pandemic.

The report [NSP] [was] essential because countries must accept it to monitor their progress. The bigger picture [was] that AMR must be contained by every country...that WHO [had] a role [in] monitor[ing] the implementation of a national action plan...[and] addressing the issues and gaps. [P11]⁶⁹⁶

⁶⁹³ By the end of March 2018, 100 countries had prepared a NAP, and a further 67 had plans in progress.

⁶⁹⁴ MHR: National Strategic Plan for Combating Antimicrobial Resistance in Sri Lanka, 2017–2022 (NSPSL 2017): One Health is an approach that recognises that the health of people is closely connected to the health of animals and our shared environment. It is a collaborative, multisectoral, and transdisciplinary approach – working at the local, regional, national, and global levels – with the goal of achieving optimal health outcomes recognising the interconnection between people, animals, plants, and their shared environment. For the importance of the OHC, see Mackenzie and Jeggo (2019).

⁶⁹⁵ Ibid., 10.

⁶⁹⁶ P11: Policy, AMR, WHO.

The problem was, though, we prepared it with the timeline, we didn't plan for an audit. I think we should have done the midterm audit, which would have pushed this into the track again. Unfortunately, with COVID, the attention given to the NSP now is much less. [P25]⁶⁹⁷

The NSPSL goes beyond health, and there is a tri-party agreement under the OHC. While three interviewees highlighted the inadequate contribution from the other sectors (veterinary, fisheries, agriculture and environment), another interviewee also claimed that there was a poor relationship among the partners even at the regional level.

Some activities [had] been planned for other sectors but did not take [off] much. So, it's a major work to be done; it [was] a big issue [in Sri Lanka]. [P20]⁶⁹⁸

At the regional level, they [three parties] have not been able to work beyond just getting together to share information... We have not gone into that level yet... [WHO] have a work plan [and] are trying to implement it, but it's hard. [P11]⁶⁹⁹

Another interviewee argued that the health sector should help the other sectors to overcome constraints in implementing the NSPSL.

We need to understand the constraints of other sectors in implementing the NSP, and the health sector should support them. Reasons [were] lack of understanding of [the] gravity [of] AMR, lack of expertise and commitment. [P20]⁷⁰⁰

Interviewees identified several problems relating to implementing the NSP, such as political will, finances, the private-sector contribution and unrealistic planning.

The success behind most of the health initiatives was [a] strong political will (for example, malaria elimination work in Sri Lanka), but AMR had never been a politically attractive initiative as it wouldn't yield a tangible outcome for people. The NSP [of Sri Lanka] report was not developed to grab political support. [P01]⁷⁰¹

The NSP was made without a funding plan. It generally [worked] with its common elements [...] shared with other programmes like health education and laboratory work. But the NSP [of Sri Lanka] [had] not planned financing [a] surveillance system of antibiotic use; [therefore] that [surveillance] [was] not being mov[ed] [forward]. [P16]⁷⁰²

According to the NSP [of Sri Lanka], not only the private health sector but also privately owned farms [were] targeted [with] many responsibilities to achieve the objectives. However, their contribution was insignificant. Private hospitals [had] not practised stewardship and not given data for any surveillance systems. [P22]⁷⁰³

Milestones of achieving strategies were not planned realistically. The strategic plan [was] to [have] include[d] AMR-related topics as modules in the curriculum in [medical, nursing and veterinary] studies by 2022, but nothing [has] been done. [P16]⁷⁰⁴

⁶⁹⁷ P25: AMR, Sri Lanka.

⁶⁹⁸ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

⁶⁹⁹ P11, Policy, AMR, WHO

⁷⁰⁰ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

⁷⁰¹ P01: Policy, pharmaceuticals, Sri Lanka.

⁷⁰² P16: Policy, Sri Lanka.

⁷⁰³ P23: Policy, pharmaceuticals, Sri Lanka; for private sector involvement, see MHR: NSPSL.

⁷⁰⁴ P16: Policy, Sri Lanka; MHR: NSPSL 2017, 13.

7.1.2 National AMR legislation

Legislation plays a vital role in tackling AMR and is the key factor in managing the overuse and misuse of antimicrobials (FAO, 2021).⁷⁰⁵ According to the MoH's policy repository, there is no AMR policy or Parliamentary Act in Sri Lanka. However, regulation of pharmaceuticals including antibiotics is covered by the National Medicines Regulatory Authority (NMRA) Act of 2015.⁷⁰⁶ This subsection will present participants' opinions on the importance of legislation and a draft AMR policy for Sri Lanka.

Two interviewees characterised current regulations as weak, and identified a need for stricter laws to enforce AMR measures in Sri Lanka.

It is beyond the Ministry of Health and should be [managed by] a very high-level, empowered committee. State regulations [are] not enough and need laws also for enforcement. [P08]⁷⁰⁷

We made a draft for the policy document to get these two committees legalised. Those are not strong enough to enforce the AMR activities. [P25]

While one interviewee mentioned the importance of having an AMR policy for regulating private-sector hospitals, another argued that it would not work there as the implementation body was weak.

We need an AMR policy to regulate infection control procedures in private-sector hospitals, which [are] not regulated effectively. [P22]⁷⁰⁸

We could implement [an] AMR policy in the public sector but not in the private sector as the implementation bodies of the Ministry (such as the private sector directorate and private sector regulation council) are either too weak or [are] biased towards the private sector. [P20]⁷⁰⁹

One interviewee stated that a Parliamentary Act on AMR policy was needed to receive political support.

A national policy [of Sri Lanka] on AMR is important to grab [on] to political commitment as it should pass the cabinet of ministers and be debated and adapted to the social, political, and economic context of the Parliament of Sri Lanka. [P16]⁷¹⁰

According to another interviewee, the draft AMR policy was developed to strengthen AMR measures in Sri Lanka, while a third claimed that the draft policy should be reviewed by a wider group of stakeholders.

The draft policy [was] formulated to strengthen AMR activities by looking at issues of implementation. [P03]⁷¹¹

⁷⁰⁵ The legislation refers to laws that are written in general terms to meet present and possible future needs. The government issues regulations based on the law (Lezotre, 2014).

⁷⁰⁶ MHR: NMRA Act of 2015. The NMRA and antibiotic regulation will be discussed in section 7.1.1.

⁷⁰⁷ P08: Policy, Sri Lanka, WHO.

⁷⁰⁸ P22: Policy, Sri Lanka.

⁷⁰⁹ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

⁷¹⁰ P16: Policy, Sri Lanka.

⁷¹¹ P03: AMR, Sri Lanka.

Only two organisations contributed to the draft [AMR] policy, [which] should be improved according to wider stakeholder opinion before sending to the cabinet. [P16]⁷¹²

One interviewee flagged up that a draft AMR policy had been delayed at the legal department (branch) of the MoH.

...we wanted it [the policy] to be approved by the cabinet, which we still could not finish. The draft form was given to the legal department [of the MoH] and it [was] going from here to there and it has still not been completed. [P25]⁷¹³

7.2 Laboratory management

Table 7.3: Categories and findings relating to laboratory management: National Laboratory Policy (NLP) and capacity strengthening of microbiology laboratories

Category	Subcategory	Findings
National Laboratory Policy (NLP)	Existing NLP of 2006	<ul style="list-style-type: none"> ▪ Could not be implemented due to external pressure ▪ Failed to be activated due to the pandemic
	Necessity of NLP	<ul style="list-style-type: none"> ▪ To strengthen the laboratory surveillance system ▪ For monitoring and improvement of laboratory standards ▪ Standardisation process in private hospitals
Capacity strengthening of microbiology laboratories	Laboratory facilities	<ul style="list-style-type: none"> ▪ Testing facilities and utilisation ▪ Insufficient standardisation and digitalisation of public-sector facilities
	Microbiologists in position	<ul style="list-style-type: none"> ▪ Unavailability of microbiologists ▪ Issues with cadre projections and training opportunities ▪ Limitations of laboratory facilities for training
	Work of microbiologists	<ul style="list-style-type: none"> ▪ Too much work for microbiologists ▪ Should be delegated, automated and digitalised
	Virology facilities	<ul style="list-style-type: none"> ▪ Necessary to reduce antibiotic use for viral diseases ▪ Convert COVID-testing facilities for virus testing

Source: Interview findings of the sample as described in subsection 1.7.

7.2.1 National Laboratory Policy (NLP)

An NLP outlines the vision and mission of a country's laboratory system, and a strategic plan guides the practical implementation process of the necessary laboratory system improvement (WHO Europe, 2017). Laboratory policies and plans are important not only for streamlining the evidence base for the detection, management and prevention of pathogens but also for quantifying the burden of AMR and resistance patterns (WHO Europe, 2017). In 2006, Sri Lanka's cabinet ministers approved an NLP and recommended the formulation of a National Health Laboratory Services Act with strategies and monitoring indicators.⁷¹⁴ The NSPSL also aimed to develop an NLP and National Laboratory Regulatory Act by 2019. This subsection will present interviewees' opinions on the existing NLP and the necessity for it.

⁷¹² P16: Policy, Sri Lanka.

⁷¹³ P25: AMR, Sri Lanka.

⁷¹⁴ MHR: National Health Laboratory Policy, MoH, 2006.

Though a cabinet of ministers had authorised the existing NLP in 2006, it was not implemented, and, according to one interviewee, a National Health Laboratory Services Act was not prepared in line with the laboratory policy, due to pressure from private hospitals owners.

Immediately after we got the cabinet approval for the laboratory policy, the owners of the leading private hospitals met the [health] minister and halted proceeding with any activities related to this policy, including the preparation of the Act. This adversely affected not only the private sector but [also] the public sector. [P20]⁷¹⁵

Another interviewee pointed out that the recent attempt to activate the laboratory policy had also failed due to the current pandemic.

[As the existing laboratory] policy was not going any further, before the second wave [of COVID] we had one meeting with representatives of [the] colleges to activate [it] with [a] few modifications. The Ministry accepted it, [knowing it to be] an important problem, but it did not go so far because of the COVID second wave. [P25]⁷¹⁶

Four participants referred to the importance of implementing an NLP for combatting AMR. One interviewee emphasised that an NLP and Act were necessary to strengthen the laboratory surveillance system.

AMR could not [be] control[led] without a lab surveillance system (for which data [was] not flow[ing] from hospitals). [Therefore] a proper lab policy and regulations [were] needed too [for the] enforcement of laws. [P16]⁷¹⁷

When one interviewee claimed that the NLP could improve laboratory standards through an accreditation system, another interviewee pointed out that the private sector had started accreditation of machine-based laboratories and would extend it to microbiology laboratories.

[Concerning] AMR, the National Laboratory Policy could [be used to] monitor and regulate the activities of laboratory services mainly [i]n microbiology, which is currently lacking. It could also maintain laboratory standards through nationally and internationally accepted accreditation systems. [P22]⁷¹⁸

In the private sector, the major labs in the country are going for accreditation of biochemistry and haematology [laboratories] where machines play the main role. But [where] microbiology is concerned, the human factor is like 60 to 80 per cent of [the] work. Because of that, I think most private hospitals are going for accreditation of microbiology after accreditation of haematology and biochemistry. That's a good sign. [In the] Government sector only one or two labs were [accredited]. But I think if the ministry uses more encouragement to the government sector, at least national labs would go for accreditation. [P25]⁷¹⁹

7.2.2 Capacity strengthening of microbiology laboratories

Effective prevention and treatment of infectious diseases requires reliable and efficient laboratories for the diagnosis of disease (Njelesani et al., 2014). WHO's *GAP* also emphasises the need for member states to strengthen microbiology laboratories for the effective management of AMR (WHO, 2015). The strengthening of microbiology laboratories is not limited to quality assurance, laboratory networks, properly

⁷¹⁵ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

⁷¹⁶ P25: AMR, Sri Lanka.

⁷¹⁷ P16: Policy, Sri Lanka.

⁷¹⁸ P22: Policy, Sri Lanka.

⁷¹⁹ P25: AMR, Sri Lanka.

outfitted reference laboratories and standardisation of methodologies. It also involves the linkage of information systems for data management, including artificial intelligence (AI) approaches and human resources (WHO Europe, 2017; Vandenberg et al., 2020). In Sri Lanka, the microbiology laboratory, as part of the main pathology department, started to develop as a separate entity in 1980 under consultant microbiologists (Abeyewickrama et al., 2018). In 2017, Sri Lanka had more than 60 microbiology labs (in public, private and university sectors) across the country that could conduct AMR surveillance (WHO, 2017a). The Medical Research Institute, Colombo, had been the national reference laboratory for human health (specialised national reference laboratories for gonorrhoea and tuberculosis). This subsection will present interview data on microbiology and virology laboratory facilities, and human resources related to microbiology services.

Though the MoH invested in improving laboratory testing and developed an essential test list (similar to the Essential List of Medicines – ELM), utilisation of those facilities for diagnosis and treatment was inadequate.

After discussing with relevant colleges, we [MoH] identified and prepared an essential test list in 2015. Considering all, we spent 2 to 3 million Sri Lankan rupees to increase lab testing...with new equipment. Any base hospital could do up to cultures and many things. The lab sector was improved very much...but people don't use lab tests, do not use results. They just start treatment with antibiotics. [P08]⁷²⁰

Another interviewee argued that the public-sector laboratories were not standardised and digitalised to support AMR activities.

Standardisation could not [be found] in many government microbiology facilities. As most of the laboratories were not digitalised, it was hard to generate surveillance data. [P22]⁷²¹

One interviewee flagged up the fact that microbiologists were concentrated in the Western Province of the country, where the highest number of tertiary care institutions were scattered.

Microbiologists [were] more concentrated in the Western Province, [where] most hospitals [were] final tertiary reference centres, and not available...below this level...However, we try to normalise distribution as much as possible in the country. [P25]⁷²²

Another interviewee argued that the scarcity of microbiologists was due to issues of the cadre projections and a limited number of training opportunities and units for microbiology.

I think the ministry [had] not understood the gravity of [the] AMR issue in Sri Lanka, so the current cadre projection wouldn't be enough to bridge the demand with retirement and attrition of microbiologists. We [had] less than 60 microbiologists in the public and private sector and [were] recruiting only 8-10 each year for training as [there were] inequitable allocations of trainees and limited numbers of training units. [P16]⁷²³

⁷²⁰ P08: Policy, AMR, Sri Lanka, WHO.

⁷²¹ P22: Policy, Sri Lanka.

⁷²² P25: AMR, Sri Lanka.

⁷²³ P16: Policy, Sri Lanka.

Increasing the number of microbiology trainees was not practical because of the limited size of existing laboratories, as one interviewee pointed out.

It was not practical to increase the number of trainees, as some training [was] lab based. Labs [were] of limited size so they could not accommodate [more trainees]. [P03]⁷²⁴

When one interviewee highlighted the high workload of microbiologists due to a lack of staff with the same qualifications, another interviewee suggested delegating their responsibilities to subordinate staff and starting automation and digitalisation of the work for effective utilisation of resources.

So, we [microbiologists] [are] doing more than one thing. We are handling infection control, postgraduate training, diagnostic services. And, sometimes, [we assist in] national-level work. The only place that we [had] two microbiologists was the National Hospital of Sri Lanka [NHSL], [where] you needed about 15 microbiologists according to in the UK [settings]. [P25]⁷²⁵

We need to delegate selected responsibilities of microbiologists among postgraduate trainees, medical officers and laboratory technicians [technologists] in the unit. Digitalisation and automation of the microbiology unit were essentially ineffective use of the resources. [P13]⁷²⁶

To reduce the inappropriate prescription of antibiotics for viral infections, one interviewee flagged up the importance of diagnosing such infections through virus-testing laboratories. Another interviewee recommended expanding COVID-testing laboratories in the country to diagnose viral infections.

We need to develop virology facilities. Before we are [able] to limit prescriptions, we need to [make] a diagnosis so the clinician is aware that this is due to a viral infection. They [would] at least think twice before starting antibiotics. [P25]⁷²⁷

...I think COVID [has been] a blessing because most of the provinces and Colombo group of hospitals [now have] a virology laboratory [for] COVID testing. Later on, we can move this towards doing molecular testing for [viruses]. [P22]⁷²⁸

⁷²⁴ P03: AMR, Sri Lanka.

⁷²⁵ P25: AMR, Sri Lanka. The NHSL is the largest hospital in the country, with more than 3,000 beds. For the history, services and present team of the NHSL, see NHSL (2015).

⁷²⁶ P13, Policy, WHO.

⁷²⁷ P25: AMR, Sri Lanka.

⁷²⁸ P22: Policy, Sri Lanka.

7.3 Management of antibiotics

Table 7.4: Categories and findings relating to the management of antibiotics: regulation of antibiotics, selection of antibiotics and surveillance of antibiotics

Category	Subcategory	Findings
Regulation of antibiotics	Formulation of regulations	<ul style="list-style-type: none"> ▪ Delay in the formulation of the National Medicinal Drug policy ▪ Delay in formulating regulations for the Cosmetics, Devices and Drugs Act (CDDA)
	Issues with the regulation of antibiotics	<ul style="list-style-type: none"> ▪ Registering of products that cause AMR ▪ Insufficient regulations in other sectors
	Regulation of the use of antibiotics in the private sector	<ul style="list-style-type: none"> ▪ Multiple determinants of private-sector treatment ▪ Inadequate regulation of the private sector ▪ Inadequate pharmacists in private pharmacies ▪ Over the counter (OTC) prescription of antibiotics ▪ Easy access to red-light antibiotics* ▪ No guidelines for the availability of drugs
	Issues with the regulator	<ul style="list-style-type: none"> ▪ Conflict of interests for members of the regulatory body ▪ Inadequate drug-testing facilities ▪ Poor post-marketing surveillance
Selection of antibiotics	Registration of antibiotics	<ul style="list-style-type: none"> ▪ An attempt to register non-formulary medicines ▪ No system for importing newer antibiotics to the country
	Government procurement system	<ul style="list-style-type: none"> ▪ Efficient at the central and institutional levels ▪ Inefficient and led to purchase of low-quality drugs and shortage of drugs
	Antibiotic production	<ul style="list-style-type: none"> ▪ Not enough to control local consumption
	Reasons to include many antibiotics in the ELM	<ul style="list-style-type: none"> ▪ To contain infectious disease burden ▪ To increase the choice of treatment ▪ To reduce the price of antibiotics through competition
	Issues with the ELM induced higher availability of antibiotics	<ul style="list-style-type: none"> ▪ Use may be irrational due to the high availability ▪ Easy to change antibiotics when not responding ▪ Easy to treat patients in a busy clinical setting ▪ Countries are not required to have all the antibiotics available in hospitals
Surveillance of antibiotics	Surveillance system	<ul style="list-style-type: none"> ▪ Difficult to start but useful ▪ Issues in Sri Lanka such as lack of infrastructure
	Antibiotics data	<ul style="list-style-type: none"> ▪ No mechanism to collect data

Source: Interview findings of the sample as described in subsection 1.7. Notes: * Red-light antibiotics are identified as antibiotics that need authorisation by the consultant microbiologist of the hospital before being prescribed.

7.3.1 Regulation of antibiotics

Regulation of medicines refers to a combination of legal, administrative and technical measures taken by governments to ensure the safety, efficacy and quality of medicines, as well as the relevance and accuracy of product information (Lezotre, 2014). Sri Lanka had been regulating several components of pharmaceuticals, including antibiotics, via the Ceylon Hospitals Formulary (selection of drugs) in the early 1960s and the Bibile and Wickremasinghe report (on production and importation) in 1971. In 1980, understanding the issues of pharmaceutical regulation, the government passed an Act called the Cosmetics, Devices and Drugs (CDD) Act to regulate and control the manufacture, importation, sale and distribution of drugs, cosmetics and devices, and to establish a CDD Technical Advisory Committee chaired by the

DGHS, who was the chief authority in the country in relation to drugs.⁷²⁹ As a result of recommendations of the Presidential Task Forces (PTFs) and the first Health Master Plan (HMP1) (chapters 5 and 6), Sri Lanka produced a document titled “The National Medicinal Drug Policy (NMDP) – 2005”. Cabinet approval was given in October 2007 to draft a new Act by repealing or amending the existing CDD Act to implement the NMDP. Ultimately, in 2015, pharmaceutical regulation was taken away from the MoH and transferred to a newly established organisation called the National Medicinal Regulatory Authority (NMRA) through the NMRA Act of 2015 (Jayakody, 2015). The NMRA is responsible for the regulation and control of registration, licensing, manufacture, importation and all other aspects relating to medicines and medical devices and for the conducting of clinical trials in a manner compatible with the NMDP. While the NMDP emphasised promoting “the rational use of drugs” and discouraging their “irrational use”, the NMRA Act encourages the safe use of drugs.⁷³⁰ This subsection will present the findings of interviews about the formulation and regulation of medicines, including antibiotics, in Sri Lanka.

Formulation of the NMDP had been delayed for a long time due to the actions of various groups within the MoH, the Ministry of Justice and the pharmaceutical industry.

There was a drug policy since the 1960s-70s, but there were weaknesses in those. But I don't know, various forces have been operating, and [for] the drug policy to come out, and the current Medicinal Drugs Regulatory Authority to come up, took a long time. There [were] a lot of internal currents [in the MoH] working against that, and it was made public: even the President came out and said to the public he couldn't find the document [that] he wanted to take to the cabinet for approval. It was lagging in the legal draftsmen's office for a long time, and they could not trace the document. So, there are various forces – again I would call it [a] mafia – operating and that also is contributing to this. [P05]⁷³¹

The industry had been influencing politicians, officials, and media to interrupt the formulation of the NMDP since the 1970s. [P16]⁷³²

Not only the NMDP but the work on the CDD Act was also affected seriously in the 1980s as the legal draftsman's department, which is responsible for drafting, took a long time to formulate regulations for the Act.

The CDD Act came in 1980, but we could not register drugs, control drug imports for nearly four to five years as regulations were not there. We had to make frequent pilgrimages to legal draftsmen to check the progress and get the work done. [P01]⁷³³

The NMRA's regulations were not strong enough to prevent the registration of antibiotic products that would cause bacterial resistance.

The College of Microbiologists didn't allow the NMRA [to register] ...combination products with antibiotic and anti-inflammatory agent[s] and steroids. [According to] the National Guidelines of 2016, some antibiotics [were]

⁷²⁹ MHR: CDD Act 1980.

⁷³⁰ MHR: NMDP 2015, NMRA Act 2015.

⁷³¹ P05: Policy, Sri Lanka, WHO.

⁷³² P16: Policy, Sri Lanka.

⁷³³ P01: Policy, pharmaceuticals, Sri Lanka.

reserved for certain diseases, and we pay serious attention in registering those antibiotics. But, as you know, in Sri Lanka, the regulations [were] not that strong; we [couldn't] completely prevent certain things going on. [P25]⁷³⁴

Antibiotic prescriptions by the veterinary sector, indigenous practitioners and 'quack' doctors, which contributed to AMR in Sri Lanka, were not regulated or controlled sufficiently, argued two interviewees.

Veterinary surgeons [could] prescribe antibiotics that...[were] used also for humans, and those medicines could be purchased by the pharmacies as well. In human medicines, food and drug inspectors [FDIs] were checking on prescriptions in pharmacies, but for the veterinary sector we don't have such a monitoring system as far as I know.... There was no monitoring of the use of antibiotics in farms for growth promotion, though it was banned recently. [P03]⁷³⁵

There [were] large number of quacks [doctors] using antibiotics without having background knowledge, and they [were] thriving [by giving] multiple doses and higher doses to get the disease under control soon to attract patients. So, it is a vicious cycle that is going on. The indigenous practices [were] also using antibiotics and as they also [received] Western medicine training about pharmacology and physiology, so, all [of them] contributed to antibiotic resistance. [P05]⁷³⁶

Determinants of private-sector prescriptions (for instance, promotions by the industry and client income), could not easily be controlled by regulations, suggested two interviewees.

The private-sector use of the drug [was affected by] promotion and marketing, profit motives and pushing of [ir]rational use. [The] more they sell or prescribe...[the] more money they earn. So, if most [or] all healthcare occurs in the private sector like in Bangladesh, India, and Nepal, and to a lesser degree in Sri Lanka, you can't even tell them [to] follow [the] standard treatment guideline because nobody [is] obliged to follow your standard treatment guidelines. [P07]⁷³⁷

But in the private sector, they [doctors] know that people...[who] could afford [to pay] come to the private sector, and left and right, they prescribed antibiotics without any hesitation. [P05]⁷³⁸

Two interviewees argued that the private health sector was not sufficiently regulated by the MoH.

If the government or the Ministry of Health issues a circular, it [should bind] the private sector as well...[The] Ministry [had] a separate section for regulation of [the] private sector [which] [was] not strictly enforcing any of these rules, so, regulations on [antibiotics] were not enforced in [the] private sector adequately. [P25]⁷³⁹

There [was] a national guideline for the availability of antibiotics according to [the] level of the government sector hospital, but no guidelines for the private hospitals. [P03]⁷⁴⁰

The number of qualified pharmacists was insufficient to work in private-sector pharmacies according to two interviewees.

⁷³⁴ P25: AMR, Sri Lanka. For specific guidance on the use of antimicrobial agents, see MoH Empirical and Prophylactic Use of Antimicrobials, National Guidelines, 2016.

⁷³⁵ P03: AMR, Sri Lanka.

⁷³⁶ P05: Policy, Sri Lanka, WHO. Sri Lanka had nearly 40,000 quack doctors, which is equal to the number of qualified doctors in the country (Gunatilleke, 2020). According to the NMDP of 2015, "the primary concern of this policy is allopathic medicines; however, policies for the other systems of medicines will be developed later in consultation with stakeholders of those systems."

⁷³⁷ P07: Policy, pharmaceuticals, AMR, WHO.

⁷³⁸ P05: Policy, Sri Lanka, WHO.

⁷³⁹ P25: AMR, Sri Lanka.

⁷⁴⁰ P03: AMR, Sri Lanka. For a list of antibiotics according to the level of hospitals, see MHR, "Approved list of Pharmaceutical items" (Formulary revision 2016/2017).

Private hospitals, private clinics and the community purchased antibiotics from private pharmacies. It's again very much unregulated because of not enough qualified pharmacists. Most of the pharmacies in rural areas were registered under a qualified pharmacist who was not physically there and managed by unqualified people. When we [MoH] checked them, pharmacies started to improve the quality with a qualified pharmacist...but again, they would go back, so this regulation is not quite enough. [P11]⁷⁴¹

Five interviewees stated that OTC prescription had been a difficulty in controlling antibiotics, and one interviewee pointed out that people had easy access to red-light antibiotics from private pharmacies without a prescription.

Pharmacists were dispensing drugs over the counter without prescriptions for a long time. Now it has been controlled in the current policy [Act]. But you must enforce that since some pharmacies issued over-the-counter antibiotics. Our monitoring [is] weak. [P03]⁷⁴²

Red-light antibiotics like linezolid (very good for MRSA infection), cefixime and levofloxacin [are] prescription drugs and available in the pharmacies, but anybody can purchase [them]...without a proper prescription – mainly in outstations. [P25]⁷⁴³

In terms of the regulatory body, two interviewees pointed out that the regulatory authority was biased in decision-making as some members had direct links with clinical research trial groups.

[Name and the post] of NMRA had been an affiliated member of a private clinical trial company. Therefore, it [was] unavoidable to exclude the NMRA's conflict of interest for approval of this company's...clinical trials in Sri Lanka. It [was] unethical. [P20]⁷⁴⁴

The removal by the health minister of members of the NMRA who had delayed registration of a COVID vaccine because of insufficient information was identified by one interviewee as a threat to the independent behaviour of the authority. Another interviewee highlighted that not registering medicines where there was insufficient information had previously safeguarded the population from potentially harmful effects.

It was a question of [the] autonomy of the NMRA. In March 2021, the [Health] Minister removed...four senior members of [the] NMRA, including Dr Palitha Abeykoon, who had been not supporting the waiver of registration to a COVID vaccine, Sinopharm, for emergency use in Sri Lanka, based on insufficient evidence. No proper phase III clinical trial had been done, and the WHO has also not approved it yet. [P16]⁷⁴⁵

[The] DRA [drug regulation authority] rejected to register a drug called Mibefradil, a calcium channel blocker, which was registered in 53 countries, including developed countries, at the preliminary assessment in January 1998, even with huge pressure from the agent and the political authority. Subsequently, in February 1998, this was withdrawn from the market due to severe drug interactions with other drugs. Therefore, we could protect our people from these harmful effects. [P10]⁷⁴⁶

Two interviewees also claimed that the regulatory authority was not equipped to perform an adequate level of post-marketing surveillance (PMS) and laboratory testing to monitor the quality of drugs.

⁷⁴¹ P08: Policy, Sri Lanka, WHO.

⁷⁴² P03: AMR, Sri Lanka.

⁷⁴³ P25: AMR, Sri Lanka.

⁷⁴⁴ P20: Policy, pharmaceuticals, AMR, Sri Lanka. For details concerning the link between a member and a private clinical trial company, see Jayamanna (2020).

⁷⁴⁵ P16: Policy, Sri Lanka.

⁷⁴⁶ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

Post-marketing surveillance – a process of monitoring the safety of drugs once they reach the market through feedback from the manufacturer, prescriber, and user – [was] not sufficient due to resource constraints. A draft guideline was developed but not implemented. [P16]⁷⁴⁷

The National Medicinal Drugs Authority establishment was away in the right direction. Its monitoring process must be strengthened.... Although the policies and the legislation [were] there... [the NMRA] [did not] have enough quality control laboratories. That is a big vacuum we [had]. [P05]⁷⁴⁸

Another interviewee claimed that the digitalisation of the drug registration process of the NMRA had been unsuccessful due to issues with the staff and servers.

As the drug registration process had been ineffective, we attempted to computerise the whole process in 2016 to enhance the efficiency and effectiveness, but it was unsuccessful due to [the] low IT knowledge of the NMRA staff and the potential security issues of external servers managed by private companies. [P10]⁷⁴⁹

7.3.2 Selection of antibiotics

The selection of antibiotics in clinical settings is ideally based on the available clinical and microbiological evidence, the efficacy of the drug in well-designed clinical trials, and the antibiotic resistance patterns of the local region (Slama et al., 2005). Choosing pharmaceuticals including antibiotics at the central level is based mainly on the rational use, supply and cost of drugs. To assist the selection of drugs, including antibiotics, WHO launched a draft ELM, a register of minimum medicine needs for every healthcare system, in 1977 (Purgato and Barbui, 2012). Thereafter, the size of the ELM has gradually increased through an evidence-based process, including criteria such as public health, relevance, efficacy, safety, and cost-effectiveness (Laing et al., 2003). Based on the WHO model ELM, member countries also develop national ELMs according to affordability for the country, morbidity patterns, the rationality of prescribing, and the effectiveness of drugs. The number of antibiotics in the ELM also increased, without instructions about use, from 40 in 1977 to 90 in 2015. From 2015, it classified antibiotics into three groups – access, watch and reserve (AWaRe) – based on their treatment profile and potential for causing resistance (Sharland et al., 2018). As of 2019, Bangladesh, the Maldives and Nepal had already adapted the AWaRe classification into their essential lists of medicines and national formularies, while four more countries not counting Sri Lanka were in the process of adopting it.⁷⁵⁰

As chapter four, Sri Lanka developed a medicines list for both the state health sector and the private sector in 1958. In addition, to provide information about the use of these medicines, a document called the *Ceylon Hospitals Formulary* was published by Professor Senaka Bibile, who also set up an international procurement system that reduced costs. In 1980, Sri Lanka adopted WHO's model ELM and

⁷⁴⁷ P16: Policy, Sri Lanka. For draft guidelines for PMS in Sri Lanka, see MHR: “Guideline for Post Marketing Surveillance of medicines”.

⁷⁴⁸ P05: Policy, Sri Lanka, WHO. The National Medicines Quality Assurance Laboratory (NMQUAL) of the NMRA provided the technical support needed to operate the quality assurance system relating to medicines (NMRA, 2021).

⁷⁴⁹ P10: Policy, pharmaceuticals, Sri Lanka, WHO. Later the database of the NMRA was digitalised and files containing about 2,000 megabits of information relating to the formulation of drugs as well as other confidential supporting documents uploaded to the external server were erased permanently (*The Sunday Times*, 2021).

⁷⁵⁰ IRIS: Annual report of the DG of SEA, 2019. For the full list categorised according to access, watch and reserve (AWaRe), see Sharland et al. (2018).

developed a national list of essential medicines (NLEM), which was revised five times up to 2014, for the register and purchase of drugs.⁷⁵¹ In 1987, the MoH also developed a manual on management of drugs (MMD), which is the standard reference for the management of pharmaceuticals at the provincial and institutional levels.⁷⁵² This subsection will present findings on the registration and procurement of antibiotics in Sri Lanka, and the impact of the ELM on AMR.

About registering antibiotics, one interviewee flagged up an attempt to register non-formulary drugs at the regulatory authority, and another interviewee argued that the regulator had not developed a system to import newer antibiotics to the country.

I could remember that there was a huge pressure to register a drug that was not in our formulary, which was against the registration guidelines. Antibiotics also might come in various forms in this pathway. [P20]⁷⁵³

We don't have most of the newer antibiotics in the National Formulary because there [were] no registered suppliers. We [did] not have a system to get these new medicines to [the] country. [P25]⁷⁵⁴

Two interviewees said that the MoH had efficient procedures for the procurement of drugs including antibiotics.

Sri Lanka has managed to achieve an excellent availability [of drugs], with very limited resources, because the central medical procurement system and government medical store [had] been very efficient, the way they procure their medicines....Kathleen Holloway [Regional Advisor on Essential Drugs for the WHO South-East Asia Region] conducted several studies of the use of ELM. Sri Lanka really [did] stand out amongst the other countries ...where the essential medicines' availability [is] relatively high, and also the utilisation from the public sector, and accessing and using essential medicines is high. [P07]⁷⁵⁵

The Ministry of Health...started monitoring antibiotic purchasing. The drug manual was describing how we should get the drugs for institutions, so there are a lot of strategies and policies in place to ensure the right prescription. [P08]

Two interviewees argued that issues with the government procurement system and drug management led to the purchase of low-quality drugs and a shortage of drugs.

...shortage of drugs, one of the major issues in the health sector, was...mainly due to the [fact that the] procurement process was not strong enough. Technical evaluation committees and so forth processes were very long drawn. All stages of drug management, like estimation and order, were also weak. [P05]⁷⁵⁶

So, if you don't go for the lowest-price antimicrobial, people [would] question why we didn't go for the lowest product....We don't know whether there [was] a difference between brand and the generic [drugs] without testing, [for which] ...we [didn't] have good facilities. We [were] going by the certificate, which [was] given by the same company. [P03]⁷⁵⁷

⁷⁵¹ MHR: The national lists of essential medicines (NLEM) 2009 and 2014.

⁷⁵² The MMD has been revised twice, in 1993 and 2008 (MoH: MMD 2008).

⁷⁵³ P20: Policy, pharmaceuticals, AMR, Sri Lanka.

⁷⁵⁴ P25: AMR, Sri Lanka.

⁷⁵⁵ P07: Policy, pharmaceuticals, AMR, WHO. According to Rathish et al. (2017), availability of essential medicines in most of the primary and the secondary care institutions was fairly high.

⁷⁵⁶ P05: Policy, Sri Lanka, WHO.

⁷⁵⁷ P03: AMR, Sri Lanka.

When asked about the reasons for including so many antibiotics in the ELM, the interviewee stated that it was aimed at tackling the higher infectious disease burden, increasing the treatment choices, and reducing the price of antibiotics through competition.

Question: there are many antibiotics in the ELM from the beginning. I think it started from the fifties and went up to the seventies and ended up in the hundreds. What are the reasons to include many antibiotics in the list?

That infectious diseases [were] still the primary burden of disease in many of these countries where WHO was trying to promote...[the] essential medicine concept...to sort of use...the resources more effectively, mainly in Africa and in Southeast Asia. [P07]⁷⁵⁸

We need to give a variety of treatment options to treat infectious diseases. When we made the ELM, most of the countries did not have many antibiotics, so the doctor could use the antibiotics available at that time. [P11]⁷⁵⁹

Many antibiotics in the list [ELM] mean[s] high competition among the suppliers and it reduced the prices of antibiotics. [P16]⁷⁶⁰

When asked about the problems associated with the probable ELM-induced availability of antibiotics, interviewees said it would lead to irrational use, misuse, and overuse of antibiotics.

In the '80s or '90s, too many antibiotics were just deliberately included without any instruction [in the ELM] ... We didn't make enough effort to monitor and try to curb the misuse when people were using these antibiotics not according to the life-saving indication. I think that's a big problem of [the] last few decades. [P07]⁷⁶¹

In the past, we tried to maintain drugs in clinical settings based on ELM. Therefore, sometimes, different types of antibiotics were available, and doctors tended to use antibiotics irrationally due to high availability. [P05]⁷⁶²

If a patient [has] not responded to an antibiotic, doctors feel that...another antibiotic [should be given] if available rather than further investigation. [P04]⁷⁶³

Since antibiotics were freely available in hospital settings, it was...easy to treat with antibiotics for a quick recovery, to reduce the number of repeat OPD [outpatient department] visits and inpatient days. Ordering investigations, or managing without antibiotics, would be a hassle for an OPD doctor who managed more than 100 patients per day. [P16]⁷⁶⁴

Another interviewee argued that the ELM did not suggest that countries should keep the full list of antibiotics in hospitals so was not responsible for high utilisation and AMR.

Countries made their drug list based on the ELM. That did not ask countries to keep the full list of antibiotics in hospitals. So, the ELM had nothing to do with the high use of antibiotics and AMR. [P09]⁷⁶⁵

7.3.3 Surveillance of use and consumption of antimicrobials

Data on antimicrobial use (AMU) are collected at the patient level, which requires more resources but provides important details on prescribing practices, which is vital for managing the antimicrobial

⁷⁵⁸ P07: Policy, pharmaceuticals, AMR, WHO.

⁷⁵⁹ P11: Policy, AMR, WHO.

⁷⁶⁰ P16: Policy, Sri Lanka.

⁷⁶¹ P07: Policy, pharmaceuticals, AMR, WHO.

⁷⁶² P05: Policy, Sri Lanka, WHO.

⁷⁶³ P04: Policy, pharmaceuticals, Sri Lanka, WHO.

⁷⁶⁴ P16: Policy, Sri Lanka.

⁷⁶⁵ P09: Policy, pharmaceuticals, WHO.

stewardship programme (ASP). Data on antimicrobial consumption (AMC) used the estimates of aggregated data, mainly derived from import, sales or reimbursement databases, and it serves as a proxy for actual use of antibiotics (WHO, 2018). According to WHO, surveillance of AMU and AMC are vital strategies in addressing antibiotic resistance. Surveillance of AMC can help countries identify problems relating to antibiotic use, direct interventions to tackle these problems, and evaluate these interventions at the national level (WHO, 2018). As of 2019, only two countries in the region, Thailand and Bangladesh, had developed a surveillance system for AMC and AMU.⁷⁶⁶ This subsection will present findings on surveillance systems and the use of antibiotic data.

An effective surveillance system, which is difficult to set up, could provide vital information to prescribers about antibiotic resistance.

The Philippines [were] quite advanced and they [had] a good system [to track] antibiotic use. So, for the antibiotics to educate doctors and to give this information, we included these antimicrobial resistance alerts and told them that...our sentinel surveillance system in the country showed that there [was] already a high level of resistance to these drugs. So, trying to educate the prescriber...with evidence-based information, so many countries actually [went] down...this path...Initially, they particularly found many hardships. [P07]⁷⁶⁷

There was no mechanism to collect AMC data, not only from government hospitals but also from private hospitals and pharmacies in Sri Lanka.

Optimising the use of antimicrobials...is a broad area [that] needs antimicrobial consumption data as well. Though we [public hospitals] submit our data about surveillance, we [didn't] submit...about antimicrobial consumption. That [was] one area we [could] work [on] and improve...I think this is also [an] area we can take forward for the country. The Ministry and NMRA [had] made some data from the medical supply division level, but certain hospitals and pharmacy chains refuse[d] to give data to NMRA. It must be [handled] by somebody higher up. [P25]⁷⁶⁸

⁷⁶⁶ IRIS: Annual report of the DG of SEA, 2019.

⁷⁶⁷ P07: Policy, pharmaceuticals, AMR, WHO.

⁷⁶⁸ P25: AMR, Sri Lanka.

7.4 Infection prevention and control (IPC)

Table 7.5: Categories and findings relating to IPC: IPC programme, AMR stewardship programme, and surveillance of healthcare-acquired infections (HAIs)

Category	Subcategory	Findings
IPC programmes	National IPC programme	<ul style="list-style-type: none"> ▪ No national IPC programme, but MoH managed some components ▪ Important and needs a dedicated directorate
	IPC guidelines	<ul style="list-style-type: none"> ▪ IPC guidelines developed by the SLCM ▪ Need a revision to overcome issues
	Monitoring of IPC programme	<ul style="list-style-type: none"> ▪ MoH monitors selected bacterial infections ▪ No established feedback and benchmarking
	Work of infection control (IC) unit	<ul style="list-style-type: none"> ▪ Infection control activities were overlooked ▪ Lack of staff to manage the workload
ASP	Guidelines on AMR and use of antibiotics	<ul style="list-style-type: none"> ▪ No national AMR guidelines ▪ Responsibility of hospitals to develop an institutional antibiotic policy ▪ Some hospitals had developed their own antibiotics guidelines ▪ Issues of antibiotic use relating to guidelines
	Red-light antibiotics list	<ul style="list-style-type: none"> ▪ Specialists prescribing independently ▪ Impractical without microbiologists ▪ Low level of multidrug-resistant infections
	Issues in implementing ASP	<ul style="list-style-type: none"> ▪ The commitment of staff was low ▪ Lack of support from the prescribers ▪ Industry-induced demand for antibiotic prescriptions ▪ Use of immunosuppressive drugs ▪ Polypharmacy due to lack of confidence
	Antibiotics prescriptions	<ul style="list-style-type: none"> ▪ Information about antibiotics use ▪ Proposed ELM-based antibiotic list
Surveillance of HAI	National HAI surveillance system	<ul style="list-style-type: none"> ▪ MoH had not implemented ▪ Microbiologists started an HAI surveillance system in 2008 ▪ No feedback from ineffective HAI surveillance ▪ An issue for the majority of regional countries
AMR surveillance	WHONET platform	<ul style="list-style-type: none"> ▪ Useful platform to assess AMR data ▪ Sri Lanka could not manage it effectively
	The output of the national surveillance	<ul style="list-style-type: none"> ▪ No feedback given to prescribers ▪ Provided date for the GLASS survey

Source: Interview findings of the sample as described in subsection 1.7. Notes: GLASS: Global Antimicrobial Resistance Surveillance System; WHONET: computer software; SLCM: Sri Lanka College of Microbiologists

7.4.1 Infection prevention and control (IPC) programmes

IPC is a practical, evidence-based approach that prevents patients and health workers from being harmed by avoidable infections and is essential for reducing the burden of HAIs and AMR (WHO, 2016).⁷⁶⁹ The WHO guidelines for IPC programmes (table 7.6) provided eight core components to be practised at the national and healthcare facility level. According to Jayatilleke (2017, p. 4), there was “no national IPC

⁷⁶⁹ Healthcare-associated infections (HCAIs) are infections that occur while receiving health care, developed in a hospital or other health care facility that first appear 48 hours or more after hospital admission, or within 30 days after having received health care (Haque et al., 2018)

programme or a technical team to carry out IPC work at [the] national level” in Sri Lanka. The IPC programme in major hospitals was managed by a dedicated team with trained nurses and headed by a microbiologist when available (Jayatilleke, 2017; NHSL, 2015). This subsection will present data related to the work and monitoring of the IPC programme in Sri Lanka.

Table 7.6: Core components of WHO’s IPC programmes

No	Core components
1	IPC programmes
2	National and facility-level IPC guidelines
3	IPC education and training
4	HAI surveillance level
5	Multimodal strategies for implementing IPC activities
6	Monitoring and evaluation and feedback
7	Workload, staffing and bed occupancy at the facility level
8	Built environment, materials and equipment for IPC at the facility level

Source: WHO (2016), pp. 11–17.

Regarding a national IPC programme, three interviewees stated that though there was no national IPC programme, separate components of it had been managed by various directorates. Another interviewee argued that the MoH could have operated this programme through a dedicated directorate.

The ministry [had] ignored an important IPC programme that could be easily managed by the directorate of healthcare quality and safety who monitor some of the components of it now. [P23]⁷⁷⁰

Four interviewees stated that a set of comprehensive IPC guidelines for hospitals, developed by the College of Microbiologists, had been available since 2005. As this led to managerial issues, another interviewee suggested having the current guidelines revised by a group consisting of hospital administrators and other specialists.

We should be thankful [to] the microbiologists [for] preparing the IPC manual. We [are] now experiencing some practical issues like managing infection control committees and enforcing their decisions. Therefore, it would be desirable to revisit the IPC manual by a core group of experts including hospital administrators and other specialists. [P20]⁷⁷¹

Three interviewees stated that monitoring of selected bacterial infections by the MoH was a good initiative that had come out of strengthening the IPC programme. Another interviewee said that neither proper feedback nor a benchmarking system had been established by the MoH.

We started to give data for surveillance of postoperative infection rate[s] and that would be an excellent initiative for monitoring of [the] IPC programme. [P06]⁷⁷²

⁷⁷⁰ P23: Policy, pharmaceuticals, Sri Lanka. The MoH also recommended establishing a new directorate for infection control, which was carried out in a very vague manner and led to an increase in resistance to antibiotics (MoH: Health Master Plan 2016–2025, volume iv, 78).

⁷⁷¹ P20: Policy, pharmaceuticals, AMR, Sri Lanka. For the infection control committees and their composition in terms of contributors, see MHR: *Hospital Infection Control Manual*, by the Sri Lanka College of Microbiologists, 2005. This manual was revised in 2020. It could not be accessed for this chapter due to COVID-19-related travel restrictions.

⁷⁷² P06: Policy, AMR, Sri Lanka.

Staph [staphylococcus] aureus bacteraemia rates and surgical site infection rates following LSCS [lower segment Caesarean section] [were] monitored through the Healthcare Quality and Safety Directorate of the Ministry of Health but a proper system for timely feedback and use for benchmarking is not yet established. [P03]⁷⁷³

One interviewee said that the primary task of a hospital's IC unit should be to prevent and control diseases. However, this was often overlooked as the unit was overwhelmed with other related work.

They [infection control unit] play a big role. Unfortunately, because there [were] no other units, they [were] dumped with all the work like disease surveillance, COVID and dengue control work. It [infection control] was delayed because they [were] inundated with all the other work. [P06]⁷⁷⁴

One interviewee talked about an IC unit not having enough staff to manage the workload. Giving the example of urinary catheter infection, they highlighted that management of infection control was difficult due to a high workload in hospital settings.

There [were] so many patients who [were] on catheters, for example. If we couldn't educate all the caregivers about how to take care of the catheter, it is difficult to prevent urinary tract infections. [P25]⁷⁷⁵

7.4.2 Antimicrobial stewardship programme (ASP)

The goal of the ASP is to reduce the use of broad-spectrum antibiotics (BSAs), primarily through interventions to change prescribing behaviour (Dryden et al., 2011; Doernberg and Chambers, 2017). . It consists of “bundles” of interventions, including restrictions on the use of certain key antibiotics except with specific authorisation; prescriber education and academic detailing; audits of prescribing patterns, with feedback to prescribers; optimisation of laboratory testing, including rapid diagnostics; and technological support such as electronic access to microbiology results and computerised decision support systems (Davey et al., 2017). Under WHO's midterm report on developing a national ASP, Sri Lanka has framed national guidelines on empiric antimicrobial therapy, and the DGHS has also issued a circular with a red-light antibiotics list (RLAL) on the restricted use of antibiotics (SEARO, 2019). Red-light antibiotics are identified as antimicrobials that need authorisation by the hospital microbiologist before prescribing.⁷⁷⁶ This subsection will present data relating to the AMR guidelines, the RLAL, and ASP issues.

According to one interviewee, an attempt at introducing national AMR guidelines for hospitals was not successful except for the RLAL that was approved by the MoH.

We had several meetings on AMR guidelines for hospitals, along with the College of Microbiologists and other colleges and the DGHS...and at the end, there were some practical problems which were pointed out so the whole national programme was not approved. Ultimately, he [the DGHS] approved...red-light antibiotics. [P03]⁷⁷⁷

It was the responsibility of hospitals to develop an antibiotic policy that would be implemented and monitored in hospitals that had microbiologists.

⁷⁷³ P03: AMR, Sri Lanka.

⁷⁷⁴ P06: Policy, AMR, Sri Lanka.

⁷⁷⁵ P25: AMR, Sri Lanka.

⁷⁷⁶ MHR: Introduction of authorization for prescribing “red-light” antibiotics, 2016.

⁷⁷⁷ P03: AMR, Sri Lanka.

Antibiotic policies couldn't [be made] for the country. [They are] institution based. There [were] different methods, [like] newsletters and then internal communication. Then a monitoring system [needed to be] implemented. This is happening at the institutions that [have] microbiologists, but below that it [is] not that much happening. [P08]⁷⁷⁸

One interviewee explained how an institution developed a system for monitoring inward antibiotics prescriptions.

For antibiotics, we [the ministry had] not developed a special prescription as such... [Name of the hospital]...[had] developed a separate chart for antimicrobials, with the idea of recording the prescriber, [status] of culture, authoriser, and a 48-hour column where they have to review at 48 hours. That [was] another component of the antimicrobial stewardship programme. This [was] not there at the national level. [P03]⁷⁷⁹

Another interviewee questioned the practicality of policies on the rational use of antibiotics at the institutional level.

The Ministry of Health [had] taken a lot of positive things forward on the [rational] use of antibiotics [via] antibiotic policies in institutions...How it happened [was] quite different [in] the practice from the theory. It would be a great challenge for a doctor to prescribe the right antibiotics according to the guideline due to lack of testing facilities and staff, and unavailability of drugs. [P08]⁷⁸⁰

The RLAL was not a practical solution for hospitals that did not have microbiologists as it did not help control antibiotics prescriptions.

Still, every hospital in the country doesn't have a microbiologist, [not] even in major hospitals. When they don't have direct access to a microbiologist's service...then they [prescribers] would definitely feel this [RLAL] was not practical and prescribe as [they] wish. [P03]⁷⁸¹

Though guidelines for prescribing antibiotics were available, one interviewee argued that some physicians had not followed these and continued prescribing as they saw fit. To overcome this, it was suggested the institutional drug therapeutic committee or drug review committee should be strengthened to review and advise on those prescriptions.

Especially one big drawback [for RLAL was] our all our consultants [were] independent in their prescribing. The guidelines [were] there, [but] they were not bounded by [them]. Because of that, it's very difficult to control it. [Microbiologists] are trying to do this stewardship within the wards and discussing the reports, informing them [physicians] about antibiotic prescriptions. But we have noticed, it's not fully successful, it depends on the person: some work with us and some [don't]. [P06]⁷⁸²

If we need to do something immediately to improve our situation, when a consultant prescribes some antibiotic for more than seven days, it is to be evaluated by a body...I think we need to empower the therapeutic committee [who could] tell them about antibiotic stewardship. [P25]⁷⁸³

⁷⁷⁸ P08: Policy, Sri Lanka, WHO.

⁷⁷⁹ P03: AMR, Sri Lanka.

⁷⁸⁰ P08: Policy, AMR, Sri Lanka, WHO.

⁷⁸¹ P03: AMR, Sri Lanka.

⁷⁸² P06: Policy, AMR, Sri Lanka.

⁷⁸³ P25: AMR, Sri Lanka. For the composition and functions of drug therapeutic committees, see the manual on management of drugs (second revision, MoH, 2008, 26). This forum allows for decision-making by consensus among representatives of different units involved in the management of drugs.

For antibiotic prescriptions, an RLAL based system was not established in the private sector, where physicians did not seek the opinion of a microbiologist.

The red-light antibiotic use [had] not been established in the private sector yet. Only in private-sector hospitals in Colombo, some physicians sought microbiologist opinions for [the] management [of] antibiotics in bad patients. It was not a regular and established process. [P25]⁷⁸⁴

Misuse of red-light antibiotics in the community, according to one interviewee, was high.

Microbiologists who authorised the use of red-light antibiotics, [were] not available in the community: the doctors prescribe it, and it is misused. And even oral cefixime, third generation cephalosporins [were] freely available in the community. There was a nurse who had a wound clinic at home who wrote a [prescription for] linezolid, which is used for serious infections which are difficult to treat with other antibiotics. She had said, “this is a very strong antibiotic and if you take this you will be okay. This is the only drug that can cure you”. [P03]⁷⁸⁵

Two interviewees said that restrictions on the use of certain antibiotics had had a positive impact on multidrug-resistant (MDR) infections in Sri Lanka.

We have achieved certain things regarding the restriction of the use of antimalarials, rifampicin and colistin based on the national guidelines of 2016. Physicians now could prescribe colistin only for multidrug-resistant infections. Rifampicin was reserved only for TB. Considering the area of South-East Asia, Sri Lanka is one of the low [incidence] countries for MDR-TB because of strict control with medicine. [P25]⁷⁸⁶

According to four interviewees, lack of commitment from staff has been a major issue for the ASP in Sri Lanka. One interviewee claimed that clinicians and medical administrators who performed multiple tasks could not provide full commitment to the ASP.

[Microbiologists had] to do the laboratory work, the clinical liaison, the antibiotic stewardship and the infection control. So too many things for a single person....We need committees with the clinicians, and they also don't have enough time to commit to these sorts of committees....The DDG [Laboratory Services] has other responsibilities as well. We should have a special unit for antimicrobial resistance. That is probably one reason that we cannot get that to the level we want to....Maybe that organisational structure needs to be strengthened. [P03]⁷⁸⁷

Another interviewee claimed that prescribers had not been very supportive concerning the implementation of policies on antibiotics.

We had a good drug policy initially where the essential drugs concept was brought up by a Sri Lankan professor, Senaka Bibile, in the '60s and '70s....Antibiotic resistance was also identified as a priority area but, in the implementation, prescribers did not pay much emphasis. [P05]⁷⁸⁸

Another interviewee argued that pharmaceutical industry-induced demand also contributed to irrational antibiotic prescriptions and treatment contrary to the ASP.

⁷⁸⁴ P25: AMR, Sri Lanka.

⁷⁸⁵ P03: AMR, Sri Lanka.

⁷⁸⁶ P25: AMR, Sri Lanka. Sri Lanka has a relatively low burden of TB, with an estimated TB incidence of all forms of TB of 64/100,000 population, an estimated multidrug-resistant TB incidence of 0.42/100,000 (Mase, 2019).

⁷⁸⁷ P03: AMR, Sri Lanka.

⁷⁸⁸ P05: Policy, Sri Lanka, WHO.

A large portion of our expenses in reality is on antimicrobials. Some companies came in with many promotions...that influenced the prescribing. The supplier-induced demand [was] also a problem. [P03]⁷⁸⁹

The use of immunosuppressive drugs in seriously ill patients resulted in more infections and more AMR cases in ICU, as flagged up by one interviewee.

COVID brought a separate problem of resistance. Steroids such as prednisone were sometimes prescribed for...seriously ill COVID-positive patients. They got a lot of infections, and you now see a lot more resistance [cases] in our ICUs. This is a red light to act fast. [P25]⁷⁹⁰

Due to frequent quality failures, clinicians did not trust government medicines and prescribed multiple antibiotics in a patient to overcome this issue.

Producers or agents could give one drug to the NMRA to pass all the tests, but when they [bid] for a government tender, they might bring some [lower-]quality drugs. I had seen quality failures in meropenem and vancomycin that were the top-notch of antibiotics...That also [had] some impact on our clinicians. Because they (clinicians) didn't trust...what they used in the government sector, so they use[d] polypharmacy [use of multiple medications in a patient] to counteract these problems. [P25]⁷⁹¹

To enhance the ASP, it was suggested that several strategies be introduced, including staff behaviour change training and informing the prescriber about antibiotics use with the intention of reducing prescriptions.

As the importance of working on AMR stewardship [had] not been recognised by health staff, it [was] difficult to grab their support. This could be taken not only by training but also by behaviour change communication [BCC] and strengthening the regulations. [P10]⁷⁹²

The Ministry decided [there must be] a post [notice] in all the outpatient pharmacies to [raise] awareness [of] the cost of drugs to reduce polypharmacy. That helped...very much and we must make use of a similar strategy to reduce antibiotic prescriptions. [P05]⁷⁹³

A list of antibiotics based on the ELM would be useful for prescribing and ordering antibiotics and testing the sensitivity of bacteria against antibiotics.

[The] essential medicine list [was] important in antimicrobials testing. For instance, if we [didn't] report the necessary first-level antimicrobials in the Antibiotic Sensitive Testing [ABST], naturally the doctors [would] think they [were] not effective. One of [the] reasons [for not reporting was] we [didn't] have a correct antibiotic list, [which was] important, not only for the treatment but also for the laboratories. [Without it], our stewardship work activities [would] be affected by non-availability and non-reporting of correct antibiotics. [P03]⁷⁹⁴

⁷⁸⁹ P03: AMR, Sri Lanka.

⁷⁹⁰ P25: AMR, Sri Lanka.

⁷⁹¹ P25: AMR, Sri Lanka.

⁷⁹² P10: Policy, pharmaceuticals, Sri Lanka, WHO. BCC is a strategy that triggers people/society/communities to adopt healthy, beneficial and positive behavioural practices.

⁷⁹³ P05: Policy, Sri Lanka, WHO. Polypharmacy is the use of multiple medications in a patient.

⁷⁹⁴ P03: AMR, Sri Lanka. Antibiotics sensitivity (susceptibility) testing (ABST) is done to choose the most effective antibiotics against the specific types of bacteria in a person.

7.4.3 Surveillance of healthcare-associated infections (HAIs)

HAIs are infections that occur while receiving healthcare, that have developed in a healthcare facility and that appear between 48 hours and 30 days after having received healthcare (Haque et al., 2018), and they represent a major public health problem with a significant impact on AMR (Storr et al., 2017). In 2011, WHO (2011) claimed that an average of 15 per cent of patients in low- to middle-income countries (LMICs) suffered from at least one HAI at any given time. The burden of HAI is two to 20 times higher in LMICs than in their wealthier counterparts notably because of device-associated infections in neonatal and intensive care units (Allegranzi et al., 2011). In 1997 two prevalence surveys were conducted in Sri Lanka by Dr S.D. Atukorale (1998), a microbiologist, found that better implementation of infection control policies could reduce the prevalence of HAIs.

In 1988, a Sri Lankan study recommended conducting national surveillance, which had not been carried out for a long time, as flagged up by one interviewee. In 2008, the College of Microbiologists embarked on a national HAI survey, which was later taken up by the MoH.

We did a study in [the] National Hospital of Sri Lanka in 1998, found that implementation of infection control policies could significantly impact the prevalence of HAI, and recommended conducting national HAI prevalence surveys, which [had] not been implemented for decades. [P06]

The College of Microbiologists started the HAI surveillance in 2009, then this was taken up by the ministry. Since then, I think we [have been] submitting our AMR surveillance data. [P25]⁷⁹⁵

Two interviewees claimed that Sri Lanka's HAI surveillance system was not successful enough to generate feedback for the prescribers. This issue was not limited to Sri Lanka. Most of the other countries in the region were also generating insufficient HAI data.

HAIs consume a lot of antibiotics. [To] prevent HAIs, you need good surveillance [to] identify...the factors contributing to it. However, we don't have good national surveillance. We [microbiologists] submit data to a system, but we are not looking at the trends and giving feedback...to the prescriber. We need to develop that centre [where it] is done by one or two doctors but that is a place we need to spend. [P25]⁷⁹⁶

The magnitude of the HAI in the SEA [South-East Asia] region could not be assessed, as only a minority of countries of the SEA region had data on HAI. In the [SEA] region, only five countries out of 11 [had] national data. Those data were also not enough to read the bigger picture of HAI. [P11]

One interviewee highlighted that even small-scale HAI surveillance could help reduce prescriptions of antibiotics in a specialised unit.

We are trying it [HAI surveillance] with our special care baby unit. We got antibiotics consumption data from the pharmacy and analyse[d] them...with the isolates [bacterial sensitivity] to find the resistance pattern. I have seen some impacts like meropenem use went down when we showed [physicians] that about 80 per cent of gram negatives [bacteria] were resistant to it. [P25]⁷⁹⁷

⁷⁹⁵ P25: AMR, Sri Lanka.

⁷⁹⁶ P25: AMR, Sri Lanka.

⁷⁹⁷ P25: AMR, Sri Lanka.

7.4.4 AMR surveillance

AMR surveillance involves the collection of antibiotic susceptibility test results undertaken by microbiology laboratories on bacteria isolated from clinical samples sent for investigation (Johnson, 2015). It provides contextual evidence for policymaking, supports the development of empirical antibiotic therapy guidelines and assists research (Altorf-van der Kuil et al., 2017). In 2015, as per strategic objective 2 of the *GAP*, WHO developed the Global Antimicrobial Resistance Surveillance System (GLASS) to collect and report data on AMR rates aggregated at the national level (WHO Europe, 2021).⁷⁹⁸ As of 2019, globally, 87 countries were enrolled, and India, Thailand and Nepal made the greatest contribution from the SEA region.⁷⁹⁹ The Sri Lanka College of Microbiologists (SLCM) has been carrying out two public hospital-based projects on the national AMR surveillance that produced data from blood and urine cultures from 2008 and 2011 respectively (SLCM, 2021). In 2017, the MoH, with the support of the WHO country office, established the National AMR Surveillance System for the public as well as the private sectors. The Deputy Director-General of Laboratory Services of the MoH was responsible for conducting a National AMR Surveillance System using WHONET software in 25 sentinel sites (hospitals) in the country.⁸⁰⁰ This subsection will present participants' perspectives on the AMR surveillance system.

WHONET was a useful digital platform for assessing the complex AMR data countrywide. However, Sri Lanka could not manage it effectively due to a lack of capacity.

The challenge of antimicrobial resistance is how to manage the data...: there are so [many] data [at] different levels about antibiotics, pathogens and patients. So, the complexity must be addressed with some automated process, and the WHONET [could] help for that. [P08]⁸⁰¹

Though Sri Lanka is a small country, antibacterial resistance or the sensibility profile [was] not the same across the country, and this could be found through the WHONET. The gap in surveillance [reflected the fact] that Sri Lanka may not have that strength to manage [WHONET]. [P11]⁸⁰²

Compared to SLCM surveillance projects, as one interviewee stated, the MoH-led sentinel survey had not analysed data or given feedback to the prescribers. Another interviewee said that the sentinel survey had been successful in providing data for the GLASS survey.

We do provide data to the MoH, but no feedback was received. But the college [SLCM] projects had presented and published data in medical journals. [P25]⁸⁰³

⁷⁹⁸ GLASS gives a standardised approach to the collection, analysis and sharing of national AMR data in samples collected routinely for clinical purposes for a set of pathogens that cause common bacterial infections in humans (WHO, 2021a).

⁷⁹⁹ IRIS: SRA-RC73-2, Annual report of DG of SEA, 2019.

⁸⁰⁰ WHONET is a WHO-approved Windows-based database software that is for management and analysis of microbiology laboratory data with a special focus on the analysis of antimicrobial susceptibility test results (WHONET, 2021).

⁸⁰¹ P08: Policy, Sri Lanka, WHO.

⁸⁰² P11: Policy, AMR, WHO.

⁸⁰³ P25: AMR, Sri Lanka.

Our sentinel survey has many issues, but we were good enough to provide data for GLASS, I think, in 2019. As this unit of the ministry was busy with the current pandemic, it was not possible to disseminate those results among the doctors. [P20]⁸⁰⁴

7.5 Awareness-raising, professional education, and research

Table 7.7: Categories and findings relating to antibiotic awareness campaign (ACC), professional education and training, AMR research

Category	Subcategory	Findings
AAC	Level of awareness about antibiotics	<ul style="list-style-type: none"> ▪ Poor but performing AAC according to the NSP ▪ Comparatively good due to higher literacy rate
	Reasons for low awareness	<ul style="list-style-type: none"> ▪ Inadequate information to patient from prescriber: information about the danger of misuse of antibiotics was not provided
	Methods of improving awareness	<ul style="list-style-type: none"> ▪ Provide information in oral and written forms. ▪ Restart the AAC ceased due to the pandemic
Professional education and training	Knowledge about antibiotics	<ul style="list-style-type: none"> ▪ Doctors' knowledge about antibiotics was poor ▪ Doctors receive information from the pharmaceutical industry ▪ Improper IPC and AMR education in postgraduate studies ▪ Issues of undergraduate AMR education
	Training of staff	<ul style="list-style-type: none"> ▪ Education of doctors by professional associations ▪ Education of other categories mainly by the MoH
	Strategies	<ul style="list-style-type: none"> ▪ Issues of WHO's guidelines on antibiotics use into practice ▪ Provide information to reduce polypharmacy ▪ Incorporate ASP and IPC into postgraduate programmes
AMR research	Research on AMR	<ul style="list-style-type: none"> ▪ Inadequately performed ▪ Dissemination of results was insufficient
	Reasons for inadequate research on AMR	<ul style="list-style-type: none"> ▪ Inadequate government funding ▪ A research culture had not been established
	AMR research priority	<ul style="list-style-type: none"> ▪ AMR was recognised as a priority research area ▪ Priority within AMR was not identified
	Suggested priority areas	<ul style="list-style-type: none"> ▪ Surveillance to inform prescribers and policymakers ▪ IPC to analyse the level of infection control ▪ Research into preventing transmission of infections
	Issues relating to lack of research	<ul style="list-style-type: none"> ▪ Lack of evidence for professional education ▪ Issues adopting international findings

Source: Interview findings of the sample as described in subsection 1.7

7.5.1 Antibiotic awareness campaign (AAC)

According to WHO (2021a), the main objectives of an AAC are to increase awareness of AMR and to encourage best practices among the general public, health workers and policymakers to avoid the further emergence and spread of drug-resistant infections (WHO, 2020). Evidence shows that effective communication campaigns contribute towards raising the discourse around AMR and promoting the rational use of antibiotics by prescribers and patients (Sabuncu et al., 2009; Huttner et al., 2010). The NSPSL was also geared to increasing awareness of AMR and the appropriate use of antibiotics among healthcare workers and the community through a public communication campaign using reading materials, web-based

⁸⁰⁴ P20: Policy, pharmaceuticals, AMR, Sri Lanka. All eleven-member states in the SEA region participated in GLASS 2020. For Sri Lanka data, see WHO (2020).

portals and mass media. Sri Lanka's primary healthcare (PHC) structure was equipped to provide health education to the public. One of the main contributing factors for the health gains of the country had been the high literacy rate, which also positively contributed to a good awareness campaign in Sri Lanka, as recognised by chapters 4 and 5 respectively.⁸⁰⁵ This subsection will present participants' opinions on issues relating to the AAC and suggestions for increasing public awareness about AMR.

Four participants said that Sri Lanka's level of antibiotic awareness was higher than in other countries in the region – one participant attributed that to the higher literacy rate. Another participant argued that it was poor since people could not differentiate antibiotics from other medicines.

Most of the health gains of Sri Lanka [are] because of [the] high literacy rate, which [is] more than 95 per cent. So, health literacy, including awareness of antibiotics, [is] higher in Sri Lanka compared to other regional countries. [P14]⁸⁰⁶

Awareness of antimicrobials is also very poor. But we are doing some awareness programmes with the development of our action plan. Even during these awareness programmes, the questions that the general public ask show that they don't know what antibiotics are [– for instance, they talked about paracetamol when we were talking about antibiotics]. Anyway, it is difficult for a person to know by name a whole lot of antibiotics. Even doctors will not know. [P03]⁸⁰⁷

When asked about the reasons for low antibiotic awareness, interviewees highlighted inadequate information from doctors and pharmacists about the correct use and danger of antibiotics.

At the counters [pharmacists] just issue medicine and the patients don't then take the correct doses, especially antibiotics. So, there [is already] a gap in prescribing and...dispensing and then it comes to the patient. Patients also, once they [have] got symptoms down, stop [] the drug. So that education [has] to go in. So down the line, all these places are contributing to antibiotic resistance. [P05]⁸⁰⁸

People think that drugs given to one person could be used for someone who [has] got similar symptoms and...then they take leftover drugs, so that sort of practice is there. Because of the cost, people take leftovers without consulting a doctor or [getting a] prescription. People are more literate now and they think they know everything. They don't see the dangers. [P05]⁸⁰⁹

Awareness about antibiotic use could be enhanced in the community by employing appropriate communication methods at the right time with the targeted population.

We are trying to tell the doctors that they should let the person know [that] there is an antibiotic in the list and that must be taken at the correct time, and you should not stop without asking the doctor. This message, in oral and written form, should go in hand in hand. [P03]⁸¹⁰

We should give the right information about antibiotics at the right time. It should not be limited to when they are ill but also to bystanders or family members who could monitor the medication of the patient. [P16]⁸¹¹

We need to develop change agents who could disseminate information to change the behaviour of society. School children and community leaders should be given knowledge on the use and harmful effects of antibiotics in a

⁸⁰⁵ MHR: NSPSL 2017.

⁸⁰⁶ P14: Policy, WHO.

⁸⁰⁷ P03: AMR, Sri Lanka.

⁸⁰⁸ P05: Policy, Sri Lanka, WHO.

⁸⁰⁹ P05: Policy, Sri Lanka, WHO.

⁸¹⁰ P03: AMR, Sri Lanka.

⁸¹¹ P16: Policy, Sri Lanka.

systematic way. However, the Ministry [has] not [been] successful in negotiating with the Ministry of Education to include antibiotics and AMR in the school curriculum yet. [P20]

According to three participants, many initiatives such as newspaper articles, mass media campaigns and education programmes had been carried out as part of the AAC, which was then affected by the pandemic situation in the country. Another participant argued that the antibiotic awareness programme was neither systematic enough nor strong enough to make an impact.

We had this antibiotics awareness week in November [2019], where we had a very good and well-participated media conference organised by the National Action Plan Strengthening Team, but we didn't do anything afterwards. [P25]⁸¹²

The awareness campaign [was] not sound enough to make an impact in Sri Lanka. The work of the Ministry and some professional organisations such as the Sri Lanka Medical Association [SLMA] and the College of Microbiologists [had] not been systematic. Activities like seminars and media briefings were mainly in the infection control week of the year. It should be [targeted] on [the] wider population throughout the year with the support of civil organisations. [P22]⁸¹³

7.5.2 Professional education and training

To improve optimal prescribing on AMR, WHO (2021b) recommended making AMR a core component of professional education, training, certification, continuing education and development in health and other sectors to ensure proper understanding and awareness among professionals. Sri Lanka has an established undergraduate medical education system dating back to 1870 (Jones, 2004), while the postgraduate medical education system dates from 1980, when the Postgraduate Institute of Medicine (PGIM) of the University of Colombo was founded (Senewiratne and Kanagarajah, 1975; PGIM, 2016).⁸¹⁴ While the MoH was responsible for in-service training for all categories of staff, the medical professional organisations and Sri Lanka Medical Association offered continuous medical education (CME) for medical officers and specialists (Wijegunasekara, 2020; MoH, 2021). Chapters 5 and 6 of this study also identify a lack of insight during the administration of antibiotics due to professional competition in the private sector and work overload caused by overcrowding in public hospitals. Understanding this, the NSPSL also aimed to “incorporate AMR as a core component in education, training, certification and professional development”.⁸¹⁵ This subsection will present data on AMR professional education issues and strategies to overcome AMR-related problems.

An educational programme relating to WHO's guidelines on antibiotics was taking a long time to put into effect.

WHO [had] prepared various guidelines in respect of antibiotics but still it [their use was] not going down. Education on using those guidelines and putting them into practice [was] a slow process. [P05]⁸¹⁶

⁸¹² P25: AMR, Sri Lanka.

⁸¹³ P22: Policy, Sri Lanka.

⁸¹⁴ In 1976, the Institute of Postgraduate Medicine established under the University of Ceylon Act No. 1 of 1976 was unsuccessful due to a lack of resources and appropriate infrastructure (PGIM, 2016).

⁸¹⁵ MHR: NSPSL, viii, 3.

⁸¹⁶ P05: Policy, Sri Lanka, WHO.

As providing information to prescribers about the cost of drugs had had a positive effect on polypharmacy, one interviewee suggested displaying information about the institution's antibiotics utilisation to reduce antibiotic use.

The Ministry in the 1980s instructed all the outpatient pharmacies of hospitals to display the cost of drugs for the doctors to reduce polypharmacy. That helped...very much, and we must make use of a similar educational strategy. Then in a pilot study, we compared antibiotic use (mainly the local purchase of drugs) among the base hospitals and sent feedback. Some of the hospitals put a feedback graph in the consultant's lounge. That itself was only a visual thing. So that sort of feedback [had] to be done in physicians' education. [P05]⁸¹⁷

As the specialists were the leaders in the ASP, it was recommended that they be involved in postgraduate training programmes.

We (specialists) [were] leaders in stewardship work, but we need[ed] to make our other consultants aware [of this]. The postgraduate-level education of doctors did not provide systematic education in important areas of IPC and AMR. What I would like to see: antibiotic stewardship [and] infection prevention and control should be incorporated into all postgraduate programmes. [P10]⁸¹⁸

It was claimed that doctors' knowledge of antibiotics was poor as their main source of information was the pharmaceutical industry rather than medical education, and postgraduate trainees learned antibiotic practices based on their supervisors' preferences on antibiotic use. Undergraduate medical education on AMR was not proving effective at changing misconceptions.

The doctors who were prescribing...were not aware enough of the dangers and the pharmacology. Undergraduate training had to be strengthened...[and] should be more practical. So, they don't see the practical side of it [as] the outcome. Doctors' main education was the medical representatives. We learned a lot from them on new drugs so that also influenced prescribing. People who are prescribing [were] not equipped enough to make rational decisions. [P05]⁸¹⁹

However, most of the postgraduate-level courses such as medicine, surgery, and microbiology [were] not taught course[s]: they're unique. If the consultant [supervisor] [was] practising good antibiotics policies, trainees [would] also learn and practise the same; otherwise, not. [P25]⁸²⁰

In undergraduate studies, learning [about] AMR did not aim to obtain a practical outcome and change the misbeliefs [about] antibiotics. Still pharmacists in [the] private sector issue OTC antibiotics for viral infections. [P10]⁸²¹

Three interviewees stated that professional doctors' associations were also keen for their members to be provided with more education on the use of antibiotics. This included associations of general practitioners (GPs), whose membership contributed to a major share of antibiotics prescriptions in the country. Another interviewee said that professional education on AMR was mainly aimed at doctors, while other categories were overlooked.

⁸¹⁷ "Specialists may request for local purchase of drugs which are not included in the Sri Lanka Hospital Formulary or the annual drug estimate but registered for use in the country", see Drug Manual of MoH (2008), 41.

⁸¹⁸ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

⁸¹⁹ P05: Policy, Sri Lanka, WHO.

⁸²⁰ P25: AMR, Sri Lanka.

⁸²¹ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

As you know, the Sri Lankan prescribing [is] mostly through GPs [general practitioners] . The two professional organisations for general practitioners [were] also keen about educating their membership and organised some lectures. [P25]⁸²²

I think we [MoH] [had] focused more on educating doctors on AMR, and the other categories who closely work on AMR (like nurses, laboratory technicians and health educators) were ignored, which is a serious issue. Even educating pharmacists [was] also not adequate as those categories [did] not have strong professional bodies to conduct those types of training. [P16]⁸²³

7.5.3 AMR research

Substantial research is required to generate evidence on the effectiveness of AMR policies and to ensure that health system investments in AMR are evidence-based (Rogers Van Katwyk et al., 2020). Expert groups identified numerous research priority topics, ranging from the discovery and development of antibiotics and diagnostics to policy research on AMR, considering the scientific, clinical, and societal aspects of the subject (Matthiessen et al., 2016; JPIAMR, 2020). One of the main strategic areas of Sri Lanka's NSP was strengthening the knowledge and evidence base of AMR through research.⁸²⁴ This subsection will present interviewees' perspectives on issues related to research on AMR in Sri Lanka.

Four interviewees stated that there was insufficient research into antibiotic resistance, use and practice, and according to one interviewee, dissemination of research findings was also inadequate in Sri Lanka.

Not enough research [was] done...on resistance [of] antibiotics, and the next step [was] dissemination of that, which [was] also poor. [Additionally], there [were] hardly any studies on the use and practice of antibiotics done at the community level. [P05]⁸²⁵

Four interviewees highlighted that the government did not have a funding plan for AMR research. One interviewee complained that the lack of government funding for postgraduate research would negatively impact AMR research at this level. Lack of encouragement for research was also identified as a reason for inadequate research by one interviewee.

Though paramedical categories like MLTs [medical laboratory technologists] in Open University and other private universities were involved, most of the AMR research was done by a postgraduate trainee [in microbiology] because they [had] to do...a 4-month dissertation [as] a part of...during their training. Now, surely, they couldn't start the dissertation, because of a lack of ministry funds. This year we [had] a big problem. [P25]⁸²⁶

Our education and employment system had not emphasised much in research on academic or professional attainments. So, the students and employees were not into that, and the research culture could not be established in this situation. [P22]⁸²⁷

Three interviewees pointed out that the government had not identified AMR as a priority area for research nor provided a plan on priorities for AMR research.

⁸²² P25: AMR, Sri Lanka.

⁸²³ P16: Policy, Sri Lanka.

⁸²⁴ MHR: NSPSL 2017.3.5.

⁸²⁵ P05: Policy, Sri Lanka, WHO.

⁸²⁶ P25: AMR, Sri Lanka.

⁸²⁷ P23: Policy, pharmaceuticals, Sri Lanka.

The National Health Research Council [NHRC] of Sri Lanka, the apex body governing the scientific and ethical conduct and funding of relevant health research, [had] not identified AMR as a research priority. [P16]⁸²⁸

... [Ministry of Health] not disseminated the information on the priority areas of research in AMR as well as operational research priorities for responsible use of antimicrobial agents by the authorities. [P19]⁸²⁹

Considering resource strengths and constraints, three interviewees suggested prioritising a few AMR research areas (surveillance, IPC and increasing understanding of AMR dynamics).

We need...AMR surveillance research to understand the drivers and burden of AMR and inform the prescribers and the policymakers for the decision-making. [P23]⁸³⁰

It [was] important to investigate to improve infection prevention and control measures in the private and public sectors and other sectors. [P16]⁸³¹

We should do health system research to identify [the] complex dynamics of AMR to prevent the transmission, and it should be beyond medicine and include social, economic, and political underpinning. [P08]⁸³²

One interviewee pointed out that using, for professional education, protocols that had been developed without evidence was unsatisfactory. Another interviewee argued that the lack of local evidence (which meant relying on findings borrowed from international AMR studies and applying them to the local context) was problematic.

But most of the countries in the regions [did] not have profiles of antibiotics resistance. We cannot imagine how it is connected to protocols [that] may be used for professional education. [P11]⁸³³

As it was hard to find local studies, internal research findings had been used to make policies and guidelines on AMR including the NSP. However, those results could not be justified with[in] the local context and would give some negative outcomes. For instance, our AMR burden may be different from those settings. [P10]⁸³⁴

7.6 Discussion

In this chapter, using the AMR assessment framework, I have examined the perspectives of experts in health policy, pharmaceuticals and AMR on the AMR situation. In this section, I will discuss these findings in relation to the limited literature on AMR policy perspectives in the Sri Lankan context. This literature includes cross-sectional surveys on antibiotic awareness that have been conducted among patients (van Melle et al., 2019), university staff (de Silva et al., 2017), university students (Shahpawee et al., 2020) and undergraduate students of pharmacy (Sakeena et al., 2018) and nursing (Jayaweerasingham et al., 2019). It also uses WHO reports on AMR in the SEA region and Sri Lanka, documentary reviews on IPC in Sri

⁸²⁸ P16: Policy, Sri Lanka.

⁸²⁹ P19: Policy, Sri Lanka, WHO.

⁸³⁰ P22: Policy, Sri Lanka.

⁸³¹ P16: Policy, Sri Lanka.

⁸³² P08: Policy, Sri Lanka, WHO.

⁸³³ P11: Policy, AMR, WHO.

⁸³⁴ P10: Policy, pharmaceuticals, Sri Lanka, WHO.

Lanka and AMR surveillance in both LMIC and high-income countries (Jayatilleke, 2017, 2020).⁸³⁵ It likewise includes multinational studies of the historical development of AMR policy (Tansey and Reynolds, 2000; Gradmann, 2013; Podolsky et al., 2015; Gradmann, 2016).

According to a situational analysis of AMR in the SEA region from 2016 to 2018 performed by the WHO South-East Asia Regional Office (SEARO), Sri Lanka made remarkable progress in implementing the NSPSL – second only to Thailand in the region (figure 7.1).⁸³⁶ However, while progress was evident on the preparation of the NSPSL (and on sanitation and hygiene), this situation assessment appears to be inaccurate in several key respects. First, for the indicator described as “a national AMR containment policy and regulatory framework for control and registration of use in the animal sector”, Sri Lanka, which had no policy, received a higher score (four) than the Maldives (two), which had developed a policy based on their National Strategic Plan (NSP) (MoH Maldives, 2019).⁸³⁷ Second, for “a platform and/or mechanism for sharing of AMU monitoring data from all relevant sectors”, Sri Lanka, which had only attempted to develop a platform, and Thailand, which had developed an integrated method to collect consumption data, received the same score of three (WHO, 2018c). Third, Sri Lanka, which had no established national HAI system, received the second-highest score of four out of five. Fourth, though enforcement of the law in Sri Lanka and India was reportedly inadequate, both countries received four out of five for better regulation of OTC sales. Additionally, problems implementing the NSPs were found to be caused not only by the inadequacy of the monitoring system but also by the lack of political will, funding,

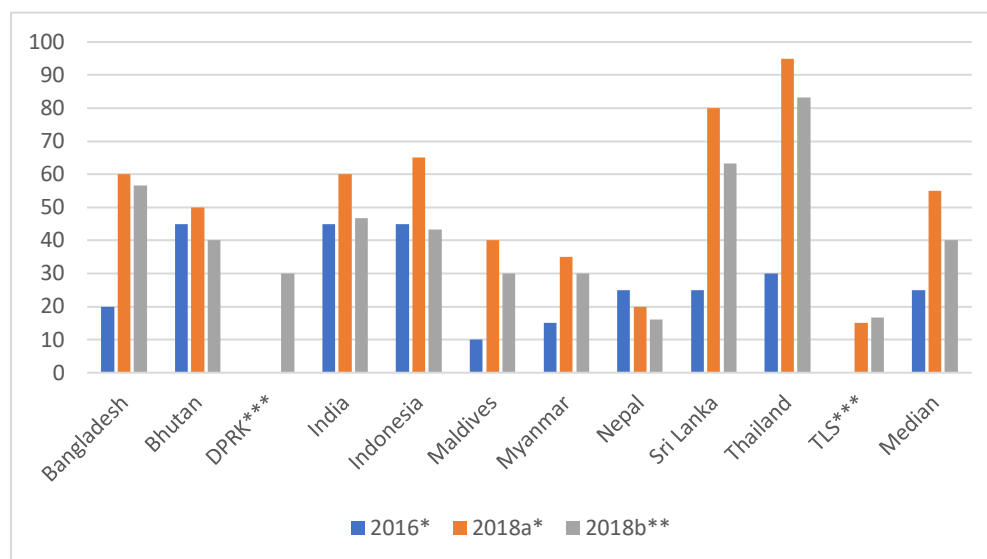
⁸³⁵ IRIS: Situational analysis of antimicrobial resistance in the South-East Asia Region, 2018, and Joint External Evaluation of IHR [International Health Regulations] Core Capacities of the Democratic Socialist Republic of Sri Lanka, 2017.

⁸³⁶ IRIS: Situational 2018: The situation analysis, 2018, and review of implementation was carried out among all relevant stakeholders using guided discussion participatory methodology. The implementation review in the intercountry meetings was conducted jointly by the national stakeholders and WHO (the regional office and country offices).

⁸³⁷ IRIS: National Antimicrobial Containment Policy 2019-2023, MoH, Maldives: “Maldives AMR policy will help initiate an AMR stewardship programme in...animal health.”

private-sector contribution, and planning. The progress on NSP-led AMR may therefore have been overstated in WHO’s Regional Office assessment, which identified Sri Lanka’s IPC as “good”.

Figure 7.1: Progress of NAP-AMR implementation by country, 2016-18



Source: Situational analysis of antimicrobial resistance in the SEA Region, 2018. New Delhi: WHO RO for SEA, 2018. Notes: *Progress assessed for 20 indicators based on Situation Analysis tool 2016, ** Progress assessed for 30 indicators (10 newly introduced indicators) based on Situation Analysis tool 2016, ***Data is not available for Democratic People’s Republic of Korea (DPRK) and Timor-Leste (TLS)

As discussed earlier, hospital IPC activities had been deteriorating due to managerial issues (chapter 4.3), lack of funds (chapter 5), overcrowding and lack of staff (chapters 5 and 6). In 2016, the MoH also acknowledged that “infection control at present carried out in a very vague manner” would lead to an increase in resistance to antibiotics, and it recommended a new directorate be set up for IPC.⁸³⁸ In 2016, the NSPSL further recommended establishing a national IPC unit with an adequate budget within two years.⁸³⁹ This has still not been established. Jayatilleke (2017) claimed that “in...public sector hospitals...bed occupancy [exceeded] 100% thus making it essential for patients to share...beds”, which violated “fundamental principles of IPC” in Sri Lanka. As presented in chapter 4 of this thesis, Sir Cecil Wakeley and Dr Donald Barlow had also flagged up this issue as far back as the 1950s, and it has still not been addressed.⁸⁴⁰ Chapters 5 and 6 further identified the abolition of the user fee and the reduction in the quality of care in PHC as the root causes of overcrowding. Another issue for IPC, as mentioned by Jayatilleke (2017), and I also proposed that, the understaffing of hospitals could be managed by the delegation and digitalisation of work.⁸⁴¹ One of the key elements of the success of IPC in Sri Lanka was the availability of

⁸³⁸ MHR: HMP2, volume iv, 78.

⁸³⁹ MHR: NSPSL, 5.

⁸⁴⁰ Cecil Wakeley stated that in the children’s hospitals, two children were put into one bed, which would cause cross infections between them.

⁸⁴¹ Sri Lanka is undergoing a severe economic crisis due to depletion of the country’s foreign reserves (Perumal, 2021). Therefore, low-cost solutions would be beneficial.

institutional IPC guidelines. Those guidelines could be strengthened through expert revision by a multisectoral team.

A laboratory benchmarking system and IPC activities were further assessed by a WHO expert mission in 2017.⁸⁴² Agreeing with the mission's recommendations to develop national-level IC policies, establish a comprehensive HAI surveillance system, and develop legislation to ensure strict oversight and enforcement to address unauthorised use of antibiotics, this chapter questions some of the mission's findings concerning Sri Lanka's strengths.⁸⁴³ First, not "all hospitals [had] an IC unit and an IC committee" – these were not available in most of the PHC hospitals.⁸⁴⁴ Second, although "Sri Lanka [has] a National Advisory Committee on Infection Prevention", it has not been active for years.⁸⁴⁵ Third, the NMRA failed to ensure the "acceptable quality, and...uninterrupted supply and rational use of medicines" due to issues with the regulations, laboratory facilities and surveillance system.⁸⁴⁶ Identifying the inconsistency of data collection, analysis and reporting of AMR and also the quality and use of bacteriology testing, Jayatilleke (2020) and WHO (2017) suggested integrating all the laboratories with the national laboratory information management systems (LIMS) and strengthening the laboratory licensing and accreditation process in Sri Lanka. Such findings highlight the need for strong legislation/policies on AMR and laboratories, realistic human resources for health (HRH) planning, viral testing facilities, and digitalisation, automation and delegation of work.

As identified in the previous chapters, Sri Lanka's higher literacy rate was aided by the introduction of free education and female education, which also led to higher health literacy, which in turn led to most of the health gains in Sri Lanka. However, several studies have found high levels of myths and self-medication and poor knowledge about antibiotic use among Sri Lankans, including inward patients (van Melle et al., 2019), university staff (de Silva et al., 2017) and university students (Shahpawee et al., 2020). The reasons for this situation were not only the poor performance of the AMR awareness programme but also the fact that patients were not informed about the danger and correct use of antibiotics by the prescriber. Chapter 5.3 noted that public health staff, including public health midwives (PHMWs), were effective in delivering public health programmes in the community. Liyanapathirana and Thevanesam (2016) also suggested delivering the awareness programme via public health midwives and public health inspectors (PHIs), who are specialised in this work. A further option is to use community leaders and change agents to disseminate good antibiotic practices among the community. As for antibiotics knowledge

⁸⁴² IRIS: Joint External Evaluation of IHR Core Capacities of Democratic Socialist Republic of Sri Lanka, Geneva: WHO; 2017, 10, 11. This mission, led by Dr Bardan Rana of WHO SEARO and consisting of 10 experts from WHO and other organisations, assessed the capacities and capabilities of Sri Lanka's AMR-related activities and made recommendations for improving the country's public health security. Benchmarking is the process of measuring products, services, and practices against leaders in a field, allowing the identification of best practices that will lead to sustained and improved performance. For laboratory benchmarking, see Galloway and Nadin (2001).

⁸⁴³ Ibid., 10, 11.

⁸⁴⁴ Ibid., 10.

⁸⁴⁵ Ibid.

⁸⁴⁶ Ibid., 11.

among undergraduates, while Sakeena et al. (2019, p. 15) stated that it was low among pharmacy students, Jayaweerasingham (2019) said it was good among nursing students; however, they mistakenly believed “that taking antibiotics [would] help to prevent [a] cold from worsening”.⁸⁴⁷ Zawahir et al (2019) also found that OTC prescription of antibiotics in private pharmacies was associated with staff misbeliefs about the effectiveness of antibiotics and with their professional competency. Inappropriate antibiotic use in hospital settings in Sri Lanka, South Africa and the UK was “framed by prescribers not just in clinical, but also in moral and contextual terms” (Tarrant et al., 2021). In Sri Lanka, prescriptions of antibiotics are influenced by the pharmaceutical industry, which provides a source of information for the prescriber and promotes such prescriptions. There are three root causes of this issue. First, the AMR section in the undergraduate curriculum is not oriented towards achieving a practical outcome, and it is not persuasive enough to overcome the myths about antibiotics. Second, the AMR training provided to nurses and paramedics by their respective professional organisations and the MoH is inadequate. Third, postgraduate trainees’ knowledge about antibiotic use was based on their supervisors’ practice. This reveals that low awareness and knowledge of antibiotics could be addressed by an effective awareness programme and education system while controlling the availability of antibiotics.

In 2017, Suzanne Hill, the then WHO HQ Director of Essential Medicines and Health Products, declared that the introduction of AWaRe classification of antibiotics marked the biggest revision of the antibiotics section in the EML’s 40-year history (Schnirring, 2017). Many authors also stated that this system ensures that antibiotics are available when needed and that the right drugs are prescribed for the right infections (Adekoya et al., 2021; Budd et al., 2019). Holloway et al. (2016) also saw that the ELM promoted a reduction in inappropriate antibiotic use. None of them, however, identified the impact of the ELM – from its inception to 2017 – on AMR, and this chapter argues that the higher availability of antibiotics in healthcare settings that was brought about by the ELM had an adverse impact on the overuse of antibiotics. As a result of greater availability, prescribers often used antibiotics as the drug of choice for many infections for which it was not indicated, and this tendency increased as the ELM increased the choice of antibiotics. This illustrates the need for an effective stewardship programme supported by local evidence on antibiotic sensitivity and resistance.

Krockow and Tarrant (2019) stated that the SLCM’s national guidelines for antibiotic prescribing gave “recommendations on antibiotic treatment choices, but... [had] only a limited focus on stewardship principles”. This chapter argues that the SLCM’s attempts at proceeding with AMR guidelines were not fully endorsed by the MoH. This chapter further finds that enforcement of the RLAL was partly successful in facilities where microbiologists and some specialists prescribed independently, but it was unsuccessful in facilities where there were no microbiologists. This included PHC hospitals and the private sector. The WHO SEARO assessment also found that the ASP had had limited success in the SEA region and that the implementation of the ASP in Sri Lanka had been negatively impacted by the lack of support from

⁸⁴⁷ Antibiotics are not effective against the common cold, which is a viral infection.

prescribers and staff, by pharmaceutical industry-induced demand and by polypharmacy caused by a lack of confidence in government medicines.⁸⁴⁸ This could be overcome by informing the prescriber about utilisation patterns, introducing an ELM-based antibiotic list, facilitating testing to choose the most effective antibiotics, and ensuring rational prescribing and ordering. The findings from this chapter support the SEARO assessment about the low level of progress on AMR-related research and innovation in Sri Lanka, and the chapter discusses some underlying causes for it. First, components of AMR were not a research priority in the MoH's medical and dental services (except the “antibacterial effect of medicinal plants”) for funding from the National Health Research Council of Sri Lanka.⁸⁴⁹ Second, the authorities had not disseminated the information and funding plan for operational research priorities for responsible use of antimicrobial agents under the NSPSL.⁸⁵⁰ Such findings indicate that the ASP and research activities in Sri Lanka need to be improved to achieve an effective outcome in AMR control. However, an effective regulator and effective regulation also need to be in place in this endeavour.

Regarding the regulator, agreeing with Professor Lal Jayakody about the challenge to the NMRA of improving the capacity of the National Medicines Quality Assurance Laboratory (NMQAL) and monitoring medicines on the market, this chapter questions the NMRA's behaviour as an independent authority: firstly, the possible conflict of interest for members of the regulatory body, who were alleged to have links with private clinical trial firms;⁸⁵¹ secondly, the removal by the Minister of Health (whose aim was to intensify the vaccine drive) of four members of the NMRA for not approving a Chinese COVID vaccine due to insufficient evidence. It must be highlighted that in refusing to register a medicine despite huge pressure from the agent and political authority, a drug regulatory subcommittee in 1998 was able to safeguard people from the harmful effects of a drug that had to be withdrawn due to severe drug interactions (Weerasuriya, 1998). Thirdly, in August 2021, a loss of 2,000 gigabytes of classified NMRA files stored in the Sri Lanka Government Cloud (files that included the formulation of drugs and other confidential supporting documents) also raised questions about the credibility of the regulator (Jayamanna, 2020; The Sunday Times, 2021). Understanding the issues with the regulator, in the 1970s Professor Bibile unsuccessfully attempted to formulate an NMDP (chapter 3.4), which had been one of the major recommendations of the PTFs and HMP1 (chapter 6.4). Though formulation of the NMDP took place in 2015, delays in drawing up the Act were due to the pharmaceutical industry, the MoH and the legal draftsman's department. Disagreeing with the findings of WHO's assessments on what the NMRA antibiotics regulations achieved, this chapter argues that they failed to regulate the use of antibiotics, whether by the veterinary sector, indigenous practitioners or quack doctors.⁸⁵² It also finds that the Act failed to regulate the private health sector's management of multiple prescription determinants (through

⁸⁴⁸ IRIS: Situation 2018,12.

⁸⁴⁹ MHR: Research Priorities in Medical & Dental Services (<http://www.health.gov.lk>).

⁸⁵⁰ MHR: NSPSL, Specific objective 2.4.

⁸⁵¹ For the link between a member and a private clinical trial company, see Jayamanna (2020).

⁸⁵² IRIS: Joint, 2017 and Situation, 2018.

the employment of qualified pharmacists, enforcement of the law on OTC and RLAL prescriptions, and guiding the availability of antibiotics).

7.7 Conclusion

“The State has agreed as a matter of policy to give health protection to the people of the country. Yet there is neither sufficient funds nor personnel and equipment available to carry out this undertaking efficiently.”⁸⁵³ This statement made by the Director of Health Services in 1963 has remained an accurate description of the healthcare delivery system in Sri Lanka for the last six decades. Governments before 1977 attempted to maintain a higher national health expenditure despite economic constraints; however, subsequent governments continued to reduce healthcare spending, imposing extra pressure on the healthcare infrastructure. Government health policy initiatives faced challenges not only in supporting the expansion of healthcare but also in bridging the growing demand for health. Such actions impacted AMR in two ways – indirectly by weakening the health structure, and directly by leading to inconsistent medicinal policy on antibiotic use and supply. Assessing the views of experts on the AMR situation with the help of the AMR assessment framework and the drawing on the findings of the previous chapters, this chapter has argued that Sri Lanka needs to overcome its weaknesses in tackling AMR using its healthcare system’s own strengths.

The current approach to tackling AMR in Sri Lanka is based on the WHO's global strategies, which are not flexible enough to adapt to the national context. Ongoing economic and resource constraints are also directly linked to inadequate performance in the surveillance of and research and education activities on AMR. The recent implementation of the NMDP and the Medicinal Regulation Act are not adequate to regulate antibiotic use and supply. Laboratory work is also not sufficiently regulated due to the non-availability of an active National Laboratory Policy. The RLAL list that sought to contain antibiotics use was narrowly focused on tertiary level hospitals, with private healthcare and PHC outside of its scope. There is no government mechanism examining the contribution of other sectors, including the animal sector that uses a substantial amount of antibiotics, to the national AMR drive. Insufficient awareness of antibiotics is widespread not only in the community but also in the medical sphere. Although Sri Lanka was ranked second among the region’s countries, its national AMR action plan has not been evaluated yet to understand the direction in which the national AMR endeavour is going.

Delivering an antibiotic awareness campaign via the existing PHC system, where midwives and public health inspectors are geared to perform such activities, could effectively utilise the country’s higher literacy rates. Utilisation and supply of antibiotics cannot be controlled only by protocols and guidelines, and direct government control limiting antibiotics in the market is also important, as experienced before 1977. Strengthening the existing Medicinal Policy and Act and the Laboratory Policy will be ineffective in enforcing regulations unless the regulatory body is strong and impartial. National level governing of

⁸⁵³ SLML: A.D.P.D Wejagoonawaedene, “Presidential address” *CMJ*, Vol 8, No 1 (1963)10-11

infection control and prevention and antimicrobial stewardship should not be limited to the tertiary care level, but should also include the PHC and private health sector to reduce HAIs. Surveillance of antibiotic use and consumption and bacterial resistance against antibiotics cannot be driven forward effectively without a patient information system, which has not been established yet, even though it was recommended several decades back by the first Presidential Task Force. A general analysis of the national health situation is also necessary to find a homegrown solution for tackling AMR able to overcome the system's weaknesses and threats through its strengths and opportunities. This is also vital for evidence-based policymaking on antibiotic use, supply and AMR. With its past experience of eliminating measles and malaria, Sri Lanka is in a good position to take up the challenge of combating AMR in its own way while working together with regional and international partners. This will be elaborated further in the next and final chapter of the thesis, to which we will now turn.

Conclusion

The WHO heavily influences the development of international and national guidelines on antimicrobial resistance (AMR). According to the WHO, AMR is a global problem that requires urgent and coordinated international attention.⁸⁵⁴ Robert Bud (2009, p. 208) claimed that the WHO has shown some interest in AMR since the early 1980s.⁸⁵⁵ As an initial step, in the early 1990s the WHO assisted a team led by Thomas F. O'Brien and John M. Stelling Bringham (1995) of the Women's Hospital Boston to develop a digital platform called WHONET for the surveillance of antibiotic resistance. Accepting the so-called global antibiotic policy produced as a result of this work, the 1998 World Health Assembly recommended that, with WHO support, states each put together a strategy for managing antibiotic use, and three years on, the WHO published its global strategy for the containment of AMR.⁸⁵⁶ As Bud (2009, p. 208) argued, "it [the global strategy] was a practical document, emphasising 'how' and the 'what' rather than the 'if' or 'why'".

My own experience in the AMR context as a clinician and a senior healthcare manager leading policy reform and improvement within the Sri Lankan Ministry of Health, with a view to promoting equity and democratic accessibility, developed against this backdrop. Four factors, in particular, played a role in kindling my interest in the issue of AMR. First, the falling efficacy of several antibiotics within hospital settings. Second, my awareness that no systematic surveillance of AMR was in place and our national health system was not geared to accommodate WHONET. Third, that there had been a consistently high demand for antibiotics, driven both by patients and doctors in formal and informal healthcare settings. Four, my realisation that WHO's Global Strategy produced guidelines to manage the situation with little concern for the issues faced in lower resource settings and any socio-economic contextualisation, making it hard for doctors and policymakers to balance their clinical judgement and the public demand for antibiotics. These issues, which were often interconnected, convinced me that the assessment and mitigation of AMR are complex processes, as the problem is not only a narrowly medicalised issue. International and national political and social movements have been important determinants of antibiotic provision and use too, in Sri Lanka as well as the wider South Asian subcontinent, and thus play a role in determining the bases and drivers for AMR. Therefore, it was necessary to address several questions to identify the issues underlying AMR-related challenges in present day Sri Lanka, as well as the historical origins of this very significant public health and medical problem. One such question is how the international and local actors managed AMR before the WHO's direct intervention in the late 1980s. Another is how post-independence Sri Lanka's health policies suppressed or promoted AMR. Yet another is how the international and national AMR strategies were useful in managing antibiotic provision, use and AMR efficiently in Sri Lanka. This means we require a historically grounded study of this issue in order to gain a long-term understanding of

⁸⁵⁴ See IRIS: WHO Global Strategy for the Containment of Antimicrobial Resistance (2001).

⁸⁵⁵ Robert Bud is the Research Keeper at London's Science Museum.

⁸⁵⁶ IRIS: WHO Global Strategy for the Containment of Antimicrobial Resistance (2001).

how past administrative trends have contributed to an overuse of antibiotics, how drug provision policies need to be reformed and how we, as an independent nation, need to work with the WHO and other South Asian countries to regulate antibiotic supply, use and AMR. This thesis attempts to provide such a study.

This is a mixed-method thesis that uses archival research and in-depth interviews and demonstrates how a complex theme like AMR is best assessed using both techniques to overcome the constraints placed on studying this subject. Two frameworks developed by this study, a modified health policy assessment framework and an AMR assessment framework, can also be used as a platform for future research on health policy and AMR assessments respectively. Overall, the thesis makes an original contribution to knowledge in its re-evaluation of the history of healthcare in Sri Lanka, and in its practical recommendations that have the potential to positively impact Sri Lankan health policy in the future.

This study argues that the WHO failed to pay sufficient attention to AMR from 1949 to 1977 in the face of rising global resistance to antibiotics in common bacterial strains. This thesis attempts to contribute to the growing historical work on antibiotic use, supply production and AMR in the international context in several ways. It shows that the overuse of antibiotics, creating the conditions for the emergence of AMR in many settings, was driven not only by effective publicity for and marketing by the pharmaceutical industry but also by the WHO's often uncritical enthusiasm for controlling infectious diseases through antibiotic-based international programmes. However, the WHO was not interested and unsuccessful in addressing the growing global demand for antibiotics production and supply, not only due to a lack of technical capacity and training facilities but also because of the inadequacy of literature and provision of equipment for antibiotics production. The commercial pharmaceutical industry did not approach small nations; instead, producers of antibiotics competed to install their antibiotics plants in large countries, focusing on larger markets. This thesis also outlines that antibiotics became a political instrument, as the US and its allies, unwilling to move important equipment beyond the Iron Curtain, resisted the development of antibiotics manufacturing facilities in Eastern Bloc countries. Senior officials within the WHO were aware of emerging evidence on AMR but for a variety of political and operational reasons, they did not act effectively on this, prioritising the development of their international disease programmes.

In addition to outlining the role played by the WHO and the pharmaceutical industry in the rise of AMR, this thesis also contributes to studies on Sri Lanka's political and economic history by analysing this history from an international perspective, showing how international players were able to influence Sri Lanka's politics and economy in general and its health policies in particular. Sri Lanka's desire for sovereignty was a problem first for the Britain-Ceylon Defence Agreement of 1947, then for the US's and Britain's supremacy in the region. In an attempt to retain control, the US and Britain tried to coerce Sri Lanka's politicians with perks and aid. Later, in 1971, officials in the British PM's office tried to take advantage of Sri Lanka's political and economic crisis, promoting the reinstatement of the Defence Agreement as the solution to Sri Lanka's economic problems. British diplomats in Colombo unsuccessfully attempted to gain wider influence in South Asia through Sri Lanka's Prime Minister but were more

successful in compelling successive Sri Lankan governments to adjust both their posture towards donor countries and their domestic policies in order to facilitate the smooth flow of aid.

This doctoral study argues that health policy was used by international organisations and donor countries to control the Sri Lankan government's domestic and international activities. It also argues that Sri Lankan governments used health policies to ensure their political survival both on a domestic and on an international level. By studying the history of international health and Sri Lanka's public health, this thesis adds to the historical understanding of this period in Sri Lanka and the region in several ways. First, Sri Lanka's negotiations at the various levels of the WHO helped to shape international policies. Second, the WHO attempted to manage the member states based on their size and power, and so Sri Lanka, as a small and less powerful country, was marginalised. For instance, in the WHO's first decade, Sri Lanka was not given the opportunity for adequate representation at the Executive Board and expert committees. Moreover, although Sri Lanka requested medicinal production plants at the World Health Assembly, Executive Board and Regional Committee level, it ultimately received only DDT plants, while larger countries, such as India and Pakistan, received both DDT and antibiotic plants. Western countries and donor agencies and the WHO maintained their authority in Sri Lanka not only through health funding but also by employing health experts. The Sri Lankan national governments, too, were desperate to improve the country's health system through foreign aid and consultation. The national governments were unable to meet the growing demand for healthcare, not only due to the country's economic crisis but also because of the politicisation of health policies. By examining the process of health policy creation, this thesis illuminates the shifting ways in which the national government interacted with provinces and districts' health governance, thereby making a novel contribution to the history of health and health policy in Sri Lanka.

I am a senior Sri Lankan government official and will be able to transfer the findings of this study to the Sri Lankan government to strengthen the knowledge and prepare evidence-based policies on antibiotic use, provision and AMR.⁸⁵⁷ The thesis also recommends the adoption of key policy initiatives through its five subcase studies. In light of the importance of the National Medicinal Policy and National Medicinal Regulatory Act (which was brought in by the government to bridge the popular demand for a national drug policy), it proposes strengthening both of these with a view to enforcing regulations on antibiotics. Equally important is the National Laboratory Policy of 2003 (which was never implemented), and thus the thesis stresses the need to develop this policy in order to standardise public and private microbiology laboratories and enforce the surveillance that is the key element of combatting AMR. Where antibiotic prescriptions are concerned, the thesis identifies that the red-light antibiotic list works only at the tertiary care hospitals that have a microbiologist, and that therefore a mechanism to strengthen antimicrobial stewardship is necessary to implement it in other healthcare settings. An additional recommendation is that the infection prevention and control programme, which is mainly focused on the

⁸⁵⁷ See the strategic objectives of MHR, NSPSL 2017, 2.

secondary and tertiary hospitals, needs to expand into all levels of healthcare under the supervision of the dedicated directorate of the Ministry of Health. Finally, although the WHO's Regional Office in South-East Asia (SEA) ranked Sri Lanka second among the countries in this region for work on AMR, this thesis demonstrates that Sri Lanka's progress in fact differs from the SEA assessment and urges the importance of evaluating current national AMR endeavours.

The objectives of this thesis were twofold. The first was to develop a new kind of work, based on a novel use of mixed methods approaches, on healthcare development in Sri Lanka by relating international and national health policies to the nation's political history. It argues that the kind of work I am presenting here is lacking in histories of Sri Lanka related to dynamics of international, regional and national governance, which focus on the politics of health policy creation. The second objective of this thesis was to add a novel perspective to the existing literature on WHO HQ and regional offices by highlighting the layers of negotiations between newly independent nations in the period after World War II and the different layers of the WHO governance, focusing on the particular case of Sri Lanka. With the exception of a few scholars, such as Margaret Jones (2016), who assessed the work of the Colombo Plan aid from the UK and US for Sri Lanka's national TB programme, the literature in the field has paid little attention to the role of the key international players in Sri Lanka's economic, political and health policies. This study provides some insight into the roles of the US and UK and their reaction to Sri Lanka's attempted economic and health policy reforms, highlighting the importance of the international context and strategy in the creation of economic and health policies. I have taken a different approach to studies that focus on healthcare delivery in the national context by considering where the WHO HQ and the South-East Asia Regional Office fit into Sri Lanka's health policies. This thesis also contributes to the growing scholarship on AMR by providing a perspective on the policy of antibiotic use, supply, and production and the development of AMR in both international and Sri Lankan healthcare settings. Finally, it shows that the political and economic factors underpinning the international and national contexts were important in the creation of health policy and tackling AMR in Sri Lanka.

Regarding methods, the thesis is an interdisciplinary work drawing on the disciplines of history and health services research to explore its line of enquiry. First, it made use of archival materials, including hitherto underexplored files on Sri Lanka's health programmes, antibiotics and AMR at the WHO Geneva archive, the WT archives, the WHO Regional Office in New Delhi, the Rockefeller archives in upstate NY, and the online archive of the WHO (IRIS). The WB global archives and the British, US and Sri Lankan national archives were mined for scattered communications on Sri Lanka's political and economic activities involved in the policymaking process, revealing perspectives that would otherwise have been underrepresented in this history because of a lack of centralised archives. Various articles of the *Ceylon Medical Journal* (CMJ) of the Sri Lanka Medical Library reveal, as demonstrated in chapter four, that clinicians' perceptions were also vital in the assessment of healthcare delivery in Sri Lanka. Archives such as the British and US national archives and the WB archives contain files of other organisations such as the Colombo Plan that worked with the US, Britain and the WB in Sri Lanka. Accordingly, these files not only

are useful for tracing the power and wider influence of the US and Britain and international funding organisations but also can be used to study the negotiations from multiple perspectives. The extensive holdings of the British Library, the Wellcome Collection, London, and the Sri Lanka Medical Library include official magazines and published reports that do not appear in the other archives. Similarly, the Sri Lanka National Archive's newspaper and Hansard publications published by the Sri Lankan parliament can help to reveal the significance of public and political pressures in policymaking. It is only by painstakingly cross-referencing the files of different governments and different inter-imperial and international organisations that the extent and importance of their contributions can be traced.

The COVID-19 pandemic meant that the availability and accessibility of some archival materials were limited. The thesis has sought to address this issue by employing in-depth interviews, a method used in history and policy scholarship. This study used both purposive and snowball sampling techniques to recruit the participants. In total, 25 in-depth interviews were conducted between September 2018 and April 2021 with experts in health policy, pharmaceuticals and antibiotics who worked or are working at the WHO and in Sri Lanka, but five additional planned interviews could not be conducted. Conducting those interviews would have helped to add details of experience and analytical depth, but this was not possible during the pandemic. I addressed this issue by paying particular attention to underrepresented specialities and divergence in the interviewees' responses. These interviews also provided insight into recent past history, especially about specific themes in the recent past, which cannot always be described by archival collections due to files being closed for anywhere between 30-70 years but can often be collected through interviews. Therefore, the material I have collected is not just about today's policy, but also about the history of the 1980s and 1990s that created or suppressed AMR in Sri Lanka. It was useful for gaining an understanding of the policy context, which was determined not only by the country's economic and political situation but also by international health policy and international politics. The negotiations between different layers of Sri Lanka's health governance and the WHO and other agencies were also brought up, which helped to identify the behaviour of the political authorities and bureaucracy involved. The interviews thus demonstrate the effects of international and national health policy on Sri Lanka's political and economic structures, allowing the thesis to explore not only the progress of AMR activities but also the root causes of Sri Lanka's AMR problem. Interviewee statements were cross-checked not only with those of other interviewees but also with primary archival sources and secondary materials such as published reports and scholarly articles.

In summary, this thesis concludes that the WHO did not respond adequately to the emergence of AMR, which is rooted not only in health but also in economic and political spheres. Moreover, Sri Lanka's national politics and international relationships created a sustained period of political and economic instability that impacted on healthcare delivery in Sri Lanka. Although Sri Lanka's health indicators have now improved, the country's economic constraints and adverse political relationships have limited the development of its health system. The thesis has shown that the higher echelons of international health, such as the WHO and UNICEF and national health governance, formulate, implement and evaluate health

policies that impact directly on Sri Lanka's healthcare delivery system and its components, such as antibiotics and AMR. It argues that most such initiatives have in fact had a negative impact on the country's health system and economy, ultimately adversely affecting the lives and health of its people. In terms of combatting AMR, this thesis suggests that the WHO and national governments have realised their past errors and are now trying to act by making this a part of the international and national agendas. Finally, it argues that Sri Lanka's approach to tackling AMR needs to be improved for the effective containment of AMR. In other words, this thesis asks how health policies, including on AMR, can be managed effectively and efficiently to provide good health for the people.

Accordingly, a line of future enquiry could be to identify the fundamental issue of health policy formation, formulation, implementation and evaluation in Sri Lanka. Any research of this kind will need to enquire into how the government's existing health policies can be reviewed and evaluated to restructure them to bring maximum benefit to the system. It will also need to identify whether an independent body would be capable of liaising with the policy level of the government on this issue. If so, the third step for future research will be to investigate what this body's composition, level of authority and responsibilities ought to be. One such mechanism could be the adoption of a participatory approach, in which effective stakeholder participation is employed to overcome the lack of public participation in health policy development and implementation. This method has already been applied with initial success in some countries, such as Bulgaria (Dimova et al., 2018).⁸⁵⁸ Referring to this kind of work and the findings of this thesis can lay the foundation for future research to identify a suitable method to formulate, implement and evaluate health policy in Sri Lanka.

The second line of enquiry, which has already been touched upon, would be to further investigate how the fundamental issue of tackling AMR is being managed effectively by the national health systems. This thesis argues that the current understanding of AMR is coloured by UN agencies' ideology and based upon findings gained in the developed world. AMR, therefore, not only became a top priority on the international health agenda, but this understanding of AMR also gradually penetrated the national health systems. In other words, like most international health policies, the WHO has directed its member states to adopt its policy on AMR (with alterations) into their national health systems. When looking at the case of Sri Lanka, however, this thesis argues that this has not led to any significant improvement of the country's healthcare delivery system and its tackling of AMR. The findings of this thesis further suggest that a novel method needs to be found by studying, first, the failures of this top-down approach; second, to what extent the national governments accommodate stakeholder inputs and the strengths, weaknesses, and

⁸⁵⁸ The important features of Bulgaria's Partnership for Health are: first, it is constituted as a permanent consultative body to the Minister of Health. Second, it engages a wide variety of stakeholders and professionals to shape and improve health policies. Third, it supports the elaboration of legislative acts based on the stakeholders' collaboration in priority areas. Fourth, the governance and organisational structure of this body assure capacity building, fast mobilisation of experts, continuity of stakeholder involvement, and increased responsibility in health policy development and implementation. Finally, it helps reconcile initially opposing positions and foster reforms often impeded by political antagonism.

opportunities of their respective health systems; third, how national governments become part of a collaborative and coordinated international response; fourth, how national governments prepare a national action plan to achieve their previously unachieved goals in tackling AMR. Finally, the WHO's regional offices and HQ can then utilise these national plans to make a regional and international action plan for AMR in a bottom-up approach. Such action plans need to highlight the interventions that are most important and identify a logical sequence for implementation. However, this is a complex area in which it is often difficult to foresee all obstacles.⁸⁵⁹ The plans and strategies to control AMR will depend largely on the decisions and actions of each nation, but the consequences are likely to be experienced worldwide.

⁸⁵⁹ To enhance the outcome of the fight against AMR, it may also be productive to utilise examples of the successes and failures of international and national policies in managing the current pandemic.

Appendices

Appendix 1: Defining settings

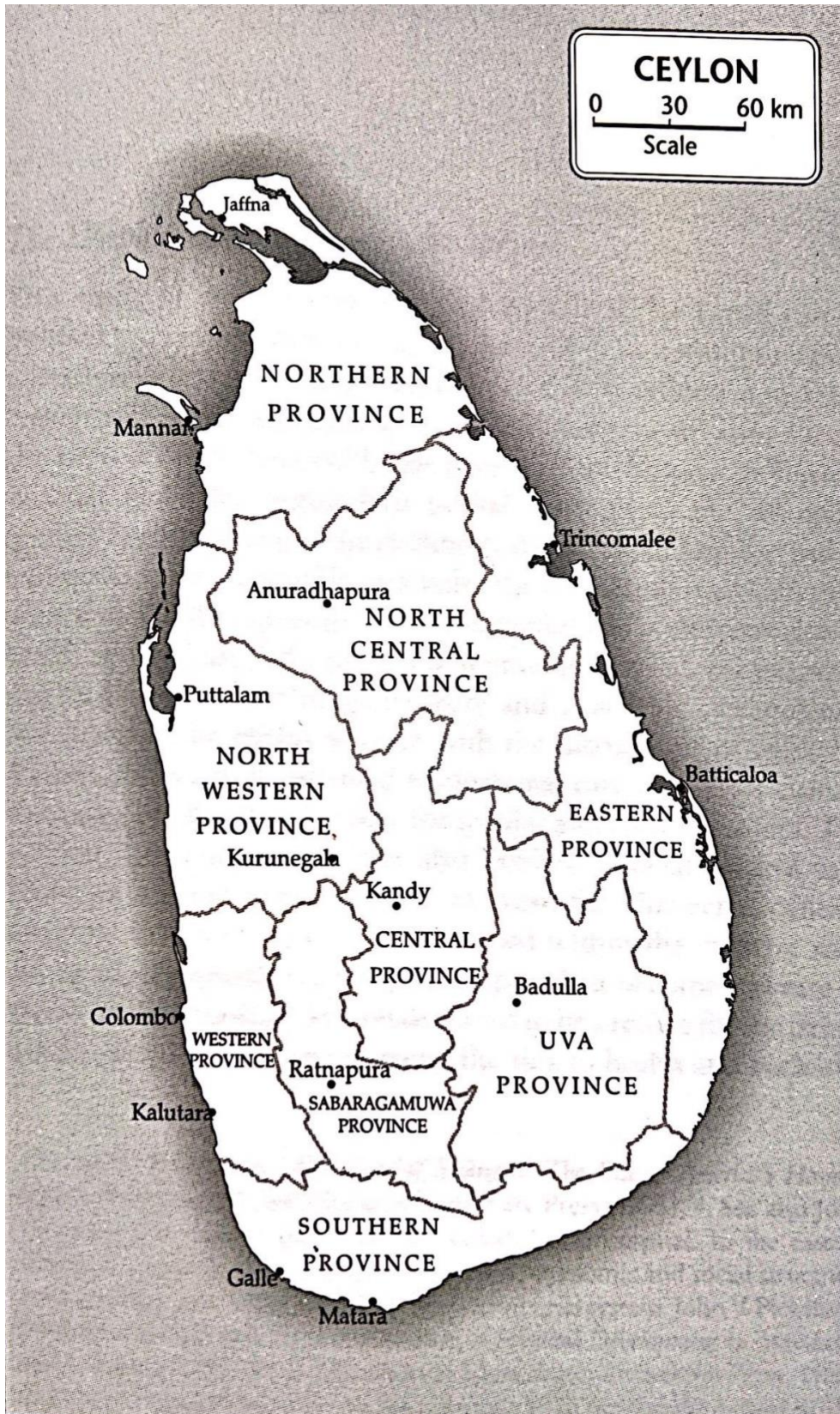
This thesis considers the international setting as the context in which the interactions between countries and international organisations such as the WHO, WB, IBRD and CP are carried out. Work carried on between countries in the same geographical region and organisations work in the same region, for instance, WHO South-East Asia Regional Office, one of the six WHO regions, is considered as the regional setting.

Sri Lanka's country-level structure which underwent a drastic change after 1977, has five main layers: National, Provincial (Subnational), District, Local and various levels. The country is divided into 9 provinces, which are further subdivided into 25 districts. Districts are further subdivided into Municipalities, which are sorted into three categories. Each municipality is divided into wards and wards into Grama Niladhari (GN) divisions. The below table (1.1A) shows the main political, administrative and healthcare actors of those levels according to the time frames.

Table 7.1A: The political, administrative and healthcare structure and main actors of Sri Lanka from 1948 onwards

Setting	Political		Administrative		Health	
	Before 1977	After 1977	Before 1977	After 1977	Before 1977	After 1977
National	Prime Minister & MP's, Cabinet of Ministers	Executive President. Prime Minister, MP's, Cabinet of Ministers	Ministry of Internal Affairs	Ministry of Internal Affairs	Health Minister, Parliamentary Secretary, Health Secretary and DGHS	Health Minister, Health Secretary, DGHS
Provincial		Governor, Chief Minister, Provincial Council Members, Provincial Ministers		Provincial Secretary		Provincial Health Minister, Health Secretary, Provincial Director of Health Services (PDHS)
District		District Coordination Committee		District Secretary	Superintendent of Health Services (SHS)	Regional Director of Health Services (RDHS)
Local	Mayor of Municipalities, Chairmen of Village Council	Mayor of Municipal Council, Chairmen of Pradesiya Saba	Government Agent	Divisional Secretary	MOH	Medical officer in Health (MOH)
Wards (grass-root)	Municipal Councillor	Municipal Councillor	Grama Niladhari (GN)	Grama Niladhari (GN)	Midwife PHI	Midwife PHI

Appendix 2: Map of Sri Lanka



Appendix 3: Interviewer guide

1. Would you be able to tell me your name, please?
2. When did you join the service?
3. What were your roles in the health sector? Or brief description about your past positions and your role over there.
4. What is your understanding of health policy in Sri Lanka?
5. Please elaborate context and content, actors and effects of the policy initiatives (discuss one by one and use the tick boxes when necessary).

No	Policy initiative	Context & content	Actors	Effects
1	“Health for All”, the Alma-Ata Declaration			
2	Reintroduction of DP for government doctors			
3	Abolition of the UF			
4	Cosmetics, Devices and Drugs Act (CDDA)*			
5	WHO’s essential medicines list (EML)*			
6	Devolution of healthcare under the 13th Amendment to the constitution in 1987			
7	The presidential task force for health in 1992 (PTF1)			
8	The presidential task force for health in 1997 (PTF2)			
9	Health master plan 2007-2016 (HMP1)			
10	National Medicines Regulatory Authority (NMRA) Act*			

6. What is your understanding of AMR?
7. Please elaborate context and issues of the following components of AMR in Sri Lanka and the South East Asia context. (use the progress boxes)

Main categories	Subcategories	Progress box
AMR policies, guidelines	National AMR action plan (NAP) and surveillance system	
	National AMR containment policy	
Laboratory management	National laboratory policy	
	Capacity strengthening of microbiology laboratories	
Management of antibiotics	Regulation of antibiotics	
	Selection of antibiotics	
	Surveillance of use and sale of antimicrobials	
Infection prevention and control (IPC)	IPC programme	
	AMR stewardship programme	
	Healthcare-associated infections (HAI) surveillance	
	AMR surveillance	
Awareness-raising and research	Antibiotic awareness campaign	
	Professional education and training	
	Proper environment for research and innovation	

Appendix 4: National Health Policy of Sri Lanka in 1996

Certificate of Authorization: The National Health Policy of Sri Lanka was published in 1996 by the Ministry of Health & Social Services.

Introduction:

Sri Lanka has achieved a commendable health status measured in terms of traditional health indices in relation to its Gross Domestic Product (GDP). This has been mainly due to the social policies adopted by the successive government in the past few decades.

Health Policy:

The health policy of the Government will be directed at consolidating the earlier as well as adopting new policies to raise the health status of the people

The broad aim of the Health Policy is to:

I. Further increase life expectancy by reducing preventable deaths due to both communicable and non-communicable diseases.

II. Improve the quality of life by reducing preventable diseases, health problems and disability; and also emphasizing the positive aspects of health through health promotion.

In this respect the Government has identified the following diseases/health problems as priority areas needing focused attention:

Maternal and child health problems, adolescent health, malnutrition & nutritional deficiencies, problems of the elderly, malaria, oral health, bowel disease, respiratory disease, mental health problems, physical disabilities, deliberate self-harm/suicide, accidents, rabies, coronary heart disease, hypertension, diabetes, cerebrovascular disease, renal disease, malignancies, STD/HIV – AIDS, substance abuse and problems related to the family unit

Measures will be taken to raise the health status of the population in general and minimize the impact of the above-mentioned diseases/health problems in particular by adopting the following health strategies.

1. Improve the existing preventive health programmes and in addition develop more comprehensive coordinated and focused programmes that would-

- a. Reduce the burden of disease in the community.
- b. Enable early detection of preventable diseases/health problems and their complications.
- c. Focus on promoting positive health behaviour.

2. Improve the existing medical facilities and develop additional services to meet a wider range and level of medical needs including rehabilitation and continuing care, both institutional and community based.

3. Health care will be made more accessible to the community on an equitable basis with provision for meeting specific health needs.

4. Improve the quality of health care to a level acceptable to both the community and service providers.

5. Services activities and patient care will respect the dignity of the individual at all times.

6. Health The government will remain committed to providing basic healthcare free of cost to the individual at the point of delivery, in state sector institutions.

7. The government will ensure the right of men and women to be informed and to have access to safe, effective, affordable and acceptable methods of family planning of their choice.

8. Health care will be made efficient and cost effective.

9. Develop and implement a national drug policy for the rational use and distribution of drugs.

10. Promote the involvement of the community in health care

11. Allocate resources between provinces/districts based on their health needs and national priorities.

12. The health Ministry will strengthen integrated approaches with other governmental and non-governmental agencies to facilitate greater coordination for better health care.

13. The government will facilitate the development and regulation of the private health care sector and promote better coordination with this sector.

14. Encourage health systems research and its application.

15. Human resource development will be supported and strengthened in keeping with contemporary needs.

16. Services and programmers will be introduced to meet the emerging health needs of the elderly and those affected by physical disabilities, mental health disorders, as well as the health problems of displaced populations.

17. Development of indigenous systems of medicines and homoeopathy will be encouraged.

18. The government is committed to allocate additional funds from governmental sources and through alternative mechanisms of funding, towards meeting promotion and prevention.

Implementation:

The national health policy will be implemented through the central and provincial health ministries

Appendix 5: National Medicinal Drug Policy for Sri Lanka⁸⁶⁰

Certification of Authorisation

The National Medicinal Drug policy for Sri Lanka had been published in 2005, by the Ministry of Health Care and Nutrition. Accordingly, The National Medicine Regulatory Authority Act (Act No 05 of 2015) has been approved by the Parliament of the Democratic Socialist Republic of Sri Lanka and certified on 19th March 2015.

Preamble

Sri Lanka had a partly written Drug policy from the 1960s. it was “written” as elements of a policy, beginning from selection of drugs for the government drug supply and the Ceylon Hospitals formulary in early 1960s, the Bibile Wickremasinghe report in 1971, the Cosmetics Devices and Drugs Act (1980). However, there was no comprehensive document.

There were attempts to develop a NMDP in 1991 & 1996; while the documents were accepted by the Ministry of health, they did not reach the final step of cabinet approval. Hence no comprehensive document exists at present. The present effort building upon previous efforts brings together the elements of a National Medicinal drug Policy all stakeholders. It is hoped that this effort will see a formal National Medicinal drug Policy being adopted by the cabinet for the country.

The objectives of the Sri Lanka National Medicinal Drug Policy are.

1. To ensure the availability and affordability of efficacious, safe and good quality medicines relevant to the health care needs of the people in a sustainable and equitable manner.
2. To promote the rational use of medicines by healthcare professionals and consumers.
3. To promote local manufacture of Essential Medicines.

The Sri Lanka National Medicinal Drug Policy;

1. Will be within the overall health policy of the country
2. Will be based on the Essential Medicines concept
3. Will be focused on the health sector but include/ coordinate with relevant areas such as education, finance, agriculture, animal husbandry, pharmaceutical industry and trade
4. Will safeguard the rights of the patients/ consumers.

An NMDP should cover all systems of medicine including allopathic, homeopathy, Ayurveda, sidda, unani and any other systems recognized in the country. The primary concern of this policy is

⁸⁶⁰ Source: MHR: Policy Repository - Ministry of Health - Sri Lanka

allopathic medicines; however, policies for the others systems of medicines will be developed later in consultation with stakeholders of those systems.

Certification of Authorisation

The National Medicinal Drug policy for Sri Lanka had been published 2005, by the Ministry of Health Care and Nutrition.

Accordingly, The National Medicine Regulatory Authority Act (Act No 05 of 2015) has been approved by the Parliament of the Democratic Socialist Republic of Sri Lanka, and certified on 19th March 2015.

The Sri Lanka NMDP will have the following elements.

1. Selection of essential medicines
2. Affordability and Equitable Access
3. Financing options
4. Supply systems and Donations
5. Regulation and quality assurance
6. Quality use of Medicines
7. Research
8. Human resources
9. Viable Local Pharmaceutical Industry
10. Monitoring and evaluation

There shall be a National Standing Committee appointed by the Ministry on the recommendation of the DGHS, comprising all stakeholders to oversee the implementation of the National Medicinal Drug policy.

Selection of essential medicines

The selection of an Essential Medicines List Prioritizes the medicines that are important. The medicines will be selected according to valid scientific evidence, the disease pattern in the country and cost-effectiveness.

A standing committee comprising all stakeholders will be established to define and regularly update the National Essential Medicines List. It will formulate, review and update Standard Treatment Guidelines, Drug Index, the Sri Lankan Formulary and Government Drug procurement Documents.

Affordability and equitable access

A pricing policy/ mechanism should be adopted to ensure affordability. Retail pricing should be based on a dispensing fee rather than cost markup. Legislation requiring generic prescribing and allowing cost effective generic substitution with the consent of the patient (and where possible informing the doctor) should be enacted. There shall be a policy for licensing pharmacies which among others would incorporate the needs and requirements of the communities.

Medicines including raw materials (both local and imported) should be free of any taxes, other tariffs and excise duties. The public health provisions of the Doha Declaration (parallel Imports, compulsory licensing) should be authorized by the Regulatory Authority.

Rational self-medication will be facilitated by appropriate scheduling of the medicines.

Financing options

The state should provide sufficient funding for procurement and supply of necessary medicines with priority for essential medicines, monitor appropriate use and prevent waste. Public and private sector health insurance schemes will be encouraged to develop reimbursable lists of medicines.

Supply systems and donations

The responsibility for ensuring a continuous availability of Essential Medicines in the country is a shared public/private sector responsibility. The state should continue centralized bulk purchase and supply to its institutions. Preference should be given to local manufacturers in supply of medicines to the state sector. Good pharmaceutical procurement practices and management of the supply chain should be enacted for both the public and private sector.

There should be a private/public mix of suppliers to the private sector.

A policy for acceptance of donations of medicines should be developed based on WHO Guidelines for Drug donations. Until this policy is developed the WHO guidelines should be followed.

The state should take the responsibility for the availability of “orphan” drugs and incentives to be given to suppliers of such items.

Regulation and quality assurance

Legislation should be enacted to provide a sound legal basis for regulating activities in medicines. A statutory body called the National Medicinal Drug Regulation Authority (NMDRA) accountable to the Ministry of Health through the National standing committee should be established. This authority will be solely responsible for regulation and control of manufacture, importation, registration, promotion, sale and distribution of medicinal drug and devices, nutraceuticals and functional foods. It should have transparent mechanisms and adequate human resources.

Medicines should be registered based on the criteria of quality, safety, efficacy, need and cost effectiveness. These criteria should be established by the NMDRA. The NMDA should have the authority to limit the number of new chemical entities of a particular class of drugs, as well as the number of products.

Official drug information will be instituted through approval of product information Leaflets/summary of product characteristics and where relevant patient information leaflets.

The authority should be funded by the state and through statutory levies on services rendered. An accredited drug quality Assurance Laboratory should function within the authority with appropriate fees for services.

Good Manufacturing practices (GMP) compliant with WHO Guidelines should be required for registration of medicines. Good pharmacy practices (GPP) and good Distribution practices (GDP) should be developed and implemented.

The promotion of medicines should be regulated based on the Sri Lanka Medical association Ethical Criteria for Medicinal Drug promotion. Promotion and sale of medicinal drug based on financial or other incentives should be prohibited. Post-marketing surveillance and pharmacovigilance systems should be established.

Quality use of medicines

Appropriate education in the quality use of medicines should be included in the training of healthcare professionals. The state should fund a national medicines information center and Drug information Bulletins through the medicines budget, to provide independent and unbiased information to healthcare professionals and consumers.

The rational use of drugs should be promoted, and irrational use should be discouraged. There should be public education programs about medicines especially through the school curricula.

Research

There should be resources and incentives for operational research on issues such as access to medicines, pricing mechanisms, cost-effectiveness and other areas of pharmaco-economics, quality, storage and utilization. The research findings should be incorporated into clinical practice. Clinical research into drug for neglected diseases which are prevalent in Sri Lanka should be encouraged and funded. Contract research in drug development should be in keeping with WHO Good Clinical practice Guidelines.

Human resources

There should be a special focus on the development of the pharmacy profession with degree programs in pharmacy. The pharmacy council should be established as a priority with sole responsibility for accreditation of pharmacists.

The NMDRA should undertake human resource development it's staff. There is a necessity for external technical cooperation for the development of human resources in the pharmaceutical sciences. Expertise in clinical pharmacology/clinical pharmacy needs to be developed and utilized in the health care sector.

Viable local pharmaceutical industry

The state should encourage and facilitate a viable sustainable local pharmaceutical industry by fiscal and other incentives. This will allow better monitoring of quality; improve availability, affordability, employment of skilled personnel and development of technical and human resources.

The state pharmaceuticals corporation (SPC) and the state pharmaceuticals Manufacturing Corporation (SPMC) should be amalgamated into one comprising of technical experts in the relevant fields and official from the Ministry of Health and Treasury.

This corporation should facilitate training for the pharmaceutical sector. The Medical supplies Division should give preference to pharmaceutical manufactured by this corporation at procurement.

Monitoring and evaluation

An inspection system should be established at the NMDRA for GPP, GMP, and GDP by the appropriately qualified personnel. Regular monitoring of the pharmaceutical sector through indicator-based surveys should be conducted by the National Standing committee.

Implementation

Once the NMDP is adopted, it will be the responsibility of the Minister of Health on the recommendation of the Director General of Health Services, to appoint the National Standing committee within three months to oversee the implementation of the policy.

This policy will be reviewed, and revised, if necessary, in five years.

Abbreviations

AAC	Antibiotic awareness campaign
AAF	AMR analysis framework
ABR	Antibacterial Resistance
ADB	Asian Development Bank
AIDS	Acquired immunodeficiency syndrome
AMC	Antimicrobial consumption
AMR	Antimicrobial resistance
AMS	Association of Medical Specialists
AMU	Antimicrobial use
AP	Antibiotics production
ASEAN	Association of Southeast Asian Nations
ASP	Antimicrobial stewardship programme
AWaRe	Access, watch and reserve
BL	British Library
Bodleian	Bodleian Library, The University of Oxford
BWC	Burroughs Wellcome and Company
CDD	Cosmetics, Devices and Drugs
CRO	Commonwealth Relation Office
COVID	Coronavirus disease
CP	Colombo Plan
DCC	District Development Councils
DCBL	Distilleries Company (Biochemical) Limited
DDHS	Deputy Director of Health Services
DDT	Dichloro-diphenyl-trichloroethane
DG	Director-General
DGHS	Director General of Health Services
DHS	Director of Health Services
DMSS	Director of Medical and Sanitary Services
DoH	Department of Health
DP	Dual practice
DS	District Councils
EB	Executive Board
ECA	Expert committee on antibiotics
ECVD	Expert committee on venereal diseases
ELM	Essential List of Medicines
FCO	Foreign and Commonwealth Office
FO	Foreign Office
GAP	Global Action Plan
GLASS	Global Antimicrobial Resistance Surveillance System
GoSL	Government of Sri Lanka
GMOA	Government Medical Officers Association
HFA	Health for All
HIV	Human immunodeficiency virus
HMP	Health Master Plan
HQ	Headquarters
HRH	Human resources for health
IBRD	International Bank for Reconstruction and Development
ILO	International Labour Office
IMF	International Monetary Fund
IPC	Infection prevention and control
IRIS	Institutional Repository for Information Sharing
JICA	Japan International Cooperation Agency
JVP	Janatha Vimukthi Peramuna
LMIC	Low- and middle-income country

LSSP	Lanka Sama Samaja Paksha
MEP	Mahajana Eksath Peramuna
MO	Medical Officer
MOH	Medical officer of health
MoH	Ministry of Health
MPTF	Modified policy triangle framework
MRC	Medical Research Council
MRSA	Methicillin-resistant staphylococcus aureus
NAP	National action plan
NARA	US National Archives and Records Administration at College Park,
NGO	Non-governmental organisation
NLP	National laboratory policy
NMDP	National medicinal drug policy
NMRA	National Medicinal Regulatory Authority
NSP	National strategic plan
NSPSL	National Strategic Plan of Sri Lanka
NWP	North Western Province
OOP	Out-of-pocket
OPD	Outpatient departments
OTC	Over the counter
PAM	Penicillin aluminium monostearate
PHC	Primary healthcare
PM	Prime Minister
PMS	Post-marketing surveillance
PE	Podbielniak Extractors
PST	Purposive sampling technique
PTF	Presidential task force
RC	Regional Committee
RD	Regional Director
RLAL	Red-light antibiotics list
RO	Regional office
RSEA	Records of South-East Asia Regional Office, Delhi (WHO)
SEA	South-East Asia
SEARO	South-East Asia Regional Office
SEATO	Southeast Asia Treaty Organization
SLCM	Sri Lanka College of Microbiologists
SLFP	Sri Lanka Freedom Party
SLML	Sri Lanka Medical Library
SLNA	Sri Lanka National Archives
SPC	State Pharmaceuticals Corporation
TB	Tuberculosis
TNA	The National Archives, UK (Kew)
TNC	Transnational Companies
UF	User fee
BHC	British High Commissioner
UN	United Nations
UNICEF	United Nations Children's Fund
UNP	United National Party
UNRRA	United Nations Relief and Rehabilitation Administration
UNTAA	United Nations Technical Assistance Administration
USD	United States Dollar
USOM	United States' Organisation Mission
VD	Venereal diseases
WB	World Bank
WBGA	World Bank Global Archives, Washington DC
WHA	World Health Assembly

Bibliography

Primary Sources

Bodleian Libraries (Bodleian)

MS. OXFAM PRG/1/2/1 Folder 3 1969-1969, Ceylon Report of the tour in July and August 1968.

MS. OXFAM PRG/1/2/2 Folder 3 1974-1975, Filed Committee for Asia, Sri Lanka, 1974.

British Library (BL)

Kaipainen, W. J Does Induced Resistance of Bacteria to one Antibiotic result in Simultaneous Sensitivity Changes to other Antibiotics? Helsinki; Kirjapaino OyLiike, 1951.

Pharmaceutical reforms by a medical friend, Pharmaceutical Third World Experience, Colombo, Faculty of Medicine, Colombo Campus, 1978.

Department of National Archives Sri Lanka (SLNA)

Newspaper- Lankadeepa

“Prime minister listens to companies of TB patients”, Lankadeepa, 11 January 1952.

“Government doctors take the final decision” Lankadeepa, January 24, 1950, 1.

“Medical Sector is criticised”, Lankadeepa, January 28, 1950, 1.

“Hundreds of pregnant mothers cannot admit as no beds in hospital: 302 beds and more than 500 patients “Lankadeepa, 20 March 1950

“No issues with commonwealth” (all the extracts of this paper is translated to English), Lankadeepa, April 20, 1950,

“Chargers against the Director”, Lankadeepa, April 6, 1950.

“Director was aware of our stand “, Lankadeepa, April 17, 1950, 6:

“implement this report fully without being caught in the battle of the PM post”, Lankadeepa, May 2, 1950.

“It is time to implement the Cumpston’s recommendations” Lankadeepa, 02, May 1950,6

“Doctors protest against Viennese doctors” Lankadeepa, 18 May 1950.

“No important medicines Welisara hospital”, Lankadeepa, 18 May 1950.

“Minister will implement the report”, Lankadeepa, 01 June 1950,1

“Overcrowding due to lack of drugs”, Lankadeepa, 02 June 1950.1

“Mayor ordered to check the water quality of the capital”, Lankadeepa, 2 July 1950.

“Director Order an investigation on shortage of drugs”, Lankadeepa, 1 August 1950.

“Government medical stores”, Lankadeepa, 1 September 1950.6

Newspaper- Ceylon Daily News

“Plan campaign to wipe out malaria”, Ceylon Daily News, January 28, 1958, 1.

“Medical director’s order overruled”, Ceylon Daily News, 2 February 1951.

“1950 recorded the highest balance of trade, February 9, 1951,
 “1950 recorded the highest balance of trade”, Ceylon Daily News, 9 February 1951, 1

“A search for economic policy, by a staff correspondent”, Ceylon Daily News, 19 February 1951.6
 “Food drive extends to rubber estate”, Ceylon Daily News, July 3, 1951, 1
 “Health Minister resigns”, Ceylon Daily News, July 13, 1951, 1
 “Higher-income to pay more” and “Country’s finance stability maintained”, Ceylon Daily News,
 13 July 1951
 “Drug supply position improving”, Ceylon Daily News, 4, July 1951, 1.
 “Order to buy drugs from any market”, Ceylon Daily News, 14 July 1951, 1.
 “Drug to buy from any market”, Ceylon Daily News, 14 July 1951, 1.
 “Capital aid for private industries”, Ceylon Daily News, January 31, 1959.
 “Order to buy drugs from any market”, Ceylon Daily News, 14 July 1951, 1.
 “The progress of Ceylon's six-year plan, Ceylon Daily News, July 19, 1951.
 “Government is becoming dictatorial”, Ceylon Daily News, 21 January 1958.
 “Plan campaign to wipe out malaria”, Ceylon Daily News, 28 January 1958, 1.

Dr J. H. L. Cumpston, Sessional Paper III, Report on the Medical and Public Health Organisations of Ceylon, 1950.

Development Councils Act 35 of 1980.

Provincial Councils Act No. 42 of 1987.

IMF eLibrary

An Overview of Economic Developments in Sri Lanka, 1996, International Monetary Fund.

Institutional Repository for Information Sharing (IRIS)

Reports of the Director General of WHO

WHO No 9, Supplementary report of the Interim Commission to the first WHA, 1948.

WHO No 16, Annual Report of the DG, 1948.

WHO No 24, Work of WHO, 1949.

WHO No 30, The work of WHO, 1950.

WHO No 45, The work of WHO, 1952.

WHO No 51, The work of WHO, 1953.

WHO No 59, The work of WHO, 1954.

WHO No 56, Work of WHO, 1966.

WHO No 75, The work of WHO, 1956.

WHO No 90, The work of WHO, 1958.

WHO No 98, The work of WHO, 1959.
WHO No 98, The work of WHO, 1959.
WHO No 147, The work of WHO 1964.
WHO No 139, Work of WHO, 1964, 37.
WHO No 180 The work of WHO, 1969:
WHO No 188, The work of WHO, 1970.
WHO No 188, The work of WHO, 1970.
WHO No 197 The work of WHO, 1971.
WHO No 205, The Work of WHO, 1972.
WHO No 205, The Work of WHO, 1972.
WHO No 221, The work of WHO, 1974.

Annual reports of the regional director of the SEA

SEA/RC9/2, Eighth annual report of the RD to the RC for SEA, July 1955–July 1956.
SEA/RC11/2, Tenth Report of the RD to the RC of the SEA, 1957-1958.
SEA/RC/13/2, Twelfth Annual Report of the RD of SEA August 1959 to July 1960.
SEA/RC15/2, Twelfth Annual Report of the RD of SEA, August 1961-July 1962.
S SEA/RC16/2, Fifteenth annual report of the Regional Director to the RC for SEA, 1963.
SEA/RC18/2, Seventeenth annual report of the Regional Director to the RC for SEA, August 1964-July 1965.
SEA/RC20/2, Nineteenth Annual Report of the RD to the RC of SEA, August 1966-July 1967.
SEA/RC22/2, Twenty-First Annual Report of the RD to the RC of SEA, August 1968-July 1969.
SEA/RC23/2, Twenty-Second Annual Report of the RD to the RC of SEA, August 1969-July 1970.
SEA/RC/30/2, Twenty-ninth annual report of the RD to the RC for SEA, 1 July 1976–30 June 1977.
SEA/RC32/2, Annual Report of the DG of SEA, 1978-79.
SEA/RC36/2, Annual Report of the Regional Director, SEARO, 1982-83.
SEA/RC73/2, Annual Report of the Regional Director, SEARO, 2019.

WHA records

WHO No 13, The First WHO, Plenary Meetings, Verbatim Records, 1948.
WHO No 21, Second World Health Assembly, Verbatim Records, 1949.
A5/VR/6, Sixth plenary meeting, provisional verbatim record, 7 May 1952.
WHO No 71, Ninth WHA, Verbatim Records, 1956.
Ninth WHA, Seventh plenary meeting, provisional verbatim record, Friday, May 11, 1956.
Twelfth WHA, Geneva: resolutions and decisions: verbatim records, 12-19 May 1959.

WHO No 136, Seventeenth WHA, Part II, Verbatim Records, 1964.

WHO No 248, The World Health Assembly, 407-8, May 1978.

Thirty-First WHA, Geneva: resolutions and decisions: verbatim records, 1979.

Other reports and records

A8/P&B/3, Second report of the Committee on International Quarantine, March 7, 1955.

A9/F&B/7, Third report of the Committee on International Quarantine, April 12, 1956.

EB3/20, UNRRA penicillin plants, Availability of medical supplies for Europe, Special Office for Europe, 1949.

EB5/11, RC for SEA, Report on the second session 1949.

EB6/39, Expert Committee on Antibiotics, 1950: EB6, Programme supplies to governments, 1950.

EB34/11, Review of the Organization's programme in endemic treponematoses and venereal infection, May 1964.

EB25/7, Regional Committee for SEA, report on twelfth session, December 4, 1959.

EB9/Min/6, EB9/Min/6 Rev.1, Minutes of the sixth meeting, Geneva, 23 January 1952.

SEA/RC3/31 Rev.1, A Note by the Ceylon Delegation Epidemic Standard for Quarantine Diseases, September 25, 1950.

Report of Expert Committee on Tuberculosis, Paris, 30 July to 2 August 1947.

WHO technical series report no 23, Expert Committee on Antibiotics, report on the first session, 1950.

WHO technical series number 210, the second report of the Expert Committee on Antibiotics, Geneva, July 11–16, 1960.

WHO No 18, Programme and budget estimates for 1950, 1949.

The first ten years of the WHO, 1948.

The declaration of Alma-Ata. World Health 1988.

Situational analysis of antimicrobial resistance in the South-East Asia Region, 2018.

Joint External Evaluation of International Health Regulations Core Capacities of Democratic Socialist Republic of Sri Lanka, 2017.

Joint External Evaluation of IHR Core Capacities of Democratic Socialist Republic of Sri Lanka, Geneva: WHO; 2017.

Bulletin of the World Health Organization,

Agarwal, S. C "Chloramphenicol resistance of Salmonella species in India, 1959-61". Bulletin of the World Health Organization, 27 (3) 1962

A.Manten, "The non-medical use of antibiotics and the risk of causing microbial drug-resistance" Bulletin of the World Health Organization, 29 (3),(1963):387 - 400.

Jeljaszewicz, J. & Hawiger, J. “The resistance to antibiotics of strains of Staphylococcus aureus isolated in Poland”, Bulletin of the World Health Organization, 35 (2) 1966

Jeljaszewicz, J. & Hawiger, J. “The resistance to antibiotics of strains of Streptococcus viridans, Streptococcus faecalis, Escherichia coli, Pseudomonas aeruginosa, Proteus and Klebsiella isolated in Poland”. Bulletin of the World Health Organization, 35 (2) 1966.

Records of South-East Asia Regional Office, WHO, Delhi (RSEA)

SEA/TB/2, Final Report of reorganisation of Tuberculosis Control in Ceylon (Restricted), A WHO Project by Neubauer and Wilson, February 16, 1956, 3, 10.

SEA/TB/9, Report on assistance to Tuberculosis Laboratory, Intercountry Tuberculosis Programme, (Restricted), July 22, 1957, 1

SEA/VHS/14, Assessment Report on the Statistical Aspect of WHO TB Control Project, (Restricted), 1957

SEA/TB/2, Final Report of Tuberculosis Control in Ceylon (Restricted), A WHO Project by Neubauer and Wilson, February 16, 1956

SEA/TB/Add.1, Ten-Year plan for control of TB in Ceylon, March 4, 1957.

SEA/TB/9, Report on assistance to Tuberculosis Laboratory, Intercountry Tuberculosis Programme, (Restricted), July 22, 1957, 1.

SEA/VHE/41, Notification of the infectious diseases in Ceylon, Restricted, April 12, 1961.

SEA/PHA/45, Ceylon 73, Course in Hospital Administration and Management (Restricted), May 18, RSEA: SEA-TB-112, Assignment Report on TB control in Ceylon, (Restricted), 1971.

SEA-TB-146, Report of the Tuberculosis Control Programme in Sri Lanka (Restricted), October 12, 1977.

Ministry of Health Records, Sri Lanka (MHR)

Cosmetic Device and Drug Act 1980.

National Health Development Project (2003).

Economy and Health, Taking Sri Lanka towards the global best, Draft Commission Report, February 2005.

National Health Laboratory Policy of Ministry of Health, 2006.

The National Medicinal Drug Policy, 2015.

National Medicines Regulatory Authority Act, 2015

The National Health Development Project 2013-2017.

National Strategic Plan for Combating Antimicrobial Resistance in Sri Lanka, 2017-2022.

“Approved list of Pharmaceutical items” (Formulary revision 2016/2017).

“Draft Guideline for Post Marketing Surveillance of medicines”.in Sri Lanka

The national lists of essential medicines (NLEM) 2009 and 2014.

Hospital Infection Control Manual, by the Sri Lanka College of Microbiologists, 2005.

Introduction of authorization for prescribing “red-light” antibiotics, 2016.

Research Priorities in Medical & Dental Services (<http://www.health.gov.lk>).

Rockefeller Archives (RFA)

RG462.K, Box 1: Ceylon (Sri Lanka) - Health Services, 1927, Health Unit at Kurunegala.

Sri Lanka Medical Library (SLML)

Wejagoonawaedene, A. D. P. D, "Presidential address" CMJ, Vol 8, No 1,1963

Arumanayagam P and Mendis, N.M.M, "Typhoid fever in Ceylon," CMJ, Vol 14, No 4, 1969

Wijerama, E. M "Seventy-five years", CMJ Vol 8, No 1, (1963) 23.

Wijeratne, R "Some problems of general practice in Ceylon", CMJ, Vol. 4, No. 3, May 1958

Bibile, Senake, "Antibacterial Drugs", CMJ, Vol 3, No 1, September 1955

Rajasuriya, K "From Russia – with admiration", CMJ, Vol. 14, No. 3,1969

Editorial, "What's a name", CMJ, Vol. 15, No. 4,1970

The National Archives, Kew (TNA)

CAB 135/56, Felix R D Bandaranaike, Minister of Justice, Sri Lanka.

CO 882/4/7, Ceylon: "The Civil Medical Department of Ceylon", 24 June 1876.

DO 35/5363, New Ceylon Government under Solomon Bandaranaike, 1955-1956

DO 189/638, Colombo Plan aid to communist sponsored projects

DO 35/2733, Technical Co-operation Scheme: selection of experts in technical and industrial fields, 1950-51.

DO 35/5558, Recommendations arising out of a report by Donald Barlow FRCS on the thoracic services, 1952

DO 35/5766, Medical and Public Health services in Ceylon: report of visit by Lieutenant General Sir Bennett Hance, 1954

DO 35/5361, Resignation of Dudley Senanayake as Prime Minister of Ceylon, Sir John Kotelawala appointed new Prime Minister, 1953

DO 189/319. Appointment of president and director of Colombo Plan Bureau, 1962-1963

FCO 37/794, Visits of Ministers and Members of Parliament from Ceylon to the UK, 1971.

FCO 37/788, Ceylon internal political situation, 1971

FD 7/427, Working Party on the Resistance of Gonococci to Penicillin: minutes of meetings and reports, 1959-1963.

FO 371//116980, Reports and minutes of meetings of Asian prime ministers in Ceylon: proposed Afro-Asian Conference in Djakarta, later held in Bandung, 1955

FO 371.161129, Political relations: Ceylon, 1961

FO 371/111889, Five Power staff talks on military and political aspects of South East Asia defence: US-UK study group; meetings of SEATO

T 317/1635, Ceylon political crises: UK supply of military equipment, 1971

MH 78/33, Loan of Mr F W Beek to Government of Ceylon to advise on Health Services

OD 27/154, Ceylon, 1967-68

PREM 15/2222, Aid for Sri Lanka: Prime Minister's meeting with Sri Lankan officials; correspondence, 1973-74

T 230/199, Copy of Colombo Plan for Economic Development in S and SE Asia: contributions from India, Pakistan and Ceylon for the annual report, 1950

The US National Archives, College Park, Maryland, (NARA)

RG469 UD 854 B1, Records of U.S. Foreign Assistance Agencies, 1942 - 1963, Records Relating to Ceylon, 1951 - 1953

RG 469, P 132A, B1, Records of U.S. Foreign Assistance Agencies, 1942 - 1963, Near East Central Files: Ceylon. 1953-1954

RG469 P 131A B3, Records of U.S. Foreign Assistance Agencies, 1942 - 1963, Near East Central Files: Ceylon, 1953-1954

The World Bank Digital Archives (WBDA)

1849871, President Eugene Black Round the World Trip – Correspondence – Volume 1, (confidential) 1952 – Ceylon, India, Pakistan.

PUB 6563, Financing health services in developing countries: An agenda for reforms, 1987

Athukorala, Premachandra and Jayasuriya, Sisira, “Macroeconomic Policies, Crises, and Growth in Sri Lanka 1969-90”, Washington DC, The International Bank for Reconstruction and Development / The World Bank Washington, 1994.

S.S. Bhalla and P. Glewwe, P., “Growth and Equity in Developing Countries: A Reinterpretation of the Sri Lankan Experience”. World Bank Econ. Rev. 1, 1986.

The World Bank Global Archives (WBGA)

1578425, United Arab Republic - DDT and Penicillin Project - Correspondence 01

1554091, Ceylon – General Survey Mission – 01, 1951.

1554078, Ceylon - General - 3, 1966.

Wellcome Collection, London (WTA)

PPEBC/E.46, Invitation, programme, list of speakers and participants, abstract of Chain's paper, etc., 1961-62.

PPEBC/E. 47, Editorial correspondence transcript of discussion of Study Group sent to Chain for correction, 1961-62.

PPEBC/E/223/230, Correspondence September–November 1950.

WF/TRC/02/347, Penicillin Advertisements and Propaganda, 1944.
PP/EBC/K.5, "Correspondence, Aschberg, O. and Aschberg, F.", 1946
WF/M/P/16, "Penicillin files: Correspondence with overseas houses", 1946.
WF/M/P/16/05, "New York – Cairo & India – Penicillin", 1946
WF/TRC/02/347, Penicillin Advertisements and Propaganda, 1944.
WF/M/P/16/13: Box 28, "India – Penicillin", 1949.
Library: K21587, Health progress in Ceylon: A Survey by David Montague, 1956, 19.

WHO archives, Geneva (WHOAG)

Ceylon 25, Domiciliary Treatment Service in Ceylon by a Public Health Nurse, 1953.
WHO1-465-7-1, VD expert committee sessions 1948 to 1949
WHO2-L-10-2- 3, 1950=1951 - DR. E.B. Chain (Confidential file) request for visa for the US. 1950-1951

WHO2-DC-VD-18, Treponemal disease control in underdeveloped countries, 1952,
WHO2-DC-TB-SEARO, SEARO, survey of TB control, Ceylon, 1952
WHO3-A10-370-2a, Plans for an intensified antibiotics research programme: standardization of methods
for sensitivity testing, 1960
WHO3-A10-522-2, Scientific group on the establishment of a repository for antibiotics, 18-22 JULY 1961-
1964
WHO3-A10-181-3, Grant to the Karolinska Institute Stockholm for clinical testing of antibiotics (Dr
Friberg), 1960
WHO3-A10-181-4, Grant to University Hospital Seattle: Standardization of antibiotic bacterial sensitivity
testing methodology, 1967.
WHO3-A10-440-1, Seminars and symposia general, 1965
WHO3-A10-181-3 (A), Grant to the Karolinska Institute Stockholm studies on methodology of microbial
sensitivity testing of antibiotics, 1969

M 12/372/3, ILO, World Employment Programme, Co-ordinated in respect of Ceylon, 1971
Technical 3 EDM1 JKT 4, Report of the PTF on the formulation of a national health policy for Shri Lanka,
07, July 1992, IX.

Secondary Sources

- Abeykoon, P., 2019. Financing Common Goods for Health: Sri Lanka. *Health Syst. Reform* 5, 397–401. <https://doi.org/10.1080/23288604.2019.1655358>
- Abeyratne, S., 2004. Economic Roots of Political Conflict: The Case of Sri Lanka. *World Econ.* 27, 1295–1314. <https://doi.org/10.1111/j.1467-9701.2004.00645.x>
- Abraham, E.P., Chain, E., 1940. An enzyme from bacteria able to destroy penicillin. *The Nature* 837.
- Adekoya, I., Maraj, D., Steiner, L., Yaphe, H., Moja, L., Magrini, N., Cooke, G., Loeb, M., Persaud, N., 2021. Comparison of antibiotics included in national essential medicines lists of 138 countries using the WHO Access, Watch, Reserve (AWaRe) classification: a cross-sectional study. *Lancet Infect. Dis.* 21, 1429–1440. [https://doi.org/10.1016/S1473-3099\(20\)30854-9](https://doi.org/10.1016/S1473-3099(20)30854-9)
- Allegranzi, B., Bagheri Nejad, S., Combescure, C., Graafmans, W., Attar, H., Donaldson, L., Pittet, D., 2011. Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis. *Lancet Lond. Engl.* 377, 228–241. [https://doi.org/10.1016/S0140-6736\(10\)61458-4](https://doi.org/10.1016/S0140-6736(10)61458-4)
- Altorf-van der Kuil, W., Schoffelen, A.F., de Greeff, S.C., Thijsen, S.F., Alblas, H.J., Notermans, D.W., Vlek, A.L., van der Sande, M.A., Leenstra, T., 2017. National laboratory-based surveillance system for antimicrobial resistance: a successful tool to support the control of antimicrobial resistance in the Netherlands. *Eurosurveillance* 22, 17–00062. <https://doi.org/10.2807/1560-7917.ES.2017.22.46.17-00062>
- Alwis, S., R, S., Perera, S., De Silva, D., Widanapathirana, N., Wellappuli, N., Ranasinghe, S., Ranasinghe, T., Silva, P., Thomas, Z., Pascal, Z., McIssac, M., 2018. Health Labour Market Analysis: Sri Lanka Ministry of Health, Nutrition and Indigenous Medicine Ministry of Health, Nutrition and Indigenous Medicine -Sri Lanka and World Health Organization.
- Amarasinghe, S.N., Dalpatadu, K.C.S., Rannan-Eliya, R., 2018. Sri Lanka Health Accounts :National Health Expenditure 1990-2016.
- American Journal of Public Health, 1948. The First World Health Assembly. *Am. J. Public Health Nations Health* 38, 1448–1450.
- Aminov, R.I., 2010. A Brief History of the Antibiotic Era: Lessons Learned and Challenges for the Future. *Front. Microbiol.* 1. <https://doi.org/10.3389/fmicb.2010.00134>
- Amrith, S., 2005. Asian internationalism: Bandung's echo in a colonial metropolis. *Inter-Asia Cult. Stud.* 6. <https://doi.org/10.1080/14649370500316869>
- Amrith, S., 2004. In Search of a 'Magic Bullet' for Tuberculosis: South India and Beyond, 1955–1965. *Soc. Hist. Med.* 17, 113–130. <https://doi.org/10.1093/shm/17.1.113>
- Amrith, S.S., 2006. Decolonizing international health [electronic resource]: India and Southeast Asia, 1930-65 / Sunil S. Amrith., Cambridge imperial and post-colonial studies series. Palgrave Macmillan, Basingstoke [England].

- Anderson, M., Schulze, K., Cassini, A., Plachouras, D., Mossialos, E., 2019. A governance framework for development and assessment of national action plans on antimicrobial resistance. *Lancet Infect. Dis.* 19, e371–e384. [https://doi.org/10.1016/S1473-3099\(19\)30415-3](https://doi.org/10.1016/S1473-3099(19)30415-3)
- Arendt, J.N., 2012. The Demand for Health Care by the Poor under Universal Health Care Coverage. *J. Hum. Cap.* 6, 316–335. <https://doi.org/10.1086/669139>
- Asiedu, K., Fitzpatrick, C., Jannin, J., 2014. Eradication of Yaws: Historical Efforts and Achieving WHO's 2020 Target. *PLoS Negl. Trop. Dis.* 8, e3016. <https://doi.org/10.1371/journal.pntd.0003016>
- Attanayake, N., 2008. Decentralization, MSc course in Medical Administration, Postgraduate Institute of Medicine, Colombo, Sri Lanka.
- Attanayake, N., Siyambalagoda, L., 2003. An inquiry into the regulation of pharmaceuticals and medical practice in Sri Lanka, HEFP working paper 05-03, LSHTM, 2003.
- Atukorala, S.D., 1998. Monitoring effectiveness of controlling hospital acquired infections by prevalence surveys. *Ceylon Med. J.* 43, 134–137.
- Aturupane, H., 2017. Public Investment in Education: Benefits, Challenges and Opportunities, in: Cooray, N.S., Abeyratne, S. (Eds.), *Decentralization and Development of Sri Lanka Within a Unitary State*. Springer, Singapore, pp. 179–201. https://doi.org/10.1007/978-981-10-4259-1_8
- Bagchi, A., 1988. Sri Lanka's Experiment in Controlled Decentralisation: Learning from India. *Econ. Polit. Wkly.* 23, 25–28.
- Barber, M., Rozwadowska-Dowzenko, M., 1948. Infection by penicillin-resistant staphylococci. *Lancet Lond. Engl.* 2, 641–644.
- Barber, M., Waterworth, P.M., 1962. Antibacterial Activity of the Penicillins. *Br. Med. J.* 1, 1159–1164.
- Baru, R.V., 1994. Structure and Utilisation of Health Services: An Inter-State Analysis. *Soc. Sci.* 22, 98–111. <https://doi.org/10.2307/3517917>
- Baughn, C.C., Yaprak, A., 1996. Economic Nationalism: Conceptual and Empirical Development. *Polit. Psychol.* 17, 759–778. <https://doi.org/10.2307/3792137>
- Berridge, V., 2002. The Origin of the Black Report: A Conversation with Richard Wilkinson. *Contemp. Br. Hist.* 16, 120–122. <https://doi.org/10.1080/713999460>
- Bhalla, S.S., Glewwe, P., 1986. Growth and Equity in Developing Countries: A Reinterpretation of the Sri Lankan Experience. *World Bank Econ. Rev.* 1, 35–63. <https://doi.org/10.1093/wber/1.1.35>
- Birgand, G., Castro-Sánchez, E., Hansen, S., Gastmeier, P., Lucet, J.-C., Ferlie, E., Holmes, A., Ahmad, R., 2018. Comparison of governance approaches for the control of antimicrobial resistance: Analysis of three European countries. *Antimicrob. Resist. Infect. Control* 7, 28. <https://doi.org/10.1186/s13756-018-0321-5>
- Björkman, J.W., 1985. Health Policy and Politics in Sri Lanka: Developments in the South Asian Welfare State. *Asian Surv.* 25, 537–552. <https://doi.org/10.2307/2644406>

- Bradley, E.H., Curry, L.A., Devers, K.J., 2007. Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Serv. Res.* 42, 1758–1772.
<https://doi.org/10.1111/j.1475-6773.2006.00684.x>
- Brewer, G.D., DeLeon, P., 1983. *The foundations of policy analysis*. Brooks/Cole Pub. Co., Pacific Grove, Calif.
- Britten, N., 2006. Qualitative Interviews, in: *Qualitative Research in Health Care*. John Wiley & Sons, Ltd, pp. 12–20. <https://doi.org/10.1002/9780470750841.ch2>
- Brogan, D.M., Mossialos, E., 2016. A critical analysis of the review on antimicrobial resistance report and the infectious disease financing facility. *Glob. Health* 12, 8. <https://doi.org/10.1186/s12992-016-0147-y>
- Buchanan, J.M., 1963. The Economics of Earmarked Taxes. *J. Polit. Econ.* 71, 457–469.
- Bud, R., 2009. *Penicillin: Triumph and Tragedy*, 1 edition. ed. Oxford University Press, USA, Oxford.
- Budd, E., Cramp, E., Sharland, M., Hand, K., Howard, P., Wilson, P., Wilcox, M., Muller-Pebody, B., Hopkins, S., 2019. Adaptation of the WHO Essential Medicines List for national antibiotic stewardship policy in England: being AWaRe. *J. Antimicrob. Chemother.* 74, 3384–3389.
<https://doi.org/10.1093/jac/dkz321>
- CDC, 2021. Join the AMR Challenge [WWW Document]. *Cent. Dis. Control Prev.* URL <https://www.cdc.gov/drugresistance/intl-activities/amr-challenge.html> (accessed 3.24.21).
- Chain, E., Florey, H.W., Gardner, A.D., Heatley, N.G., Jennings, M.A., Orr-Ewing, J., Sanders, A.G., Peltier, L.F., 2005. THE CLASSIC: Penicillin as a Chemotherapeutic Agent. *Clin. Orthop. Relat. Res.* 439, 23. <https://doi.org/10.1097/01.blo.0000183429.83168.07>
- Chaudhury, N., Hammer, J., Kremer, M., Muralidharan, K., Rogers, F.H., 2006. Missing in Action: Teacher and Health Worker Absence in Developing Countries. *J. Econ. Perspect.* 20, 91–116.
<https://doi.org/10.1257/089533006776526058>
- Chen, X.-S., 2019. Turning off the tap: sustaining elimination of congenital syphilis through the programme targeting high-risk groups. *J. Glob. Health* 9, 020312.
<https://doi.org/10.7189/jogh.09.020312>
- Clark, R., 2011. *The Life of Ernst Chain: Penicillin and Beyond* - Ronald Clark.
- Clovis, J.B., Brilliant, M.G.S., Matthews, D.C., Cobban, S.J., Romanow, P.R., Filiaggi, M.J., McNally, M.E., 2012. Using interviews to construct and disseminate knowledge of oral health policy. *Int. J. Dent. Hyg.* 10, 91–97. <https://doi.org/10.1111/j.1601-5037.2011.00520.x>
- Cnossen, W.M., Niekus, H., Nielsen, O., Vegt, M., Blansjaar, B.A., 1995. Ceftriaxone treatment of penicillin resistant neurosyphilis in alcoholic patients. *J. Neurol. Neurosurg. Psychiatry* 59, 194–195. <https://doi.org/10.1136/jnnp.59.2.194>
- Colombo Page, 2021. Sri Lanka : Four health service unions protest decision to vaccinate only families of state doctors.

- Cooray, N.T., 1990. "Decentralisation of Health Services in Sri Lanka", in Health system decentralisation, Mills A, Vaughan P, Smith L, Tabibzadeh (ed). World Health Organisation.
- Cull, N.J., 2013. The Decline and Fall of the United States Information Agency. *Georget. J. Int. Aff.* Vol 14 No 2 Summer/Fall 2013 Pp 223-226.
- Dalpatadu, K.C.S., 2011. Health Policies of Sri Lanka after Independence, MSc course in Medical Administration, Postgraduate Institute of Medicine, Colombo, Sri Lanka.
- De Kraker, M.E.A., Stewardson, A.J., Harbarth, S., 2016. Will 10 Million People Die a Year due to Antimicrobial Resistance by 2050? *PLoS Med.* 13. <https://doi.org/10.1371/journal.pmed.1002184>
- de Silva, K.M., 1975. SRI LANKA'S FIRST DECADE OF INDEPENDENCE: PHASE II IN THE TRANSFER OF POWER. *Verfass. Recht Übersee Law Polit. Afr. Asia Lat. Am.* 8, 331–344.
- De Silva, K.M., 1972. Sri Lanka (Ceylon) the new republican constitution. *Verfass. Recht Übersee Law Polit. Afr. Asia Lat. Am.* 5, 239–249.
- De Silva, M.D., 2017. How many Medical specialists do Ministry of Health- Sri Lanka need by 2025: Use of system dynamics modelling for policy decision. *Ceylon Med. J.* 62, 141–148. <https://doi.org/10.4038/cmj.v62i3.8517>
- De Silva, P., Liyanage, I., Silva, S., Jayawardana, M., Liyanage, C., Karunathilake, I., 2013. Migration of Sri Lankan medical specialists. *Hum. Resour. Health* 11, 21. <https://doi.org/10.1186/1478-4491-11-21>
- de Silva, Y., Amaratunge, H., Wijekoon, C.N., Jayawardane, P., 2017. Antibiotic Self-Medication (ASM) Among Non-Academic Staff Members of a Sri Lankan University; A Descriptive Cross Sectional Study. *Clin. Ther.* 39, e78. <https://doi.org/10.1016/j.clinthera.2017.05.241>
- Delpachithra, C., Jayasinghe, S., 2001. Overcrowding and "floor" patients in state hospitals: institutions can make a difference. *Ceylon Med. J.* Vol. 46, No. 2, June 2001.
- Dimova, A., Rohova, M., Hasardzhiev, S., Spranger, A., 2018. An innovative approach to participatory health policy development in Bulgaria: The conception and first achievements of the Partnership for Health. *Health Policy* 122, 81–86. <https://doi.org/10.1016/j.healthpol.2017.11.002>
- Doernberg, S.B., Chambers, H.F., 2017. Antimicrobial Stewardship Approaches in the Intensive Care Unit. *Infect. Dis. Clin.* 31, 513–534. <https://doi.org/10.1016/j.idc.2017.05.002>
- Dryden, M., Johnson, A.P., Ashiru-Oredope, D., Sharland, M., 2011. Using antibiotics responsibly: right drug, right time, right dose, right duration. *J. Antimicrob. Chemother.* 66, 2441–2443. <https://doi.org/10.1093/jac/dkr370>
- Eggleston, K., Bir, A., 2006. Physician dual practice. *Health Policy Amst. Neth.* 78, 157–166. <https://doi.org/10.1016/j.healthpol.2005.09.007>
- Ericsson, H.M., Sherris, J.C., 1971. Antibiotic sensitivity testing. Report of an international collaborative study. *Acta Pathol. Microbiol. Scand.*

- Etiaba, E., Uguru, N., Ebenso, B., Russo, G., Ezumah, N., Uzochukwu, B., Onwujekwe, O., 2015. Development of oral health policy in Nigeria: an analysis of the role of context, actors and policy process. *BMC Oral Health* 15, 56. <https://doi.org/10.1186/s12903-015-0040-8>
- FAO, 2021. Legislation | Antimicrobial Resistance | Food and Agriculture Organization of the United Nations [WWW Document]. Food Agric. Organ. FAO U. N. URL <http://www.fao.org/antimicrobial-resistance/key-sectors/legislation/en/> (accessed 9.9.21).
- Fernando, D., 2000. Health care systems in transition III. Sri Lanka, Part I. An overview of Sri Lanka's health care system. *J. Public Health* 22, 14–20. <https://doi.org/10.1093/pubmed/22.1.14>
- Fernando, M., Cooray, T., 1990. “Sri Lanka: deep roots in primary health care” in E. Tarimo & A. Creese (ed), *Achieving Health for All by the Year 2000, Midway reports of country experiences*. World Health Organization Geneva.
- Fernando, M.M.P.S.C., Luke, W. a. N.V., Miththinda, J.K.N.D., Wickramasinghe, R.D.S.S., Sebastiampillai, B.S., Gunathilake, M.P.M.L., Silva, F.H.D.S., Premaratna, R., 2017. Extended spectrum beta lactamase producing organisms causing urinary tract infections in Sri Lanka and their antibiotic susceptibility pattern -A hospital based cross sectional study. *BMC Infect. Dis.* 17, 138. <https://doi.org/10.1186/s12879-017-2250-y>
- Fernando, T., 1982. Political and Economic Development in Sri Lanka. *Curr. Hist.* 81, 211–228.
- Ferrinho, P., Van Lerberghe, W., Fronteira, I., Hipólito, F., Biscaia, A., 2004. Dual practice in the health sector: review of the evidence. *Hum. Resour. Health* 2, 14. <https://doi.org/10.1186/1478-4491-2-14>
- Fleming, A., 1929. On the Antibacterial Action of Cultures of a Penicillium, with Special Reference to their Use in the Isolation of *B. influenzae*. *Br. J. Exp. Pathol.* 10, 226–236.
- Flick, U., 2018. *An Introduction to Qualitative Research*. SAGE.
- Freeman, S., 2015. Professor who found a niche in drugs industry; Sophie Freeman meets Professor Mike Rubenstein , chief executive of Quay Pharmaceuticals, [WWW Document]. Free Libr. Farlex. URL <https://www.thefreelibrary.com> (accessed 10.17.21).
- Fretty, R.E., 1969. Ceylon: Election-Oriented Politics. *Asian Surv.* 9, 99–103. <https://doi.org/10.2307/2642308>
- Frieden, T.R., 2014. Six Components Necessary for Effective Public Health Program Implementation. *Am. J. Public Health* 104, 17–22. <https://doi.org/10.2105/AJPH.2013.301608>
- Gagliardi, A.R., Dobrow, M.J., 2016. Identifying the conditions needed for integrated knowledge translation (IKT) in health care organizations: qualitative interviews with researchers and research users. *BMC Health Serv. Res.* 16, 256. <https://doi.org/10.1186/s12913-016-1533-0>
- Galloway, M., Nadin, L., 2001. Benchmarking and the laboratory. *J. Clin. Pathol.* 54, 590–597. <https://doi.org/10.1136/jcp.54.8.590>

- García-Prado, A., González, P., 2011. Whom do physicians work for? An analysis of dual practice in the health sector. *J. Health Polit. Policy Law* 36, 265–294. <https://doi.org/10.1215/03616878-1222721>
- Gibson, T., 1982. Sri Lanka: Economic Growth and Equity. *Contemp. Southeast Asia* 4, 174–183.
- Gilson, L., McIntyre, D., 2005. Removing user fees for primary care in Africa: the need for careful action. *BMJ* 331, 762–765. <https://doi.org/10.1136/bmj.331.7519.762>
- Gould, K., 2016. Antibiotics: from prehistory to the present day. *J. Antimicrob. Chemother.* 71, 572–575. <https://doi.org/10.1093/jac/dkv484>
- Govindaraj, R., Navaratne, K.V., Cavagnero, E., Seshadri, S., 2014. Health Care in Sri Lanka : What Can the Private Health Sector Offer?
- Gradmann, C., 2016. Re-Inventing Infectious Disease: Antibiotic Resistance and Drug Development at the Bayer Company 1945-80. *Med. Hist.* 60, 155–180. <https://doi.org/10.1017/mdh.2016.2>
- Gradmann, C., 2013. Sensitive Matters: The World Health Organisation and Antibiotic Resistance Testing, 1945–1975. *Soc. Hist. Med.* 26, 555–574. <https://doi.org/10.1093/shm/hkt018>
- Gradmann, C., 2011. Magic bullets and moving targets: antibiotic resistance and experimental chemotherapy, 1900-1940. *Dynamis Granada Spain* 31, 305–321. <https://doi.org/10.4321/s0211-95362011000200003>
- Guest, G., Namey, E., Chen, M., 2020. A simple method to assess and report thematic saturation in qualitative research. *PLOS ONE* 15, e0232076. <https://doi.org/10.1371/journal.pone.0232076>
- Gunadasa, S., 2020. The lessons of the 1953 mass uprising (hartal) in Sri Lanka [WWW Document]. World Social. Web Site. URL <https://www.wsws.org/en/articles/2020/09/02/hart-s02.html> (accessed 11.1.21).
- Gunatilleke, G., 2005. The Right to Development in Sri Lanka, in: *Reflections on the Right to Development*. SAGE Publications India Pvt Ltd, New Delhi, pp. 155–207. <https://doi.org/10.4135/9788132102144>
- Gunatilleke, N., 2020. Over 40,000 quack doctors in Sri Lanka - GMOA. *Dly. News*.
- Gunawardana, R.A.L.H., 1985. *Obstetrics and Theories of Reproduction in Ancient and Early Medieval Sri Lanka*.
- Gunawardana, A., 2017. Intergovernmental Fiscal Framework for Local Government and Centre-Local Revenue and Expenditure Sharing: A Comparative Analysis, in: Cooray, N.S., Abeyratne, S. (Eds.), *Decentralization and Development of Sri Lanka Within a Unitary State*. Springer, Singapore, pp. 61–91. https://doi.org/10.1007/978-981-10-4259-1_4
- Gunawardana, R.A.L.H., 1978. Immersion as Therapy - Archaeological and Literary Evidence on an Aspect of Medical Practice in Precolonial Sri Lanka. *Sri Lanka J. Humanit.* IV.
- Hacking, T., 2019. The SDGs and the sustainability assessment of private-sector projects: theoretical conceptualisation and comparison with current practice using the case study of the Asian

- Development Bank. *Impact Assess. Proj. Apprais.* 37, 2–16.
<https://doi.org/10.1080/14615517.2018.1477469>
- Haque, M., Sartelli, M., McKimm, J., Abu Bakar, M., 2018. Health care-associated infections – an overview. *Infect. Drug Resist.* 11, 2321–2333. <https://doi.org/10.2147/IDR.S177247>
- Harder, A., 2012. The Politics of Impartiality: The United Nations Relief and Rehabilitation Administration in the Soviet Union, 1946–7. *J. Contemp. Hist.* 47, 347–369.
<https://doi.org/10.1177/0022009411431713>
- Hewa, S., 2012. British colonial politics and public health: the Rockefeller Foundation’s effort to develop public health nursing in Sri Lanka. *Galle Med. J.* 17, 27–31.
<https://doi.org/10.4038/gmj.v17i2.4920>
- Hewa, S., 2011. Sri Lanka’s approach to Primary Health Care: a success story in South Asia. *Galle Med. J.* 16, 24–30. <https://doi.org/10.4038/gmj.v16i2.3749>
- Heyman, G., Cars, O., Bejarano, M.-T., Peterson, S., 2014. Access, excess, and ethics—towards a sustainable distribution model for antibiotics. *Ups. J. Med. Sci.* 119, 134–141.
<https://doi.org/10.3109/03009734.2014.904958>
- Hipgrave, D.B., Hort, K., 2014. Dual practice by doctors working in South and East Asia: a review of its origins, scope and impact, and the options for regulation. *Health Policy Plan.* 29, 703–716.
<https://doi.org/10.1093/heapol/czt053>
- Holloway, K.A., Rosella, L., Henry, D., 2016. The Impact of WHO Essential Medicines Policies on Inappropriate Use of Antibiotics. *PLOS ONE* 11, e0152020.
<https://doi.org/10.1371/journal.pone.0152020>
- Hsiao, W.C., Li, K.T., 2000. A Preliminary Assessment of Sri Lanka’s Health Sector and Steps Forward. Institute of Policy Studies Health Policy Programme Sri Lanka.
- Huttner, B., Goossens, H., Verheij, T., Harbarth, S., 2010. Characteristics and outcomes of public campaigns aimed at improving the use of antibiotics in outpatients in high-income countries. *Lancet Infect. Dis.* 10, 17–31. [https://doi.org/10.1016/S1473-3099\(09\)70305-6](https://doi.org/10.1016/S1473-3099(09)70305-6)
- Institute of Policy Studies (Ed.), 2007. *Mahinda Chintana: a commentary on policy options*, Research studies, working paper series. Institute of Policy Studies, Colombo.
- James, C.D., Hanson, K., McPake, B., Balabanova, D., Gwatkin, D., Hopwood, I., Kirunga, C., Knippenberg, R., Meessen, B., Morris, S.S., Preker, A., Souteyrand, Y., Tibouti, A., Villeneuve, P., Xu, K., 2006. To retain or remove user fees?: reflections on the current debate in low- and middle-income countries. *Appl. Health Econ. Health Policy.* 5, 137–153.
<https://doi.org/10.2165/00148365-200605030-00001>
- Jayakody, L., 2015. The National Medicines Regulatory Authority Act: its birth, provisions and challenges. *J. Ceylon Coll. Physicians* 46, 53–58.
- Jayamanna, D., 2020. Blacklisted drug company behind attack on NMRA Chairman. *CeylonToday*.

- Jayaseelan, S., Ramaswamy, D., Dharmaraj, S., 2014. Pyocyanin: production, applications, challenges and new insights. *World J. Microbiol. Biotechnol.* 30, 1159–1168. <https://doi.org/10.1007/s11274-013-1552-5>
- Jayasuriya, L., 2010. *Taking Social Development Seriously: The Experience of Sri Lanka*. SAGE Publications India.
- Jayasuriya, L., 2004. The Colonial Lineages of the Welfare State, in: Kelegama, S. (Ed.), *Economic Policy in Sri Lanka: Issues and Debates*, NA. SAGE Publications Ltd, New Delhi, pp. 403–426.
- Jayatilleke, K., 2020. Challenges in Implementing Surveillance Tools of High-Income Countries (HICs) in Low Middle Income Countries (LMICs). *Curr. Treat. Options Infect. Dis.* 1–11. <https://doi.org/10.1007/s40506-020-00229-2>
- Jayatilleke, K., 2017. Infection prevention and control in Sri Lankan hospitals in relation to WHO Guidelines. *Sri Lankan J. Infect. Dis.* 7, 2–9. <https://doi.org/10.4038/sljid.v7i1.81>
- Jayaweera, J.A.A.S., Kumbukgolla, W.W., 2017. Antibiotic resistance patterns of methicillin-resistant *Staphylococcus aureus* (MRSA) isolated from livestock and associated farmers in Anuradhapura, Sri Lanka. *Germs* 7, 132–139. <https://doi.org/10.18683/germs.2017.1118>
- Jayaweerasingham, M., Angulmaduwa, S., Liyanapathirana, V., 2019. Knowledge, beliefs and practices on antibiotic use and resistance among a group of trainee nurses in Sri Lanka. *BMC Res. Notes* 12, 601. <https://doi.org/10.1186/s13104-019-4640-2>
- Jennings, I., 1954. Politics in Ceylon Since 1952. *Pac. Aff.* 27, 338–352. <https://doi.org/10.2307/2753075>
- Johnson, T.P., 2014. Snowball Sampling: Introduction, in: *Wiley StatsRef: Statistics Reference Online*. American Cancer Society. <https://doi.org/10.1002/9781118445112.stat05720>
- Jones, D.M., 2015. *The Sri Lankan Path to Health for All from the Colonial Period to Alma-Ata*. Orient Blackswan.
- Jones, M., 2020. *Striving for Equity: Healthcare in Sri Lanka from Independence to the Millennium, 1948–2000*. S.l.
- Jones, M., 2016. Policy Innovation and Policy Pathways: Tuberculosis Control in Sri Lanka, 1948–1990. *Med. Hist.* 60, 514–533. <https://doi.org/10.1017/mdh.2016.58>
- Jones, M., 2009. *The Hospital System and Health Care - Research Database*, The University of York.
- Jones, Margaret, 2009. *The Hospital System and Health Care: Sri Lanka, 1815-1960*. Orient Black Swan, New Delhi.
- Jones, M., 2004a. *Health Policy in Britain's Model Colony: Ceylon, 1900-1948*. Orient Blackswan.
- Jones, M., Liyanage, C., 2018. Traditional Medicine and Primary Health Care in Sri Lanka: Policy, Perceptions, and Practice. *Asian Rev. World Hist.* 6, 157–184. <https://doi.org/10.1163/22879811-12340029>
- JPIAMR, 2020. Strategic Research and Innovation Agenda | JPIAMR [WWW Document]. *Jt. Program. Initiat. Antimicrob. Resist.* URL <https://www.jpiaamr.eu/about-jpiaamr/sria/> (accessed 9.13.21).

- Kakkar, M., Sharma, A., Vong, S., 2017. Developing a situation analysis tool to assess containment of antimicrobial resistance in South East Asia. *BMJ* 358, j3760. <https://doi.org/10.1136/bmj.j3760>
- Kearney, R.N., 1977. A Note on the Fate of the 1971 Insurgents in Sri Lanka. *J. Asian Stud.* 36, 515–519. <https://doi.org/10.2307/2054101>
- Kearney, R.N., 1967. New Directions in the Politics of Ceylon. *Asian Surv.* 7, 111–116. <https://doi.org/10.2307/2642522>
- Kearney, R.N., 1964. Sinhalese Nationalism and Social Conflict in Ceylon. *Pac. Aff.* 37, 125–136. <https://doi.org/10.2307/2753947>
- Kearney, R.N., 1962. The New Political Crises of Ceylon. *Asian Surv.* 2, 19–27. <https://doi.org/10.2307/3023436>
- Keerthisinghe, L., 2013. TO SRI LANKA'S GREAT FRIEND JAPAN WITH LOVE, *Daily Mirror* online, 13/03/2013.
- Keith, R.S., 2018. The importance of the Alma Ata principles of equity and voice, through intersectoral investment and leadership, in achieving the health and nutrition Sustainable Development Goals by 2030. *World Nutr.* 9, 121–126. <https://doi.org/10.26596/wn.201892121-126>
- Kelegama, S., 2000. Development in Independent Sri Lanka: What Went Wrong? *Econ. Polit. Wkly.* 35, 1477–1490.
- Kentikelenis, A.E., 2015. Structural adjustment and public spending on health: Evidence from IMF programs in low-income countries. *Soc. Sci.* 8.
- Khan, M.S., Durrance-Bagale, A., Legido-Quigley, H., Mateus, A., Hasan, R., Spencer, J., Hanefeld, J., 2019. 'LMICs as reservoirs of AMR': a comparative analysis of policy discourse on antimicrobial resistance with reference to Pakistan. *Health Policy Plan.* 34, 178–187. <https://doi.org/10.1093/heapol/czz022>
- Klein, I., 1988. Plague, Policy and Popular Unrest in British India. *Mod. Asian Stud.* 22, 723–755.
- Knight, G.M., Raviglione, M.C., White, R.G., 2020. No antimicrobial resistance research agenda without tuberculosis. *Lancet Glob. Health* 8, e987–e988. [https://doi.org/10.1016/S2214-109X\(20\)30309-0](https://doi.org/10.1016/S2214-109X(20)30309-0)
- Kodikara, S.U., 1982. *Foreign policy of Sri Lanka: a Third World perspective*. Chanakya Publications, Delhi.
- Kodikara, S.U., 1980. Continuity and Change in Sri Lanka's Foreign Policy: 1974-1979 o. *Asian Surv.* Vol 20 No 9 Sep 1980 Pp 879-890.
- Krockow, E.M., Tarrant, C., 2019. The international dimensions of antimicrobial resistance: Contextual factors shape distinct ethical challenges in South Africa, Sri Lanka and the United Kingdom. *Bioethics* 33, 756–765. <https://doi.org/10.1111/bioe.12604>
- Kumar, R., 2018. Dual practice and inequities in access to healthcare: A qualitative study from Kandy. *Jaffna Med. J.* 30, 6–12. <https://doi.org/10.4038/jmj.v30i1.5>
- Kumar, V., 1986. *India and Sri Lanka _ China relations, 1948-84 / Vijay Kumar*. Uppal, New Delhi.

- Lakshman, W.D., 1987. Active State Control vs. Market Guidance in a Dependent Capitalist Economy: The Case of Sri Lanka, 1970-84. *Soc. Sci.* 15, 10–44. <https://doi.org/10.2307/3517313>
- Lall, S., 1983. *The Multinational Corporation: Nine Essays*. Springer.
- Langford, C., Storey, P., 1993. Sex Differentials in Mortality Early in the Twentieth Century: Sri Lanka and India Compared. *Popul. Dev. Rev.* 19, 263–282. <https://doi.org/10.2307/2938437>
- Lasswell, H.D., 1956. *The Decision Process: Seven Categories of Functional Analysis*. Bureau of Governmental Research, College of Business and Public Administration, University of Maryland.
- Lavis, J.N., Oxman, A.D., Moynihan, R., Paulsen, E.J., 2008. Evidence-informed health policy 3 – Interviews with the directors of organizations that support the use of research evidence. *Implement. Sci.* 3, 55. <https://doi.org/10.1186/1748-5908-3-55>
- Lee, K., 2008. *The World Health Organization*, 1 edition. ed. Routledge, London ; New York.
- Lee, S.M., 2008. *ASEAN: brief history and its problems*. Korean Minjok Leadership Academy.
- Leffler, M.P., 1999. The Cold War: What Do “We Now Know”? *Am. Hist. Rev.* 104, 501–524. <https://doi.org/10.2307/2650378>
- Levy, S.B., 1992. *The Antibiotic Paradox: How Miracle Drugs Are Destroying the Miracle*. Springer US.
- Lezotre, P.-L., 2014. Introduction, in: Lezotre, P.-L. (Ed.), *International Cooperation, Convergence and Harmonization of Pharmaceutical Regulations*. Academic Press, Boston, pp. 1–5. <https://doi.org/10.1016/B978-0-12-800053-3.00001-X>
- Liverani, M., Oliveira Hashiguchi, L., Khan, M., Coker, R., 2020. Antimicrobial Resistance and the Private Sector in Southeast Asia, in: Jamrozik, E., Selgelid, M. (Eds.), *Ethics and Drug Resistance: Collective Responsibility for Global Public Health, Public Health Ethics Analysis*. Springer International Publishing, Cham, pp. 75–87. https://doi.org/10.1007/978-3-030-27874-8_5
- Liyanapathirana, V., Thevanesam, V., 2016. Combating Antimicrobial Resistance. *Sri Lankan J. Infect. Dis.* 6, 72. <https://doi.org/10.4038/sljid.v6i2.8119>
- Lobanovska, M., Pilla, G., 2017. Penicillin’s Discovery and Antibiotic Resistance: Lessons for the Future? *Yale J. Biol. Med.* 90, 135–145.
- Łotysz, S., 2014. A “Lasting Memorial” to the UNRRA? Implementation of the Penicillin Plant Programme in Poland, 1946-1949. *Icon* 20, 70–91.
- Luke, N., Wickramasinghe, S., Sebastiampillai, B., Gunathilake, M., Miththinda, N., Fernando, S., Silva, S., Premaratna, R., 2016. Antibiotic sensitivity patterns among ESBL UTIs in Sri Lanka, in: *International Journal of Infectious Diseases*. p. 111. <https://doi.org/10.1016/j.ijid.2016.02.283>
- Lumsdaine, D.H., Risse-Kappen, T., 1993. *Moral Vision in International Politics: The Foreign Aid Regime, 1949-1989*. Princeton University Press.
- Mackenzie, J.S., Jeggo, M., 2019. The One Health Approach—Why Is It So Important? *Trop. Med. Infect. Dis.* 4, 88. <https://doi.org/10.3390/tropicalmed4020088>
- MacNay, K., Keith, R., Penrose, A., 2004. Bucking the trend. How Sri Lanka has achieved good health at low cost: challenges and policy lessons for the 21st century.

- Madanayaka, S.A.K., 2016. Unique Features of Foreign Policy of UNP Regimes (1948 – 1965) and Bandaranaike Regimes (1956 – 1965) 9.
- Maeda, A., Araujo, E., Cashin, C., Harris, J., Ikegami, N., Reich, M., 2014. Universal Health Coverage for Inclusive and Sustainable Development A Synthesis of 11 Country Case Studies.
- Marambe, B., Silva, P., Athauda, S., 2017. Agriculture and Rural Development Under Central Government and Provincial Council Setup in Sri Lanka, in: Cooray, N.S., Abeyratne, S. (Eds.), Decentralization and Development of Sri Lanka Within a Unitary State. Springer, Singapore, pp. 111–145. https://doi.org/10.1007/978-981-10-4259-1_6
- Matthews, B., 1982. District Development Councils in Sri Lanka. *Asian Surv.* 22, 1117–1134. <https://doi.org/10.2307/2643983>
- Matthiessen, L., Bergström, R., Dustdar, S., Meulien, P., Draghia-Akli, R., 2016. Increased momentum in antimicrobial resistance research. *The Lancet* 388, 865. [https://doi.org/10.1016/S0140-6736\(16\)31425-8](https://doi.org/10.1016/S0140-6736(16)31425-8)
- Mayring, P., 2000. Qualitative Content Analysis. *Forum Qual. Sozialforschung Forum Qual. Soc. Res.* - Line J. [Http://qualitative-res.-E2-00inhalt-Ehtm.1](http://qualitative-res.-E2-00inhalt-Ehtm.1)
- McCarthy, M., 2002. A brief history of the World Health Organization. *The Lancet* 360, 1111–1112. [https://doi.org/10.1016/S0140-6736\(02\)11244-X](https://doi.org/10.1016/S0140-6736(02)11244-X)
- McFarland, J., 1915. A text-book upon the pathogenic Bacteria and Protozoa for students of medicine and physicians, 8th ed. ed. W.B. Saunders company, Philadelphia ; London.
- Meegama, S.A., 1979. Cholera epidemics and their control in Ceylon. *Popul. Stud.* 33, 143–156. <https://doi.org/10.1080/00324728.1979.10412782>
- Mendis, N.P.R., 2017. Devolution of Legislative Power to the Provincial Council of Sri Lanka. *Int. J. Innov. Educ. Res.* 5, 34–40. <https://doi.org/10.31686/ijier.vol5.iss6.624>
- Mendis, V., 1992. National Security Concepts of States: Sri Lanka, United Nations Institute of Disarmament Research Geneva. UNITED NATIONS PUBLICATION.
- Menik, H.L., Isuru, A.I., Sewwandi, S., 2011. A survey: Precepts and practices in drug use indicators at government healthcare facilities: A hospital-based prospective analysis. *J. Pharm. Bioallied Sci.* 3, 165. <https://doi.org/10.4103/0975-7406.76502>
- MoH, Sri Lanka, 2021. Ministry of Health - In Service and Individual Training Program (ET&R) [WWW Document]. Minist. Health Sri Lanka. URL http://www.health.gov.lk/moh_final/english/others.php?pid=168 (accessed 9.13.21).
- MoH, Sri Lanka, 2008. Measures of equity, efficiency and quality of selected healthcare services. Annual Health Forum Secretariat, Management Development & Planning Unit, Ministry of Healthcare & Nutrition, Colombo.
- MoH Maldives, 2019. National Antimicrobial Containment Policy, 2019 - 2023, Maldives Food and Drug Authority, Ministry of Health, Republic of Maldives.

- MoH, Sri Lanka., 2018. Sri Lanka National Health Accounts 2014. 2015. 2016. The Ministry of Health, Sri Lanka, Colombo.
- MoH, Sri Lanka., 2009. Human Resources for Health Strategic Plan 2009 - 2018: Situation Analysis (Sri Lanka).
- MoH, Sri Lanka., JICA, 2003. Master plan study for strengthening health system in the democratic socialist republic of Sri Lanka. Japan International Cooperation Agency (JICA).
- Mohammadshahi, M., Yazdani, S., Olyaeemanesh, A., Akbari Sari, A., Yaseri, M., Emamgholipour Sefiddashti, S., 2019. A Scoping Review of Components of Physician-induced Demand for Designing a Conceptual Framework. *J. Prev. Med. Pub. Health* 52, 72–81. <https://doi.org/10.3961/jpmph.18.238>
- Mokitimi, S., Schneider, M., de Vries, P.J., 2018. Child and adolescent mental health policy in South Africa: history, current policy development and implementation, and policy analysis. *Int. J. Ment. Health Syst.* 12, 36. <https://doi.org/10.1186/s13033-018-0213-3>
- Moore, M., 1990. Economic Liberalization versus Political Pluralism in Sri Lanka? *Mod. Asian Stud.* 24, 341–383.
- Morain, S.R., Kass, N.E., Grossmann, C., 2017. What allows a health care system to become a learning health care system: Results from interviews with health system leaders. *Learn. Health Syst.* 1, e10015. <https://doi.org/10.1002/lrh2.10015>
- Mortimer-Jones, S.M., Phillips, N.D., La, T., Naresh, R., Hampson, D.J., 2008. Penicillin resistance in the intestinal spirochaete *Brachyspira pilosicoli* associated with OXA-136. *J. Med. Microbiol.* 57, 1122–1128. <https://doi.org/10.1099/jmm.0.2008/001552-0>
- Murthy, P., 2000. Indo-Sri Lankan Security Perceptions: Divergences and Convergences. *Mon. Journa IDSA XXIV No 2.*
- Nabyonga Orem, J., Mugisha, F., Kirunga, C., Macq, J., Criel, B., 2011. Abolition of user fees: the Uganda paradox. *Health Policy Plan.* 26, ii41–ii51. <https://doi.org/10.1093/heapol/czr065>
- Nairn, R.C., 1968. SEATO: A Critique. *Pac. Aff.* 41, 5–18. <https://doi.org/10.2307/2754715>
- Narine, S., 2008. Forty years of ASEAN: a historical review: *The Pacific Review: Vol 21, No 4. Pac. Rev.*
- Nehring, H., 2012. What was the Cold War? *Engl. Hist. Rev.* 127, 920–949.
- Neushul, P., 1993. Science, Government and the Mass Production of Penicillin. *J. Hist. Med. Allied Sci.* 48, 371–395. <https://doi.org/10.1093/jhmas/48.4.371>
- Ng, Y.-K., 2000. Welfarism, in: Ng, Y.-K. (Ed.), *Efficiency, Equality and Public Policy: With a Case for Higher Public Spending.* Palgrave Macmillan UK, London, pp. 24–35. https://doi.org/10.1057/9780333992777_3
- Nguyen, T.D., 2017. Fiscal Decentralisation and Economic Growth: Evidence from Vietnam, in: Cooray, N.S., Abeyratne, S. (Eds.), *Decentralization and Development of Sri Lanka Within a Unitary State.* Springer, Singapore, pp. 287–309. https://doi.org/10.1007/978-981-10-4259-1_13

- Nissanka, H.S.S., 1984. Sri Lanka's foreign policy: a study in non-alignment / H.S.S. Nissanka. Vikas, New Delhi.
- Nitrini, R., Bacheschi, L.A., Nóbrega, J.P., Scaff, M., Yasuda, N., 1984. [Neurosyphilis resistant to high doses of penicillin: report of a case]. *Arq. Neuropsiquiatr.* 42, 55–58.
<https://doi.org/10.1590/s0004-282x1984000100010>
- Njelesani, J., Dacombe, R., Palmer, T., Smith, H., Koudou, B., Bockarie, M., Bates, I., 2014. A Systematic Approach to Capacity Strengthening of Laboratory Systems for Control of Neglected Tropical Diseases in Ghana, Kenya, Malawi and Sri Lanka. *PLoS Negl. Trop. Dis.* 8, e2736.
<https://doi.org/10.1371/journal.pntd.0002736>
- NOAH, 2015. Critique of the 2015 O'Neill Review on Antimicrobial Resistance (AMR). The National Office of Animal Health.
- North-Best, E., 2017. The stolen history of the CIA and the Asian Foundation [WWW Document]. MuckRock. URL <https://www.muckrock.com/news/archives/2017/nov/02/taf-1/> (accessed 10.29.21).
- Oakman, D., 2010. Facing Asia: A History of the Colombo Plan. <https://doi.org/10.22459/FA.10.2010>
- O'Brien, T.F., Stelling, J.M., 1995. WHONET: an information system for monitoring antimicrobial resistance. *Emerg. Infect. Dis.* 1, 66.
- Olson, R.S., 1977. Expropriation and International Economic Coercion: Ceylon and the "West" 1961-65. *J. Dev. Areas* 11, 205–226.
- O'Neill, J., 2015. Antimicrobials in agriculture and the environment :
- O'Neill, J., 2014. Antimicrobial Resistance: Tackling a Crisis for the Health and Wealth of Nations. Review on Antimicrobial Resistance.
- Palinkas, L.A., Horwitz, S.M., Green, C.A., Wisdom, J.P., Duan, N., Hoagwood, K., 2015. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Adm. Policy Ment. Health* 42, 533–544. <https://doi.org/10.1007/s10488-013-0528-y>
- Pallegedara, A., Grimm, M., 2018. Have out-of-pocket health care payments risen under free health care policy? The case of Sri Lanka. *Int. J. Health Plann. Manage.* 33, e781–e797.
<https://doi.org/10.1002/hpm.2535>
- Paranavitana, S., 1970. Inscriptions of Ceylon: Containing cave inscriptions from 3rd century B.C. to 1st century A.C. and other inscriptions in the early Brāhmī script. Department of Archaeology.
- Paranavitana, S., 1953. Medicine and Hygiene as practised in Ancient Ceylon. *Ceylon Hist. J.* 3.
- Paterson, T.G., 1972. Foreign Aid under Wraps: The Point Four Program. *Wis. Mag. Hist.* 56, 119–126.
- Peiris-John, R., Attanayake, S., Daskon Attanayake, L., Wickremasinghe, R., Ameratunga, S., 2013. Disability studies in Sri Lanka: Priorities for action. *Disabil. Rehabil.* 36.
<https://doi.org/10.3109/09638288.2013.864714>
- Perera, B., 2001. Impact of decentralization on rural development at the local level, Bedgar Perera, Sri Lanka. Presented at the Regional Office for Asia and the Pacific Bangkok, Chiang Mai, Thailand.

- Perera, R., 2015. Adventure of a life time, formulation of the Health Master Plan. Dr Reggie Perera. URL <https://reggieperera.wordpress.com/2015/11/04/adventure-of-a-life-time-formulation-of-the-health-master-plan/> (accessed 5.18.21).
- Perera, R., 2014. Implications of Health Master Plan 2007 to 2016 on Family Welfare ...
- Perumal, P., 2021. Explained | What caused the Sri Lankan economic crisis? The Hindu.
- PGIM, 2016. History | PGIM [WWW Document]. Postgrad. Inst. Med. Colombo Sri Lanka. URL <https://pgim.cmb.ac.lk/index.php/history/> (accessed 9.13.21).
- Philip, W.M., Hirst, L.F., 1917. A Report on the Outbreak of The Plague in Colombo. 1914-1916. *J. Hyg. (Lond.)* 15, 527–564.
- Podolsky, S., 2018. The evolving response to antibiotic resistance (1945–2018). *Palgrave Commun.* 4. <https://doi.org/10.1057/s41599-018-0181-x>
- Podolsky, S.H., Bud, R., Gradmann, C., Hobaek, B., Kirchhelle, C., Mitvedt, T., Santesmases, M.J., Thoms, U., Berild, D., Kveim Lie, A., 2015. History Teaches Us That Confronting Antibiotic Resistance Requires Stronger Global Collective Action. *J. Law. Med. Ethics* 43, 27–32. <https://doi.org/10.1111/jlme.12271>
- Prasad, D.M., 1972. Ceylon's Foreign Policy Under The Bandaranaiques 1956—65 : A Study in the Emergence And Role of Non-Alignment. *Indian J. Polit. Sci.* 33, 271–290.
- Prematilleke, L., 1995. Ancient Monastic Hospital System in Sri Lanka. Presented at the Integral Study of the Silk Roads: Roads of Dialogue, Bangkok, Thailand.
- Purgato, M., Barbui, C., 2012. What is the WHO essential medicines list? *Epidemiol. Psychiatr. Sci.* 21, 343–345. <https://doi.org/10.1017/S204579601200039X>
- Ramasamy, R., 2020. Governance and administration in Sri Lanka: trends, tensions, and prospects. *Public Adm. Policy* 23, 187–198. <https://doi.org/10.1108/PAP-03-2020-0020>
- Rambukwella, H., 2018. S. W. R. D. Bandaranaike: the paradox of authenticity, in: *Politics and Poetics of Authenticity, A Cultural Genealogy of Sinhala Nationalism*. UCL Press, pp. 73–101. <https://doi.org/10.2307/j.ctv3hh4f7.7>
- Rannan-Eliya, R., 2006. Sri Lanka's Health System – Achievements and Challenges. *South Asia J.* 14.
- Rannan-Eliya, R., De Mel, N., 1997. Resource mobilization in Sri Lanka's health sector.
- Rannan-Eliya, R., Sikurajapathy, L., 2009. Sri Lanka : “ Good Practice ” in Expanding Health Care Coverage, *Research Studies Series, Number 3*.
- Ravallion, M., 2016. The World Bank: Why It Is Still Needed and Why It Still Disappoints. *J. Econ. Perspect.* 30, 77–94.
- Reinisch, J., 2013. ‘Auntie UNRRA’ at the Crossroads. *Past Present* 218, 70–97. <https://doi.org/10.1093/pastj/gts035>
- Reinisch, J., 2011. Internationalism in Relief: The Birth (and Death) of UNRRA 1. *Past Present* 210, 258–289. <https://doi.org/10.1093/pastj/gtq050>

- Reinisch, J., 2008. “We Shall Rebuild Anew a Powerful Nation”: UNRRA, Internationalism and National Reconstruction in Poland. *J. Contemp. Hist.* 43, 451–476.
- Reubi, D., Berridge, V., 2016. The Internationalisation of Tobacco Control, 1950–2010. *Med. Hist.* 60, 453–472. <https://doi.org/10.1017/mdh.2016.97>
- Reynolds, L.A., Tansey, E.M., 2007. Medical ethics education in Britain, 1963-1993 [electronic resource]: the transcript of a Witness Seminar held by the Wellcome Trust Centre for the History of Medicine at UCL, London, on 9 May 2006, Wellcome witnesses to twentieth century medicine ; vol. 31. Wellcome Trust Centre for the History of Medicine, London.
- Ridde, V., 2015. From institutionalization of user fees to their abolition in West Africa: a story of pilot projects and public policies. *BMC Health Serv. Res.* 15, S6. <https://doi.org/10.1186/1472-6963-15-S3-S6>
- Rifkin, S.B., 2018. Alma Ata after 40 years: Primary Health Care and Health for All—from consensus to complexity. *BMJ Glob. Health* 3, e001188. <https://doi.org/10.1136/bmjgh-2018-001188>
- Ronit, K., Porter, T., 2015. Harold D. Lasswell, The Decision Process: Seven Categories of Functional Analysis [WWW Document]. *Oxf. Handb. Class. Public Policy Adm.* <https://doi.org/10.1093/oxfordhb/9780199646135.013.23>
- Runde, D.F., McKeown, S., 2019. The Asian Development Bank: A Strategic Asset for the United States. The Center for Strategic and International Studies (CSIS), USA.
- Saavedra, M., 2017. Politics and Health at the WHO Regional Office for South East Asia: The Case of Portuguese India, 1949–61. *Med. Hist.* 61, 380–400. <https://doi.org/10.1017/mdh.2017.34>
- Sabuncu, E., David, J., Bernède-Bauduin, C., Pépin, S., Leroy, M., Boëlle, P.-Y., Watier, L., Guillemot, D., 2009. Significant reduction of antibiotic use in the community after a nationwide campaign in France, 2002-2007. *PLoS Med.* 6, e1000084. <https://doi.org/10.1371/journal.pmed.1000084>
- Sakeena, M.H.F., Bennett, A.A., Jamshed, S., Mohamed, F., Herath, D.R., Gawarammana, I., McLachlan, A.J., 2018. Investigating knowledge regarding antibiotics and antimicrobial resistance among pharmacy students in Sri Lankan universities. *BMC Infect. Dis.* 18, 209. <https://doi.org/10.1186/s12879-018-3107-8>
- Sally, R., 2006. Sri Lanka: The political economy of failure.
- Samarage, S., 2017. Some reflections on health policy making in Sri Lanka: myths and realities. <https://doi.org/10.13140/RG.2.2.15632.20485>
- Samaraweera, D., Maduwage, S., 2016. Meeting the current and future health-care needs of Sri Lanka’s ageing population. *WHO South-East Asia J. Public Health* 5, 96–101. <https://doi.org/10.4103/2224-3151.206259>
- Samaraweera, V., 1981. Land, Labor, Capital and Sectional Interests in the National Politics of Sri Lanka. *Mod. Asian Stud.* 15, 127–162.
- Sanjaya Lall, 1980. The multinational corporation. Macmillan, London.

- Schlesinger, A., 1967. Origins of the Cold War. *Foreign Aff.* 46, 22–52.
<https://doi.org/10.2307/20039280>
- Schnirring, L., 2017. WHO revises essential drug list to battle antibiotic resistance [WWW Document]. CIDRAP - Cent. Infect. Dis. Res. Policy. URL <https://www.cidrap.umn.edu/news-perspective/2017/06/who-revises-essential-drug-list-battle-antibiotic-resistance> (accessed 10.11.21).
- Schrikker, A.F., Letteren, F. der, 2006. Dutch and British colonial intervention in Sri Lanka c. 1780 - 1815: Expansion and reform. (Doctoral Thesis).
- Senewiratne, B., Kanagarajah, M., 1975. Postgraduate and continuing medical education in a developing country. *Br. Med. J.* 3, 213–216.
- Shah, A.S., Karunaratne, K., Shakya, G., Barreto, I., Khare, S., Paveenkittiporn, W., Wangchuk, S., Tin, H.H., Muhsin, M.A., Aung, L., Bhatia, R., Srivastava, R., Maryandi, D.A., 2017. Strengthening laboratory surveillance of antimicrobial resistance in South East Asia. *BMJ* 358, j3474.
<https://doi.org/10.1136/bmj.j3474>
- Shahpawee, N.S., Chaw, L.L., Muharram, S.H., Goh, H.P., Hussain, Z., Ming, L.C., 2020. University Students' Antibiotic Use and Knowledge of Antimicrobial Resistance: What Are the Common Myths? *Antibiotics* 9, 349. <https://doi.org/10.3390/antibiotics9060349>
- Sharland, M., Pulcini, C., Harbarth, S., Zeng, M., Gandra, S., Mathur, S., Magrini, N., 2018. Classifying antibiotics in the WHO Essential Medicines List for optimal use—be AWaRe. *Lancet Infect. Dis.* 18, 18–20. [https://doi.org/10.1016/S1473-3099\(17\)30724-7](https://doi.org/10.1016/S1473-3099(17)30724-7)
- Shimazu, N., 2014. Diplomacy As Theatre: Staging the Bandung Conference of 1955. *Mod. Asian Stud.* 48, 225–252.
- Silva, K.M.D., Wriggins, W.H., 1988. J.R. Jayewardene of Sri Lanka: 1906-1956. University of Hawaii Press.
- Silva, K.T., 2014. Decolonisation, Development and Disease: A Social History of Malaria in Sri Lanka. Orient Blackswan.
- Silva, S.D., 2017. Regional hegemony and small state survival: Re – examining Ceylon's foreign policy under premier D.S Senanayake.
- Sinha, R.P., 1992. Sri Lanka-United States relations / Ramashish Prasad Sinha. Commonwealth Publishers, New Delhi, India.
- Siriweera, W.I., 2003. Sanitation and Health in Ancient Sri Lanka by W.I. Siriweera | Hospital | Ayurveda. *SriLanka J. Humanit.* XXIX&XXX.
- Skinner, D., Keefer, C.S., 1941. Significance of bacteraemia caused by staphylococcus aureus: *Arch. Intern. Med.* 68, 851–875. <https://doi.org/10.1001/archinte.1941.00200110003001>
- Slama, T.G., Amin, A., Brunton, S.A., File, T.M., Milkovich, G., Rodvold, K.A., Sahm, D.F., Varon, J., Weiland, D., 2005. A clinician's guide to the appropriate and accurate use of antibiotics: the

- Council for Appropriate and Rational Antibiotic Therapy (CARAT) criteria. *Am. J. Med.* 118, 1–6. <https://doi.org/10.1016/j.amjmed.2005.05.007>
- SLCM, 2021. National Surveillance of Antimicrobial Resistance – Sri Lanka College of Microbiologists [WWW Document]. URL <https://slmicrobiology.lk/national-surveillance-of-antimicrobial-resistance/> (accessed 9.11.21).
- Smith, O., 2018. “Sri Lanka: Achieving Pro-Poor Universal Health Coverage without Health Financing Reforms”. Universal Health Coverage Study Series No. 38, World Bank Group, Washington, DC.
- Sobhani, S., 2019. From privatization to health system strengthening: how different International Monetary Fund (IMF) and World Bank policies impact health in developing countries. *J. Egypt. Public Health Assoc.* 94, 10. <https://doi.org/10.1186/s42506-019-0013-x>
- SPC, 2020. State Pharmaceuticals Corporation of Sri Lanka [WWW Document]. State Pharm. Corp. URL <https://www.spc.lk/about-spc.php> (accessed 11.15.21).
- SPMC, 2013. History of SPMC [WWW Document]. State Pharm. Manuf. Corp. SPMC. URL https://www.spmclanka.lk/index.php?option=com_content&view=article&id=58&Itemid=57&lang=en (accessed 11.15.21).
- Storr, J., Twyman, A., Zingg, W., Damani, N., Kilpatrick, C., Reilly, J., Price, L., Egger, M., Grayson, M.L., Kelley, E., Allegranzi, B., Caluwaerts, A., El-Asady, R., Fisher, D., Gastmeier, P., Holmes, A., Jayatileke, K., McLaws, M.-L., Mehta, G., Mehtar, S., Ndoye, B., Otaíza, F., Padoveze, M.C., Park, B., Parneix, P., Pittet, D., Robertson, V., Sesay-Kamara, N., Seto, W.H., Talaat, M., Unahalekhaka, A., Curiel, E.V., the WHO Guidelines Development Group, 2017. Core components for effective infection prevention and control programmes: new WHO evidence-based recommendations. *Antimicrob. Resist. Infect. Control* 6, 6. <https://doi.org/10.1186/s13756-016-0149-9>
- Tansey, E.M., 2002. Medicines and men: Burroughs, Wellcome & Co, and the British drug industry before the Second World War. *J. R. Soc. Med.* 95, 411–416.
- Tansey, E.M., Reynolds, L.A. (Eds.), 2000. Post penicillin antibiotics: from acceptance to resistance?: a witness seminar held at the Wellcome Institute for the History of Medicine, London, on 12 May 1998, Wellcome witnesses to twentieth century medicine. Wellcome Trust, London.
- Tarrant, C., Colman, A.M., Jenkins, D.R., Chattoe-Brown, E., Perera, N., Mehtar, S., Nakkawita, W.M.I.D., Bolscher, M., Krockow, E.M., 2021. Drivers of Broad-Spectrum Antibiotic Overuse across Diverse Hospital Contexts—A Qualitative Study of Prescribers in the UK, Sri Lanka and South Africa. *Antibiotics* 10, 94. <https://doi.org/10.3390/antibiotics10010094>
- Taylor, J., Smith, E., 2016. The O’Neill Review: A Critical Step in Taking Global Action Against AMR [WWW Document]. URL <https://www.rand.org/blog/2016/05/the-oneill-review-a-critical-step-in-taking-global.html> (accessed 8.10.18).
- The Anniston Star, 1970. Ceylon Socialists work on promises. (AP) The Anniston Star (Anniston, Alabama) 25 December 1970, p 42. Anniston Star 42.

- The Nobel Prize, 2020. The Nobel Prize in Physiology or Medicine 1945 [WWW Document]. NobelPrize.org. URL <https://www.nobelprize.org/prizes/medicine/1945/fleming/lecture/> (accessed 11.16.21).
- The Sunday Times, 2021. Mystery deepens over missing files on NMRA cloud; service provider had no backup. Print Ed. - Sunday Times Sri Lanka.
- Thomson, K., Hillier-Brown, F., Todd, A., McNamara, C., Huijts, T., Bambra, C., 2018. The effects of public health policies on health inequalities in high-income countries: an umbrella review. *BMC Public Health* 18, 869. <https://doi.org/10.1186/s12889-018-5677-1>
- Tissera, K., Liyanapathirana, V., Dissanayake, N., Pinto, V., Ekanayake, A., Tennakoon, M., Adasooriya, D., Nanayakkara, D., 2017. Spread of resistant gram negatives in a Sri Lankan intensive care unit. *BMC Infect. Dis.* 17, 490. <https://doi.org/10.1186/s12879-017-2590-7>
- Tyabji, N., 2004. Gaining Technical Know-How in an Unequal World: Penicillin Manufacture in Nehru's India. *Technol. Cult.* 45, 331–349.
- UNDP, 2020. Sustainable financing for health | United Nations Development Programme | capacities, focus, finances [WWW Document]. UNDPcapacity Dev. Health. URL <https://www.undp-capacitydevelopment-health.org/en/capacities/focus/financial-management/sustainable-financing-for-health/> (accessed 6.30.21).
- Uragoda, C.G., 1987. A history of medicine in Sri Lanka from the earliest times to 1948. Sri Lanka Medical Association.
- Van Boeckel, T.P., Glennon, E.E., Chen, D., Gilbert, M., Robinson, T.P., Grenfell, B.T., Levin, S.A., Bonhoeffer, S., Laxminarayan, R., 2017. Reducing antimicrobial use in food animals. *Science* 351, 1350–1352. <https://doi.org/10.1126/science.aao1495>
- van Melle, D.T., ten Asbroek, G.H.A., Vanderburg, S., Abeysinghe, Y.W., Halloluwa, C., Zhang, H.L., Sheng, T., Sewwandi, K., Bodinayake, C.K., Nagahawatte, A., Woods, C.W., De Silva, V., Tillekeratne, L.G., 2019. Antibiotic Use in Lower Respiratory Tract Infections: Insights From Patient Interviews in Sri Lanka. *Open Forum Infect. Dis.* 6, S597. <https://doi.org/10.1093/ofid/ofz360.1501>
- Vandenberg, O., Durand, G., Hallin, M., Diefenbach, A., Gant, V., Murray, P., Kozlakidis, Z., van Belkum, A., 2020. Consolidation of Clinical Microbiology Laboratories and Introduction of Transformative Technologies. *Clin. Microbiol. Rev.* 33. <https://doi.org/10.1128/CMR.00057-19>
- Voelz, N., 2021. The Power of WHO in Resource-Limited Settings: Accessibility of Drugs for Multidrug-Resistant Tuberculosis (MDR-TB) Patients in the Republic of Cameroon.
- Walt, G., Gilson, L., 1994. Reforming the health sector in developing countries: the central role of policy analysis. *Health Policy Plan.* 9, 353–370. <https://doi.org/10.1093/heapol/9.4.353>
- Walt, G., Shiffman, J., Schneider, H., Murray, S.F., Brugha, R., Gilson, L., 2008. 'Doing' health policy analysis: methodological and conceptual reflections and challenges. *Health Policy Plan.* 23, 308–317. <https://doi.org/10.1093/heapol/czn024>

- Waltz, K.N., 1993. The Emerging Structure of International Politics. *Int. Secur.* 18, 44–79.
<https://doi.org/10.2307/2539097>
- Warnapala, W.A.W., 1982. Parliamentary government or one party dictatorship? The case of Sri Lanka. *India Q.* 38, 267–288.
- Warnapala, W.A.W., 1973. Sri Lanka in 1972: Tension and Change. *Asian Surv.* 13, 217–230.
<https://doi.org/10.2307/2642738>
- Watson, S.I., Wroe, E.B., Dunbar, E.L., Mukherjee, J., Squire, S.B., Nazimera, L., Dullie, L., Lilford, R.J., 2016. The impact of user fees on health services utilization and infectious disease diagnoses in Neno District, Malawi: a longitudinal, quasi-experimental study. *BMC Health Serv. Res.* 16, 595.
<https://doi.org/10.1186/s12913-016-1856-x>
- WB, Sri Lanka, 2014. Sri Lanka Poverty and Welfare: Recent Progress and Remaining Challenges [WWW Document]. World Bank. URL
<http://www.worldbank.org/en/news/feature/2017/01/31/srilanka-poverty-welfare-recent-progress-remaining-challenges> (accessed 8.12.18).
- Weerasuriya, K., 1998. Mibefradil: the sole exception. *The Lancet* 352, 823–824.
[https://doi.org/10.1016/S0140-6736\(05\)60724-6](https://doi.org/10.1016/S0140-6736(05)60724-6)
- Wernli, D., Jørgensen, P.S., Morel, C.M., Carroll, S., Harbarth, S., Levrat, N., Pittet, D., 2017. Mapping global policy discourse on antimicrobial resistance. *BMJ Glob. Health* 2, e000378.
<https://doi.org/10.1136/bmjgh-2017-000378>
- Whitehead, M., Dahlgren, G., 2006. Concepts and Principles for Tackling Social Inequities in Health: Levelling Up Part 1. World Health Organ. Stud. Soc. Econ. Determinants Popul. Health.
- WHO, 2020. Global Antimicrobial Resistance and Use Surveillance System (GLASS) Report Early implementation 2020 (No. CC BY-NC-SA 3.0 IGO). World Health Organization, Geneva.
- WHO, 2018a. Antimicrobial resistance and primary health care: the Technical series on primary health care, WHO/HI/SDS/2018.57.
- WHO, 2018b. WHO | Universal Health Coverage [WWW Document]. WHO. URL
http://www.who.int/healthsystems/universal_health_coverage/en/ (accessed 8.3.18).
- WHO, 2018c. WHO report on surveillance of antibiotic consumption: 2016-2018 early implementation. World Health Organization, Geneva.
- WHO, 2017a. Joint external evaluation of IHR core capacities of the Democratic Socialist Republic of Sri Lanka: mission report: June 19-23, 2017 (No. WHO/WHE/CPI/REP/2017.33). World Health Organization.
- WHO, 2017b. Primary health care systems (PRIMASYS): case study from Sri Lanka. (No. CC BY-NC-SA 3.0 IGO).
- WHO, 2016a. Meeting the challenge of antimicrobial resistance [WWW Document]. WHO. URL
<http://www.who.int/life-course/news/events/antimicrobial-resistance-report/en/> (accessed 8.10.18).

- WHO, 2016b. Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level (No. CC BY-NC-SA 3.0 IGO.). World Health Organization, Geneva.
- WHO, 2015. Global action plan on antimicrobial resistance. World Health Organization Geneva.
- WHO, 2011. Report on the endemic burden of healthcare-associated infection worldwide. World Health Organization, Geneva.
- WHO, 2010. Health systems financing: the path to universal coverage. World Health Organization. <https://doi.org/10/en/index.html>
- WHO, 2000. The World health Report 2000, Health Systemd: Improving performance. World Health Organization, 1211 Geneva 27, Switzerland.
- WHO Europe, 2017. Strengthening laboratory capacity to combat antimicrobial resistance in Uzbekistan: a collaborative mentoring programme. Annual report 2017, Annual report 2017. The Regional Office for Europe of the World Health Organization, Copenhagen, Denmark.
- WHO, W.H., Candau, M.G., 1971. The work of WHO, 1970: annual report of the Director-General to the World Health Assembly and to the United Nations. World Health Organization.
- Wickremasekera, D., 2018. Flying squads to detect malpractices in State Hospitals. Pressreader.
- Wijegunasekara, J.L.H.R., 2020. Continuous Medical Education of Medical Officers in Sri Lanka: A Case Study.
- Wilson, A.J., 1979. Politics in Sri Lanka, 1947-1979. Macmillan, London.
- Wilson, A.J., 1969. Oppositional Politics in Ceylon (1947-1968). Gov. Oppos. 4, 54–69.
- Withanachchi, N., Uchida, Y., 2006. Healthcare rationing: A guide to policy directions in Sri Lanka. Health Policy 78, 17–25. <https://doi.org/10.1016/j.healthpol.2005.08.009>
- Wolstenholme, G.E.W., O'Connor, C.M. (Eds.), 1957. Ciba Foundation Symposium - Drug Resistance in Micro-Organisms: Mechanisms of Development. John Wiley & Sons, Ltd. <https://doi.org/10.1002/9780470719053.fmatter>
- Zawahir, S., Lekamwasam, S., Aslani, P., 2019. A cross-sectional national survey of community pharmacy staff: Knowledge and antibiotic provision. PloS One 14, e0215484. <https://doi.org/10.1371/journal.pone.0215484>