Prevention and Control of Noncommunicable Diseases

Think Globally - Act Locally; Lessons from Sri Lanka

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Acronyms and abbreviations

CCS Country Cooperation Strategy
CKDu chronic kidney disease of uncertain etiology
DHS Demographic and Health Survey
FCTC WHO Framework Convention on Tobacco Control
FHB Family Health Bureau
HIES Household Income and Expenditure Survey
HPV human papillomavirus
HTA health technology assessment
LKR Sri Lankan rupee
MCH maternal and child health
MDG Millennium Development Goal
MoH Ministry of Health, Nutrition and Indigenous Medicine
NATA National Authority on Tobacco and Alcohol
NCD noncommunicable disease
NHA National Health Accounts
NMRA National Medicines Regulatory Authority
OOPE out-of-pocket expense
SDG Sustainable Development Goal
SSB sugar-sweetened beverage
UNICEF United Nations International Children's Emergency Fund
WHO World Health Organization
Preface

Since Sri Lanka gained independence in 1948, all governments that came into power have steadfastly continued to support the provision of free health care and free education to people. This has paid rich dividends exemplified by high levels of literacy of the population and many public health successes. These include very low maternal and neonatal mortality rates, elimination of many communicable diseases such as malaria, and increased life expectancy.

Despite these achievements, challenges persist and newer ones have emerged. Currently, Non-Communicable Diseases (NCDs), constitute a major public health challenge threatening the well-being of people and sustainable development of Sri Lanka. The challenge of NCDs is compounded by the increasing proportion of the elderly in the population. Addressing the complexity of risk factors of NCDs - tobacco use, physical inactivity, harmful use of alcohol, unhealthy diet and air pollution - requires multisectoral responses which are challenging to implement. In this regard, over the last two decades Government of Sri Lanka has strived to provide strategic leadership for tackling NCDs by promoting greater policy coherence and coordination across government. Actions to address NCDs have engaged all stakeholders, including civil society and the private sector. Although much remains to be done, as documented in this publication, Sri Lanka has overcome tough obstacles and has made commendable progress in tackling the risk factors of NCDs. In addition, considerable investments are being made to reorganize Primary Health Care to better manage NCDs and to achieve Universal Health Coverage. High level political commitment is driving the implementation of political commitments made in 2011 and 2014 at the United Nations General Assembly on the Prevention and Control of NCDs, as part of the national response, in the overall implementation of the 2030 Agenda for Sustainable Development.

This document, `Prevention and Control of Noncommunicable Diseases: Think Globally, Act Locally; Lessons from Sri Lanka` comes at a time when the United Nations General Assembly is convening the 3rd High Level Meeting on NCDs on the 27th of September 2018
in New York, in order to take stock of the global progress in tackling these diseases. Sri Lanka has been a forerunner in the implementation of global public health treaties and through this publication, aims to further its contribution to global health and prevention and control of NCDs, by sharing best practices and disseminating lessons learned.

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Executive Summary

Noncommunicable Diseases (NCDs), currently pose a major threat to health and development worldwide. Each year, 15 million people between the ages of 30 and 69 years die from NCDs; over 80% of these premature deaths occur in developing countries such as Sri Lanka. NCDs rank among the top 10 causes of premature death in Sri Lanka. In Sri Lanka, although people are living longer, they live more years suffering from disease and disability, mainly from NCDs; life expectancy at birth in Sri Lanka is 74.9 years but healthy life expectancy at birth is only 67.0 years. Few risk factors drive NCDs and death and disability due to them. They include tobacco use, harmful use of alcohol, overweight due to unhealthy diet and physical inactivity, air pollution and poverty. The key drivers of the NCD burden are population ageing, effects of globalization on marketing and trade and rapid urbanization. According to the most recent population based risk factor survey, among 18-69 year old Sri Lankans, prevalence of current smoking is 29% in males. About one forth have hypertension or raised blood cholesterol, one third are overweight or obese and 7.4% have raised blood glucose. Available data indicate that both indoor air pollution and ambient air pollution contribute to the rising NCD burden.

The aim of this document is to reflect on the challenges and achievements of tackling NCDs in Sri Lanka over the last two decades and share best practices and lessons learned with the rest of the world. It also identifies critical gaps and areas which need attention. Chapters 1 and 2 present the context in which Sri Lanka is endeavouring to address NCD. Chapters 3 to 13 document how Sri Lanka has launched and taken forward the national NCD response, giving priority to affordable and very cost effective NCD interventions, which reduce exposure of the population to NCD risk factors and provide early detection and timely treatment of major NCDs (cardiovascular disease, cancer, chronic respiratory disease and diabetes). The lessons learned in this undertaking is summarized in the final chapter (Chapter 14).
Sri Lanka has the highest Human Development Index in South East Asia and a stellar performance in maternal and child health. However, combating NCDs is a much more complex and challenging task compared to delivering on communicable diseases and maternal and child health agenda for many reasons. First, NCDs encompass a broad array of chronic diseases. Second, although the major NCDs are preventable, the health sector has little sway on the drivers and determinants of NCDs. Preventive strategies are met with intense national and international commercial resistance. Strong political commitment, legal support, and a multidisciplinary health workforce - rare commodities in the developing world- are needed to overcome this resistance. Further, most NCDs have long incubation periods and are asymptomatic in early treatable stages making early detection difficult. Finally, although curative interventions are available to treat some NCDs, only a handful of of them are cost effective, affordable and scalable in the context of health systems in low and middle -income countries. These challenges have not deterred Sri Lanka from taking action against NCDs.

Recognizing the devastating impact of NCDs on health and development, in 2011, a political declaration which contains a roadmap of commitments to tackle NCDs, was adopted by the United Nations General Assembly. The WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020, endorsed by the World Health Assembly in May 2013, sets priorities and provides strategic guidance on how countries can implement these commitments. Current NCD activities in Sri Lanka are guided by a National Multisectoral Action Plan for Prevention and Control of NCDs 2016-2020 that is consistent with the Global NCD Action Plan. In keeping with the Global and Regional Monitoring Frameworks, Sri Lanka has also set 10 national targets including a target to reduce premature NCD mortality (Target 1). The targets focus on the following: harmful use of alcohol (Target 2), physical inactivity (Target 3), salt consumption (Target 4), tobacco use (Target 5), hypertension (Target 6), obesity and diabetes (Target 7), prevention of heart attacks and strokes through a total risk approach (Target 8), access to essential NCD medicines and technologies (Target 9) and indoor air pollution (Target 10). In September 2015, world
leaders adopted the 2030 agenda for Sustainable Development, which has 17 Goals. The agreed Sustainable Development Goals (SDGs), can only be achieved if debilitating diseases such as NCDs are successfully tackled. Thus goal 3 of this Agenda is devoted to health and wellbeing including NCDs. Sri Lanka is incorporating the national NCD agenda within the National SDG response.

In Sri Lanka, the Public Sector provides preventive care, a large portion of inpatient care and less than half of outpatient curative care, free at the point of delivery. However, the heavy demands of the emerging NCD agenda are causing disparities in health financing and service provision. There is growing dependence on out-of-pocket payments mainly due to NCD related health care. When there are shortages in diagnostics and medicines in the public health sector, people pay out-of-pocket to access them. Vulnerable households are susceptible to impoverishment and catastrophic health expenditure when they seek care for NCDs.

Across the national NCD targets, Sri Lanka has prioritized NCD action in three target areas. It has made significant progress in tobacco control (Target 5- see Chapter 7), early detection and treatment of people with high cardiovascular risk to prevent heart attacks and strokes (Target 8- see Chapter 10) and access to medicines and basic technologies (Target 9- see Chapter 11). Work is in progress in other NCD areas-reducing harmful use of alcohol (Target 2- see Chapter 4), reducing physical inactivity (Target 3 – see Chapter 5) and salt intake (Target 4- see Chapter 6), reducing the prevalence of hypertension –(Target 6 -see Chapter8), halting obesity and diabetes (Target 7-see Chapter 9) and reducing indoor air pollution (Target 10-see Chapter 12).
Lessons learned (see Chapter 14)

Lesson 1. The national NCD response can be fortified by leveraging global health strategies and treaties.

The experience of Sri Lanka demonstrates the importance of leveraging Global Health Strategies and Treaties to shape and fortify the national NCD response.

Lesson 2: Key ingredients which have been responsible for the success of other public health programs are equally important for effective NCD prevention and control

Advancing the NCD agenda in Sri Lanka from 2000 onwards, was carried out amidst the challenges posed by other competing health priorities (maternal and child health, and communicable diseases), natural disasters (a devastating tsunami, floods and earth slips) and a protracted armed conflict. This challenging experience has ascertained the key ingredients that drive the success of public health programs including NCD prevention and control. They include:

i. Improvements in living standards, education and gender equity;

ii. Sustainable funding;

iii. Equitable access to health services;

iv. Commitment to technical excellence;

v. Investment in capacity strengthening of the health workforce;

vi. Focus on high-risk population segments to improve cost effectiveness;

vii. Early detection, diagnosis and affordable treatment;

viii. Intensive surveillance, monitoring and evaluation;

ix. Community engagement and partnerships;
Lesson 3: Prioritization is the pragmatic option for addressing NCDs in resource constrained settings

Sri Lanka, like many other developing countries have very limited resources for health. Sri Lanka therefore prioritized action related to four national targets; target 1 (reducing premature mortality), target 5 (tobacco control), target 8 (prevention of heart attacks and strokes through a total risk approach) and (target 9) access to essential medicines and basic technologies. Very cost effective interventions (WHO best buys) related to these NCD domains have been implemented (see Chapters 3, 7, 10 and 11). Now that there is demonstrable progress in these areas, NCD activities are being rapidly expanded to encompass other targets.

Lesson 4: An intervention which is very cost effective is affordable to the country and is therefore scalable and sustainable.

Although there are many interventions for management of NCDs, only two are very cost effective. One of them is prevention of heart attacks and strokes through a total cardiovascular risk approach.

Sri Lanka has a fast ageing population with rising prevalence rates of both hypertension and diabetes and heart attacks and strokes are the leading NCDs. Taking cognizance of the urgent need to prevent heart attacks and strokes, in a limited resource setting, Sri Lanka embraced the very cost effective total risk approach, which uses both hypertension and diabetes together, as entry points to detect those at medium to high cardiovascular risk (WHO best buy). As discussed in Chapters 8 and 10, vertical single risk factor programs, such as a program focusing only on hypertension cannot be equitably delivered or sustained in a developing country like Sri Lanka, because the country has a modest per capita health expenditure. The recently approved government policy to reform Health Care Delivery to attain Universal Health Coverage, will enable the expansion of this program island-
wide by including this very cost effective intervention in the essential health services package.

**Lesson 5: Public–private undertakings to address NCDs are more likely to succeed when governments establish legislative frameworks to protect public health.**

In order to reduce the sugar content in sweetened beverages in Sri Lanka, the Ministry of Health engaged with the private sector and jointly developed a technical guideline. The expectation was that beverage manufacturers would comply with the guideline voluntarily. However, beverage manufacturers complied with the guideline only when a binding law was introduced (see Chapter 9).

**Lesson 6: NCD prevention in children can be effectively operationalized through schools.**

Sri Lanka has successfully used the machinery of a well organized School Health Service to operationalize NCD prevention in children. The programme is a shared responsibility of the Ministry of Health and Ministry of Education and is a good example of collaboration between two Ministries to achieve a shared national goal – physical and mental health and wellbeing of children (see Chapter 5).

**Lesson 7: Collaboration between the health sector and sectors outside health can be facilitated and accelerated by a lead agency.**

Multisectoral collaboration is essential for NCD prevention and control but is one of the most difficult endeavors. The progress made in tobacco control in Sri Lanka demonstrate that a lead agency working closely with the Ministry of Health, can galvanise multisectoral action by actively seeking opportunities to collaborate with and influence sectors outside health. In Sri Lanka, The National Authority on Tobacco and Alcohol (NATA) was established by the National Authority on
Tobacco and Alcohol Act, No. 27 of 2006 for the purpose of enactment of the legal aspects for alcohol and tobacco prevention. The National Authority on Tobacco and Alcohol has demonstrated good results in working across sectors for implementing tobacco control measures (see Chapter 7).

Lesson 8: High level political commitment is essential for NCD prevention and control.

High level political commitment is one of the essential ingredients of success in NCD prevention and control. The tobacco industry continues to undermine national efforts to prevent tobacco use including through legal action against the Government of Sri Lanka. Steadfast high level political leadership and civil society resistance have been instrumental in overpowering tobacco industry interference, over the years (see Chapter 7). The strong commitment of the present Minister of Health, Dr Rajitha Senaratne, has been instrumental in accelerating progress of NCD prevention and control, in the recent past. As a result of his leadership, the prices of a range of essential NCD medicines have been reduced and they have become more affordable to people (see Chapter 11). This is an important development because in Sri Lanka, 50% of people purchase medicines out of pocket and price is a key determinant of access to medicines. In addition, Sri Lanka has also been able to withstand pressure from the food and beverage industry and introduce traffic light labelling on sweetened beverages and a sugar tax (see Chapter 9).

Sri Lanka has laid a robust public health foundation to tackle NCDs. Public health successes in communicable diseases and maternal and child health, enable Sri Lanka to further accelerate progress in prevention and control of NCDs. However, it is important to recognize that this would not translate into an influx of significant amounts of additional resources for combatting NCDs. Thus, as resources will continue to be limited, staying the course on very cost effective NCD interventions (best buys) related to 10 NCD targets (see Chapters 3 to 12) and good buys (see Chapter 13), would be critical for winning
the fight against NCD. A larger share of the health budget needs to be allocated to NCD prevention and primary care, where the largest health gains could be achieved. Additional public sector funding is required to provide full coverage of cost-effective essential NCD services and to attain Universal Health Coverage. Moving forward, Sri Lanka needs to scale-up all WHO best buys first, in order to attain the 10 national NCD prevention and control targets. Implementation of the new national policy on health care delivery reform for Universal Health Coverage will help to further accelerate the pace of combatting NCDs, and help to protect the health and wellbeing of present and future generations of Sri Lanka.

Tackling NCDs in a developing country, under the pressures of demographic ageing, rapid urbanization, and the globalized marketing of unhealthy products is a daunting task. Sri Lanka has most of the key ingredients - steadfast political leadership, strong public health foundation, dedicated health workforce and a robust civil society-required to accomplish this formidable task.
PART I
CHAPTER 1

Sri Lanka today: A snapshot

Key messages

• Sri Lanka has the highest Human Development Index in South East Asia and a stellar performance in maternal and child health.

• Noncommunicable diseases (NCDs) are the highest ranking cause of premature death in Sri Lanka, with cardiovascular diseases in the lead.

• Tobacco use, harmful use of alcohol, physical inactivity, unhealthy diet and air pollution are the major risk factors driving NCDs.

• Challenges of addressing the NCD burden are made worse by a rapidly ageing population.

• People in Sri Lanka are living longer but they live more years suffering from disease and disability, mainly from NCDs.

• The public health approach to combat NCDs has to be an integral component of the national response to attain Sustainable Development Goals

Background

The Democratic Socialist Republic of Sri Lanka is a lower-middle-income, island country in South Asia. It has a population of 20.3 million with 18.2% of the population living in urban areas (1). The population density is 327 per square kilometer, placing Sri Lanka at the 13th position among the 100 most populous countries in the world. Literacy rate, in
the population 10 years and above is 96.8% and 94.6% among males and females respectively. Sri Lanka has a large working population with 25-54 year old individuals dominating the country. Around 42.6% of the total population are in this productive age group. Employment rate is 94.3% among males and 90.3% among females, in the population aged 15 years and above. About 81% of households have safe drinking water and 87% households have electricity. While 69% and 79% of households have radio and television access respectively, only 11% have internet facilities within the house (1).

**Administrative setup**

For administrative purposes Sri Lanka is divided into 9 provinces since 1889 (Figure 1.1). Two third of the total population live in four provinces; Western province (28.7%), Central province (12.6 %), Southern province (12.2%) and North-western province (11.7 %).

**Figure 1.1 The nine provinces of Sri Lanka**
Each province is subdivided into districts and there are 25 districts (Figure 1.2)

**Figure 1.2 The 25 districts of Sri Lanka**

Each district is divided into Divisional Secretarial Areas (n=331) and further subdivided into Grama Niladharis Divisions (n=14021). The Grama Niladharis Divisions are either a collection of small villages or a part of a larger village. There are 23 Municipal Councils and 41 Urban and 271 Pradeshiya Sabha Areas.

**Success in many fronts**

Sri Lanka is considered the oldest democracy in Asia and achieved Universal suffrage in 1931 (2). Since 1945, Sri Lanka has implemented a free education policy (3), resulting in a current high literacy rate of 93%, with a world literacy ranking of 87 (4). Sri Lanka has had a health
system that has been free at the point of delivery since 1951 (2). Since the mid 1920s health services have been delivered through a primary health care approach, predating the Declaration of Alma Ata in 1978 (5, 6).

Sri Lanka has shown a stellar performance in the areas of maternal and child health. The current maternal mortality rate is 30 per 100 000 live births (7). It has therefore already achieved the SDG Target 3.1 (to reduce the global maternal mortality ratio to less than 70 per 100 000 live births by 2030) (8). The current neonatal mortality rate is 8 per 1000 live births and under-five mortality is 9.8 per 1000 live births (7). It has therefore achieved the SDG Target 3.2 as well (to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-five mortality to at least as low as 25 per 1000 live births by 2030). With a zero Malaria incidence and a low HIV incidence it is making significant strides in attaining SDG target 3.3 (end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases by 2030) (7, 8). As a result of these achievements in health, socioeconomic development, and progress in education life expectancy in Sri Lanka has improved remarkably (Figure 1.3).

**Figure 1.3 Life expectancy at birth in males and females in Sri Lanka 1990-2016** (source: IHME celebrating 10 years of measuring what matters. Institute of Health Metrics and Evaluation; Sri Lanka. http://www.healthdata.org/sri-lanka)
Highest Human Development Index in South East Asia

In 2015, Sri Lanka had the highest Human Development Index in the South East Asia Region (Table 1.1). It ranked 73 among 188 countries (9).

Table 1.1 Human Development in Countries in the South East Asia Region

<table>
<thead>
<tr>
<th>Country</th>
<th>Global rank</th>
<th>Human Development Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri Lanka</td>
<td>73</td>
<td>0.766</td>
</tr>
<tr>
<td>Thailand</td>
<td>87</td>
<td>0.740</td>
</tr>
<tr>
<td>Indonesia</td>
<td>113</td>
<td>0.689</td>
</tr>
<tr>
<td>India</td>
<td>131</td>
<td>0.624</td>
</tr>
<tr>
<td>Bhutan</td>
<td>132</td>
<td>0.607</td>
</tr>
<tr>
<td>Timor Leste</td>
<td>133</td>
<td>0.605</td>
</tr>
<tr>
<td>Nepal</td>
<td>144</td>
<td>0.558</td>
</tr>
<tr>
<td>Myanmar</td>
<td>145</td>
<td>0.556</td>
</tr>
</tbody>
</table>

The Human Development Index integrates three basic dimensions of human development; Life expectancy at birth which reflects the ability to lead a long and healthy life; Mean years of schooling and expected years of schooling which reflect the ability to acquire knowledge and the gross national income per capita which reflects the ability to achieve a decent standard of living. For Sri Lanka the corresponding figures were 74.9 years, 14 years, 10.9 years and 10, 789 (2011 PPP$) respectively.

Ageing population

Sri Lanka is experiencing a large and rapid increase in the elderly population due to a combination of low fertility and high life expectancy.
rates. Aging Index defined as the ratio between the 60 years and over population, to 0-14 year population in a given year has increased from 18.8% in 1981 to 49.1% in 2015. The median age of the population in Sri Lanka has increased from 21.3 years to 31 years from 1981 to 2012. The median age is projected to rise to 39.6 years by 2031 and to 46.5 years by 2086 making Sri Lanka one of the fastest ageing countries in Asia. The share of the population age 60 years and older is expected to double in the next three decades to 24% (10). These demographic changes will lead to unprecedented economic, social, public health and public policy challenges mainly due to the burden of noncommunicable diseases (NCDs).

**High burden of NCD risk factors**

As shown in Figure 1.4, worldwide, few behavioural, environmental and social risk factors drive NCDs and death and disability due to them. They include tobacco use, harmful use of alcohol, overweight due to unhealthy diet, physical inactivity, pollution and poverty. Long-term metabolic impact of these factors manifest as raised blood pressure, raised blood sugar and raised blood cholesterol. These are major risk factors of NCDs which lead to cardiovascular disease (mainly heart disease and stroke), cancer, chronic respiratory disease and diabetes.
In addition to population ageing, effects of globalization on marketing and trade and rapid urbanization are driving unhealthy behaviours; tobacco and alcohol use, consumption of unhealthy diets and physical inactivity. Individuals as well as the conventional health sector have little sway in controlling these trends. Consequently, the general population is already incubating high levels of risk factors that promote NCDs, as shown by the results of risk factors surveys in children (11) and adults (12). According to the most recent STEPs survey, among 18-69 year old Sri Lankans, prevalence of current smoking is 29% in males. About one forth have hypertension or raised blood cholesterol, one third are overweight or obese and 7.4% have raised blood glucose (12). Unless timely action is taken, todays risk factors will push the already high rates of NCDs even higher, in the future.

Leading risk factors in Sri Lanka, their ranking and contribution to the disease burden is shown in Figure 1.5. The importance of reducing exposure to tobacco use, harmful use of alcohol, unhealthy diet, physical inactivity and air pollution, particularly in children and the young age groups is clear. If this is not done prevalence rates of hypertension, diabetes and high lipids in adults will rise further.

Figure 1.5 Top ten risk factors driving death and disability (DALYs) in Sri Lanka in 2016 and percent change 2005 to 2016 (Source: IHME celebrating 10 years of measuring what matters. Institute of Health Metrics and Evaluation; Sri Lanka) http://www.healthdata.org/sri-lanka
High levels of disease and premature death due to NCDs

Already, NCDs make a sizable contribution to morbidity, mortality and high health care costs. In 2015, there were 113600 deaths due to NCDs (7). As shown in Figure 1.6 ischemic heart disease, diabetes, cerebrovascular disease, asthma, chronic obstructive pulmonary disease and chronic kidney disease are among the top 10 causes of death in Sri Lanka (13).

Figure 1.6 Top ten causes of death in Sri Lanka in 2016 and percent change 2005 to 2016 (Source: IHME celebrating 10 years of measuring what matters. Institute of Health Metrics and Evaluation; Sri Lanka)

NCDs (ischemic heart disease, diabetes, cerebrovascular disease, chronic kidney disease, asthma and chronic obstructive pulmonary disease) also rank among the top 10 causes of premature death. A higher proportion of men compared to women are dying due NCDs prematurely. In 2015, 54% of male NCD deaths and 36% of female NCD deaths were below 70 years (13). High levels of premature mortality have a detrimental impact on productivity and economic growth.
Figure 1.7 Comparison of the top 10 causes of premature death (YLL) in Sri Lanka in 2016, with the group average for selected middle-income countries (Source: IHME celebrating 10 years of measuring what matters. Institute of Health Metrics and Evaluation; Sri Lanka)

Blue=Significantly lower than mean  
Beige=Statistically indistinguishable from mean  
Red=Significantly higher than mean  
Age-standardized rate per 100,000,2016

Figure 1.8 Comparison of the top 10 causes of death and disability (DALYs) in Sri Lanka in 2016, with the group average for selected middle-income countries. (Source: IHME celebrating 10 years of measuring what matters. Institute of Health Metrics and Evaluation; Sri Lanka)

Blue=Significantly lower than mean  
Beige=Statistically indistinguishable from mean  
Red=Significantly higher than mean  
Age-standardized rate per 100,000, 2016

Figure 1.7 shows that premature deaths and disability due to diabetes, asthma and self harm are higher in Sri Lanka compared to the group average. Figure 1.8 shows that ischemic heart disease is one of the highest contributors to the disease burden and that the disease burden
due to diabetes, stroke and chronic respiratory disease are higher in Sri Lanka, compared to the group average.

As shown in Figure 1.9, ischemic heart disease, diabetes, cerebrovascular disease, asthma and chronic obstructive pulmonary disease are among the top 10 causes of death and disability combined. They rank 1, 2, 5, 8, 9 respectively, among the first 10 causes of combined death and disability (13).

**Figure 1.9, Top ten causes of death and disability combined (Source: IHME celebrating 10 years of measuring what matters. Institute of Health Metrics and Evaluation; Sri Lanka)**

In addition to NCDs, Sri Lanka’s disease burden due to self-harm, road injuries, back pain and sense organ diseases are quite high, and contribute significantly to premature death (Figure 1.8) (13).

**People live longer but suffer from NCDs in later years**

In 2015, life expectancy at birth in Sri Lanka was 74.9 years and the global life expectancy was 71.4 years. In comparison, life expectancy exceeded 82 years in 12 countries: Australia, Canada, France, Iceland, Israel, Italy, Japan, Singapore, Spain, Sweden, Switzerland and the Republic of Korea. It must be noted that in Sri Lanka, there is already a gap between life expectancy at birth (74.9 years) and healthy life
expectancy at birth (67.0 years). Based on 2015 data, the gap was 7.9 years (14, 15). This means that although people are living longer, they live more years suffering from disease and disability, mainly from NCDs. On average, women live longer than men in every country in the world including Sri Lanka where there is a 6.7 years gap in life expectancy between males (life expectancy 71.6 years) and females (life expectancy 78.3 years). Male-female life expectancy gaps are lower in developed countries compared to developing countries, with lowest reported in Iceland and Sweden (3.0 and 3.4 years respectively (14, 15).

Challenges of tackling NCDs

Prevention and control of NCDs is a much more complex task compared to tackling communicable diseases and maternal and child health. There are several reasons for this complexity. First, NCDs encompass a broad array of diseases ranging from disorders of the heart, blood vessels, nerves, lungs, kidney, endocrine glands, joints, digestive system and other systems. Only some of NCDs are preventable; cardiovascular disease, cancer, chronic respiratory disease and diabetes. Second, to prevent NCDs, exposure of the population to NCD risk factors has to be reduced, throughout the life-course. The health sector has little sway on the drivers and determinants of these risk factors as they lie outside its jurisdiction (16). Third, preventive strategies are often met with intense national and international commercial opposition. To enact and implement NCD policies against commercial pressure, there has to be strong political commitment, legal support, and a multidisciplinary health workforce; rare commodities, particularly in the developing world. Fourth, treatment of NCDs is even more challenging than prevention because most NCDs have long incubation periods and are asymptomatic in early treatable stages. Strategies for early detection is therefore critical (17, 18). Further, although curative interventions are available to treat most NCDs, only some of them are cost effective, affordable and scalable in the context of health systems in low -and- middle- income countries. To successfully combat NCDs,
not only should cost effective interventions be prioritized, but they should also be implemented at scale through a primary health care approach. Finally, NCDs increase the demand for high technology interventions. Many new medical technologies and interventions to address NCDs are emerging and generally tend to improve clinical results at an increased cost. These developments are causing high income countries to devote rising amounts of financial resources to health care. Low- and- middle- income countries try to follow- suit, diverting resources from prevention and primary care jeopardizing equity and sustainability.

Despite equitable health and education policies and good performance in maternal and child health and communicable diseases, tackling NCDs poses a major challenge for Sri Lanka because of demographic and epidemiological transitions, complexities in combating NCDs discussed above and resource constraints (see Chapter 2).

**Global and local milestones**

The United Nations Political Declaration on NCDs adopted at the United Nations General Assembly in 2011, includes a roadmap of commitments made by governments (19). The WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020 endorsed by the World Health Assembly in May 2013, sets priorities and provides strategic guidance on how the road map can be implemented at country level (16). Sri Lanka has developed a National Multisectoral Action Plan for Prevention and Control of NCDs 2016-2020, which is consistent with the Global NCD Action Plan (20). In keeping with the Global Monitoring Framework, Sri Lanka has set national targets that focus on risk factors - tobacco use, high blood pressure, high salt intake, obesity, physical inactivity and air pollution- as well as targets on access to essential NCD medicines and technologies, and drug therapy for prevention of heart attacks and strokes.

In September 2015, at an historic summit of the United Nations, world leaders adopted the 2030 agenda for Sustainable Development, which
has 17 Goals. The agreed Sustainable Development Goals (SDGs), which replaced the Millennium Development Goals (MDGs), can only be achieved if debilitating diseases such as NCDs are tackled. Goal 3 of the Sustainable Development Agenda is devoted to health and wellbeing including NCDs (21).

**Poverty and NCDs**

Due to low resilience, people living in poverty are more vulnerable to behavioural and environmental risk factors that drive NCDs. The economic vulnerability of the poor is also high, with a higher probability of them falling into extreme poverty and debt during catastrophic illnesses like heart attacks and strokes. In addition, poor do not access health services when out-of-pocket expenditure is high, leading to delay in diagnosis and worse health outcomes.

According to the Household Income and Expenditure Survey conducted by the Department of Census and Statistics, the Poverty Headcount Ratio in Sri Lanka has decreased from 28.8% in 1995 to 6.7% in 2013. Wide regional disparities remain (22). At a provincial level, while the Western Province recorded the lowest level of Poverty Headcount Ratio (2%), the Uva Province showed the highest level (15.4%). The Gini coefficient, which measures the depth of the inequality, in terms of household income was 0.48 in 2012/13. Although, extreme poverty is low in Sri Lanka, 14.6% population falls in to the ‘nearly poor’ category (living below USD 3.10 per day in 2011 Purchasing Power Parity terms). Most of the poor live in rural areas and engage in small-scale agriculture. Agricultural productivity of small-scale farms has declined in recent years partly due to poor access to water.

The Samurdhi/Divineguma subsidy programme, is the main social safety net programme, benefiting 1.41 million families (23). Additionally, in order to uplift the nutritional status among mothers and children, the Ministry of Women and Child Affairs disburse assistance under the programmes of food packages for pregnant mothers and fresh milk for children between 2-5 years. There are several other social assistance
programmes, including the school food programme, Thriposha programme and disability and disaster relief assistance, which help the poor in the short-term.

**Taking forward interconnected agendas: NCDs and SDGs**

There is a mutually reinforcing relationship between NCDs and several Sustainable Development Goals such as poverty, inequality and economic growth and development. Others goals - hunger; health education; gender equality; water and sanitation; energy; industry, innovation and infrastructure; sustainable cities; consumption and production; climate change; marine resources; terrestrial ecosystems; peace, justice and accountability; and global partnerships - are also directly or indirectly linked to NCDs.

During the last three decades Sri Lanka has seen economic growth, and improvement in standards of living and health. At the same time, rising disposable incomes have increased exposure to behavioural risk factors resulting in the growing NCD burden. In addition, population growth is causing numerous environmental problems such as pollution, land degradation, scarcity of water resources, loss of biological diversity, inadequate waste disposal and traffic congestion (24). All these, have varying degrees of impact on NCDs and their risk factors.

Sri Lanka is a biodiversity “hotspots” in the world with a high density of plants and animal species per unit area. Its biodiversity is threatened due to pollution and loss of forest cover. Forest cover- which is also important for mitigation of climate change- has shown a steady decline over the last decade (25). Land degradation due to inappropriate land use and soil erosion is widespread and manifests in a variety of ways such as decreasing land fertility and landslides. Increased demand for water from the industrial sector, rapid urbanization and the consequent generation of waste and industrial effluents are causing water and soil pollution. Harmful effects on health of the use of large
quantities of pesticides, herbicides and fertilizer for agriculture is already manifesting as high rates of kidney disease in some parts of Sri Lanka (26). Traffic congestion is contributing to high levels of ambient air pollution and NCDs, particularly in cities (see Chapter 12). Due to the interconnectedness of NCDs and Sustainable Development Goals, efforts to attain the targets of the sustainable development agenda have the potential to confer a broad spectrum of benefits in mitigating NCDs.

To take the Sustainable Development Agenda forward, Sri Lanka has established a legal framework (27), and identified five key policy areas: i) eradication of poverty, ii) ensuring competitiveness of the economy, iii) improving social development, iv) ensuring good governance, and v) a clean and healthy environment. Given the evidence interconnecting NCDs with the Sustainable Development Agenda (28-31), country efforts to tackle NCDs should be closely integrated within the national response to attain the 2030 Sustainable Development Agenda.

References


Key messages

• Sri Lanka’s low-cost health care system, provides a good foundation for the attainment of Universal Health Coverage.

• The Public Sector provides preventive care, a large portion of inpatient care and less than half of outpatient curative care, free at the point of delivery.

• The heavy demands of the emerging NCD agenda are causing disparities in health financing and service provision.

• There is growing dependence on out-of-pocket payments mainly due to NCD related health care.

• When there are shortages in diagnostics and medicines in the public health sector, people pay out-of-pocket to access them.

• Vulnerable households are susceptible to impoverishment and catastrophic health expenditure when they seek care for NCDs.

• A larger share of the health budget needs to be allocated to NCD prevention and primary care, where the largest health gains could be achieved.
• More public sector funding is required to provide full coverage of cost-effective essential NCD services and to attain Universal Health Coverage.

Home-grown health financing system

It is only in the last 10 years, health financing reforms in most low- and middle- income countries have focused on achieving equity in financing of health care delivery through universal health coverage. Sri Lanka’s home-grown financing system embraced the principles of equity and universality as explicit priorities more than half a century ago. Health care in Sri Lanka is financed mainly by the Government (Table 2.1). Domestic general Government health expenditure as a proportion of current health expenditure is 54%. Domestic private health expenditure as a proportion of current health expenditure is 45%. External aid is a minor financing source and contributes only 1% to the current health expenditure. (1).

Table 2.1 Selected data on health financing in Sri Lanka 2015
(Source: WHO Global Health Observatory 2016)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Health Expenditure as % Gross Domestic Product (GDP)</td>
<td>3</td>
</tr>
<tr>
<td>Domestic General Government Health Expenditure as % Gross Domestic Product</td>
<td>2</td>
</tr>
<tr>
<td>Domestic General Government Health Expenditure as % General Government Expenditure</td>
<td>8</td>
</tr>
<tr>
<td>Current Health Expenditure per Capita in US$ (PPP$)</td>
<td>118 (353)</td>
</tr>
<tr>
<td>Domestic Health Expenditure as % of Current Health Expenditure</td>
<td>99</td>
</tr>
<tr>
<td>Domestic General Government Health Expenditure as % Current Health Expenditure</td>
<td>54</td>
</tr>
<tr>
<td>Domestic Private Health Expenditure as % Current Health Expenditure</td>
<td>45</td>
</tr>
<tr>
<td>External Health Expenditure as % of Current Health Expenditure</td>
<td>1</td>
</tr>
</tbody>
</table>
In 2016, Government spending for health accounted for 8% of the total expenditure (Figure 2.1) (1). In the same year Government spent 10%, 11%, 11% and 6% on other important development priorities such as education, welfare, transport / communication and Agriculture / irrigation respectively (2).

Globally, the average national percentage of total government expenditure devoted to health was 11.7% in 2014, ranging from 8.8% in the WHO Eastern Mediterranean Region to 13.6% in the WHO Region of the Americas (1).

**Figure 2.1 Total Government expenditure by function 2016 (Source: Central Bank of Sri Lanka 2016)**

While current health expenditure as a proportion of Gross Domestic Product (GDP) is 3%, domestic Government health spending as a share of Gross Domestic Product is only 2%. Consequently, health expenditure per capita is US$118. (Table 2.1) (2). Government health spending is low and is similar to other countries in South East Asia
which are at comparable levels of economic development (Table 2.2). Except for Maldives, countries in the region spent 1-3% of Gross Domestic Product on health (3).

**Table 2.2 Current health expenditure and Government health expenditure as a percentage of Gross Domestic Product in Sri Lanka and other countries in South Asia (Source: World Health Organization. Global Health Expenditure Database 2016)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri Lanka</td>
<td>3</td>
<td>2</td>
<td>118</td>
</tr>
<tr>
<td>Bhutan</td>
<td>3</td>
<td>3</td>
<td>91</td>
</tr>
<tr>
<td>India</td>
<td>4</td>
<td>1</td>
<td>63</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3</td>
<td>1</td>
<td>114</td>
</tr>
<tr>
<td>Maldives</td>
<td>11</td>
<td>9</td>
<td>944</td>
</tr>
<tr>
<td>Myanmar</td>
<td>5</td>
<td>1</td>
<td>59</td>
</tr>
<tr>
<td>Nepal</td>
<td>6</td>
<td>1</td>
<td>44</td>
</tr>
<tr>
<td>Thailand</td>
<td>4</td>
<td>3</td>
<td>219</td>
</tr>
<tr>
<td>Timor Leste</td>
<td>3</td>
<td>2</td>
<td>72</td>
</tr>
</tbody>
</table>

However, from a global perspective health spending in Sri Lanka is quite low (Table 2.3). This fact has to be borne in mind whenever the public health sector in Sri Lanka decides on treatment recommendations for prevalent NCDs. For example, at the current per capita health expenditure, it would not be affordable and sustainable to provide people with borderline hypertension with free medications. Recognizing these cost implications, Sri Lanka has already adopted a very cost effective total risk approach to manage hypertension (see Chapter 8 and Chapter 10) (4).
Table 2.3. Health expenditure per capita by country for 2014
Source: World Health Organization Global Health Observatory
data 2016 http://apps.who.int/gho/data/view.main.HEALTHEXPCAPAFG?lang=en

<table>
<thead>
<tr>
<th>Per capita total expenditure on health at average exchange rate (US$)</th>
<th>Countries*</th>
</tr>
</thead>
<tbody>
<tr>
<td>86 to &lt;500</td>
<td>Albania, Algeria, Angola, Armenia, Azerbaijan, Belarus, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Cabo Verde, China, Congo, Djibouti, Dominica, Dominican Republic, Egypt, El Salvador, Fiji, Gabon, Georgia, Guatemala, Guyana, Honduras, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kiribati, Lesotho, Libya, Malaysia, Mauritius, Micronesia, Mongolia, Montenegro, Morocco, Namibia, Nicaragua, Nigeria, Papua New Guinea, Paraguay, Peru, Philippines, Republic of Moldova, Saint Lucia, Sao, San Marino, Sao Tome and Principe, Seychelles, Solomon Islands, Sri Lanka, Sudan, Swaziland, Thailand, The former Yugoslav Republic of Macedonia, Tonga, Tunisia, Turkmenistan, Ukraine, Uzbekistan, Vanuatu, Viet Nam</td>
</tr>
<tr>
<td>500 to &lt;1000</td>
<td>Antigua and Barbuda, Argentina, Brazil, Brunei Darussalam, Bulgaria, Colombia, Cook Islands, Cuba, Costa Rica, Ecuador, Equatorial Guinea, Grenada, Kazakhstan, Latvia, Lebanon, Marshall Islands, Mexico, Nauru, Oman, Panama, Poland, Romania, Russian Federation, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Serbia, South Africa, Suriname, Turkey, Tuvalu, Venezuela (Bolivarian Republic of)</td>
</tr>
<tr>
<td>1000 to &lt;2000</td>
<td>Bahrain, Bahamas, Barbados, Chile, Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Kuwait, Lithuania, Maldives, Niue, Palau, Saudi Arabia, Slovakia, Trinidad and Tobago, United Arab Emirates, Uruguay</td>
</tr>
<tr>
<td>2000 to &lt;3000</td>
<td>Israel, Malta, Portugal, Qatar, Republic of Korea, Singapore, Slovenia, Spain</td>
</tr>
<tr>
<td>3000 to &lt;4000</td>
<td>Andorra, Italy, Japan, United Kingdom of Great Britain and Northern Ireland</td>
</tr>
<tr>
<td>4000 to &lt;5000</td>
<td>Belgium, Finland, France, Iceland, Ireland, New Zealand</td>
</tr>
<tr>
<td>5000 to &lt;6000</td>
<td>Austria, Canada, Germany, Netherlands</td>
</tr>
<tr>
<td>6000 to &lt;8000</td>
<td>Australia, Denmark, Sweden</td>
</tr>
<tr>
<td>8000 to 10 000</td>
<td>Luxembourg, Monaco, Norway. Monaco, Switzerland, United States of America</td>
</tr>
</tbody>
</table>

* Data not available for Democratic People’s Republic of Korea, Somalia, South Sudan and Zimbabwe.

The major health financing source categories in Sri Lanka are:

- Government, comprising central government, Provincial Councils, local governments and social security institutions such as the Employees Trust Fund (a form of social security)
- Households that pay directly out-of-pocket for healthcare
- Employers, who directly finance or reimburse healthcare services for their employees
- Health insurance schemes that pay for healthcare
- Domestic and foreign non-profit institutions
• Providers who use their own resources to finance healthcare.

In 2013, the Ministry of Health, provincial government and local government financed 62%, 31% and 2% respectively of public sector spending. The balance was from the Presidents Fund, other Government Ministries and the Employees Trust Fund.

**Low health spending due to inadequate Government revenues**

Sri Lanka’s gross national income per capita (GNI) in 2016 was US$3,727 (2). It is higher than the average gross national income per capita for countries in South Asia (US$1,611) and those categorized as low- middle-income countries (US$2,078) (2). Sri Lanka has reported rapid economic growth for over a decade. Annual reports from the Central Bank indicate that in 2016, growth declined to 4.4% in real terms, compared to 5% in 2014 (2, 5). Total debt also increased in 2016, primarily due to external borrowings. The central government debt to Gross Domestic Product ratio increased to 79.3% by end of 2016 from 77.6% as at end 2015. Although Government revenues as a share of Gross Domestic Product increased to 14.2% in 2016 from 13.3% in 2015, it still remains low and comparable with less developed countries.

Domestic general government health expenditure as percentage of general government expenditure, which is used as a summary indicator of the priority accorded to health decreased from 8.7% in 2008 to 8% in 2016 (2). Despite low health spending, Sri Lanka has been able to sustain favourable health outcomes related to maternal and child health and communicable diseases. However, an increase in health spending will be required to deal with the rising NCD burden in the future. According to the analysis of the Central Bank, structural issues in the economy including poor collection of tax revenue, have prevented the country from maintaining a high Gross Domestic Product growth rate over time (2, 6). Until such deep rooted issues in the economy are addressed and domestic resource mobilization is strengthened to increase Government revenues, the fiscal space available for more public spending on health
will remain marginal. Taking cognizance of this resource situation, Sri Lanka Government has given top priority to implementation of very cost effective, high impact NCD interventions (WHO best buys) (see Chapters 3 to 13).

**Private financing and out of pocket expenditure**

The main source of private financing is household out-of-pocket expenditure (85%). Out-of-pocket spending accounts for about 38% of total health expenditures in Sri Lanka (1). Other sources of private financing include, expenditure by companies to provide health care and medical benefits to their employees (5-8%), contributions from private health insurance (5%) and non-profit sector contributions (2-3%) (5). Although Sri Lanka has a high out of pocket expenditure, a large share is concentrated among the higher income deciles of the population.

The breakdown of out of pocket payments by households based on data from Household Income and Expenditure Survey 2015/16 is shown in Figure 2.2 (8, 9). The highest portions of out-of-pocket expenditure is incurred on doctors fees (33%) and purchase of medicines (27%). Out of pocket spending is incurred even when utilizing the public sector health services if there are shortages in diagnostics and medicines in public health facilities.

Based on the findings of a Management Practice Survey conducted by the World Bank to review the private health sector, on average, 86% of total revenue to private health facilities come from direct payments by patients. Revenue from private health insurance and employer-paid insurance play only a minor role. The President’s Fund (a fund established to assist patients in defraying the costs of major surgery in the private sector) had financed less than a fifth of the total revenue in 10% of the health facilities surveyed (10).
Impact of NCDs on households

The Department of Census and Statistics has conducted regular Household Income and Expenditure Surveys since 1990/91 (11-13). The latest survey conducted in 2016 covered all 25 districts in the country (9). Findings in 2016 reveal that the estimated average household income per month at national level was LKR 62,237 and the median household income was LKR 43,511. The estimated average monthly household income of the households in the poorest 20% (1st and 2nd decile) was LKR 14,843 and richest 20% (9th and 10th decile) was LKR 158,072. The estimated average monthly household expenditure was LKR 54,999 and increased by 32.7 % against the previous survey year 2012/13 (12). Among the major categories of household consumption expenditure, the estimated average monthly expenditure on food was LKR 19,114 and non-food expenditure was LKR 35,885; an increase of 22.1% and 39.1% respectively against the previous survey year 2012/2013.
Table 2.4 Percentage distribution of average monthly household expenditure on health and other major non-food expenditure groups by national household expenditure decile – 2016
(Source: Calculations based on Household Income and Expenditure Survey 2016).

<table>
<thead>
<tr>
<th>Expenditure Decile Group (LKR)</th>
<th>Total (%)</th>
<th>Health expenses and personal care (%)</th>
<th>Tobacco, drugs and liquor (%)</th>
<th>Housing (%)</th>
<th>Education (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(≤17589)</td>
<td>100</td>
<td>7</td>
<td>2.9</td>
<td>19.2</td>
<td>5.8</td>
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<tr>
<td>2</td>
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<td>11.4</td>
<td>7.4</td>
<td>36.5</td>
<td>1.9</td>
</tr>
<tr>
<td>3</td>
<td>100</td>
<td>10.8</td>
<td>7.0</td>
<td>30.2</td>
<td>4.0</td>
</tr>
<tr>
<td>4</td>
<td>100</td>
<td>9.8</td>
<td>6.4</td>
<td>23.9</td>
<td>5.3</td>
</tr>
<tr>
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<td>100</td>
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<td>5.8</td>
<td>26.9</td>
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</tr>
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<td>25.0</td>
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</tr>
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<td>100</td>
<td>8.0</td>
<td>4.6</td>
<td>23.8</td>
<td>6.5</td>
</tr>
<tr>
<td>8</td>
<td>100</td>
<td>7.9</td>
<td>4.4</td>
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<td>6.3</td>
</tr>
<tr>
<td>9</td>
<td>100</td>
<td>7.1</td>
<td>3.2</td>
<td>21.8</td>
<td>6.8</td>
</tr>
<tr>
<td>10 (&gt;99113)</td>
<td>100</td>
<td>6.6</td>
<td>2.6</td>
<td>19.2</td>
<td>6.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenditure Decile Group (LKR)</th>
<th>Total (%)</th>
<th>Transport (%)</th>
<th>Fuel and light (%)</th>
<th>Communication (%)</th>
<th>Other (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(≤17589)</td>
<td>100</td>
<td>12.4</td>
<td>4.9</td>
<td>3</td>
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<tr>
<td>10 (&gt;99113)</td>
<td>100</td>
<td>12.2</td>
<td>2.6</td>
<td>2.0</td>
<td>58.4</td>
</tr>
</tbody>
</table>
In 2016, the estimated national average monthly expenditure on health and personal care was 7% (Table 2.4). As a percentage of total monthly expenditure, the poorest 20% (1st and 2nd decile) spent more on health (11.4% and 10.8% respectively) than the richest 20% (9th and 10th decile), (6.6% and 5.9% respectively ). An analysis of the findings of the 2006/2007 and 2009/2010 Household Income and Expenditure Surveys in Sri Lanka (11, 12) has shown that households with more pre-school children, elderly members and members suffering from NCDs have a relatively higher tendency to spend out-of-pocket on health (14). An analysis of data from 2012/2013 Household Income and Expenditure Survey (13) indicate that financial constraints of seeking treatment for NCDs and hospitalization in the private sector compel households to sacrifice the basic needs of food and clothing. The burden on poorer households was higher, whereas richer households had the option of utilizing more from non-basic needs to cope with NCDs and hospitalization and not sacrifice basic needs (15).

**Catastrophic and impoverishing spending on health**

Universal Health Coverage is central to the Health and Wellbeing goal (Goal 3) of the 2030 Sustainable Development Agenda. To attain the goal of Universal Health Coverage, health systems need to demonstrate satisfactory performance in two key dimensions. First, is that everyone should receive needed health care (referred to as service coverage). Second, is that families who do get needed care do not suffer undue financial hardship as a result (referred to as financial protection) (16, 17) (Figure 2.3)
Global estimates of catastrophic spending at the 10% and 25% thresholds have been reported to be 11.7% and 2.6% respectively (18). According to WHO estimates (17), in Sri Lanka, proportions of the population with household expenditure on health greater than 10% and 25% of total household expenditure or income (SDG indicator 3.8.2) are small (2.8 % and 0.1 per cent respectively in 2009). However, a more recent World Bank study based on the analysis of 2015/2016 household data reported that 6.4 % of households in Sri Lanka experienced catastrophic spending at the 10 % threshold (8).

According to WHO estimates (17), in 2009, proportions of population pushed below the $1.90 and $3.10 per day poverty lines by household health expenditure (SDG indicator 1.1.1), were 0.05% and 0.44%
respectively. Increase in poverty gap due to household expenditure as a proportion of the $1.90 a day and $3.10 poverty lines, were 0.01% and 0.09% respectively. An analysis of 2015/2016 household data report that 0.4% of households were pushed into poverty due to payments for health in 2015 (8).

Thus, although people in Sri Lanka experience both catastrophic and impoverishing spending on health, the incidence of both is low compared to other countries at the same level of development.

**Allocation of finances for provinces, prevention and primary care**

The Public Sector in Sri Lanka provides virtually all of preventive care, a large portion of inpatient care and less than half of outpatient curative care, while the Private Sector provides more than half of outpatient curative care and a small proportion of inpatient care (Figure 2.4) (19).

Annually, a major share of public health expenditure is channeled to meet recurrent expenditure. In 2016 for example, total Government expenditure, including central Government transfers to Provincial Councils for healthcare services was LKR. 136,690 million, out of which, 82.7% was allocated for recurrent expenditure. Major share of recurrent expenditure was for the payment of salaries and wages of health care staff (54.9%) and for purchase of medicines (33.7%). The expenditure on essential requirements such as diets, laundry, electricity and water was 11.3%. Capital expenditure in 2016 was LKR 23,647 million (17.3%). The largest part of the capital investment (89.5 %) was allocated for curative health care of which LKR 1034 million (4.3%) was assigned for NCDs. Investment in disease prevention in 2016 was LKR 2360.6 million ( 1.7 %) and mainly targeted for the prevention of Dengue, Rabies, Tuberculosis and NCDs (20).
The mechanism for resource allocation among provinces and health facilities need to be better aligned with the disease burden and requirements for prevention and control of NCDs. Currently, financial resources for health are allocated largely based on historical patterns related to infrastructure and staffing. Routine data collection to determine the operational costs per patient is in place only in a small number of hospitals (5, 21-24). Provincial budgets are based on three different transfers from the center to provinces as determined by the Finance Commission. The largest grant intended for recurrent spending at provincial hospitals is determined largely by allocations for salaries and maintenance in previous years, and is therefore not needs-based. The other two inter-fiscal transfers follow a formula that is intended to reflect need, but these are much smaller.

A disproportionate share of government health spending is allocated to certain provinces and districts. For example in 2013, there was a three fold difference in the per capita expenditure on health in the Eastern provinces (Rs. 6814) compared to the Western Province (Rs 19307).
Further, although in the latest Household Survey, Sabaragamuwa Province reported the lowest Gini value (0.41) for household income (9), the Government per capita expenditure on health was the lowest in the Sabaragamuwa province (Rs 3839). Maldistribution was also seen at the district level. While the Government spending per capita was Rs 3169 in the Kilinochchi district with the lowest Gini index, it was Rs 7278 in the Colombo district with the highest Gini index (0.46) (5, 24). This maldistribution need to be rectified.

Further, a significant portion of spending is directed to secondary and tertiary hospitals. Primary health care in the curative system accounts for less than 15 % of the budget. Yet, this is where the largest health gains could be achieved through cost-effective management of NCDs. It is also notable that a woefully inadequate amount of the health budget (1.7% in 2016), is spent on prevention (5, 23), when only prevention provides sustainable solutions to NCDs. In order to improve NCD outcomes, aside from increased funding for NCD prevention, and primary health care, consideration need to be given to allocating resources across programs, facilities, districts and provinces, primarily based on need.

**Need to strengthen domestic resource mobilization to tackle NCDs**

Sri Lanka’s low-cost health system has been attributed to relatively low salaries in the Government sector, low price of major inputs to delivery of healthcare i procured through international competitive tenders and cost control through line-item budgeting (8). The growing burden of NCDs has introduced disparities in financing and service provision (25 ). An increase in health spending is essential for providing adequate service coverage and financial protection in relation to NCDs; Universal Health Coverage. Overseas Development Assistance plays only a small role in financing health in Sri Lanka. Private financing provides additional resources, but the associated increase in out of pocket expenditure for health by the patient, which is innately regressive, can worsen inequity and deepen poverty (26,
Domestic resource mobilization is central for sustainable financing of public sector health services (28). This is contingent upon national macroeconomic performance, competing demands from other sectors, the size of the tax base and the government's capacity to collect taxes. It has been estimated that strengthening tax administration alone could raise an additional 31% of tax revenues for health across 52 developing countries, including Sri Lanka (29). Government has recognized the need for revenue reforms to streamline the tax system including tax legislation and administration and broadening the tax base for sustainable resource mobilization (30). An additional potential source of fiscal space which has been proposed is the introduction of a social health insurance system that raises revenues through a payroll tax. Such a system if properly developed, could benefit the formal sector employees who account for about 37% of total workforce in Sri Lanka (8).

**Addressing NCDs in the context of Universal Health Coverage**

NCDs cause premature death, disability and poverty which are barriers to productivity and economic development. Thus, Universal Health Coverage and Sustainable Development Goals cannot be attained without tackling NCDs. Embracing a strategic approach to combat NCDs, can save lives, cut down on health care costs and boost economic productivity (Figure 2.5).
Tackling NCDs in a health system which is free at the point of delivery, is a complex task. The two dimensions of Universal Health Coverage provide a framework for laying a strong foundation for handling the task (Figure 2.3). First, it is necessary to ensure coverage of the population with a set of very cost effective interventions (essential services). Sri Lanka is in the process of developing an essential services package for this purpose. Second, sustainable resources need to be mobilized to provide financial protection underpinned by equity. A set of very cost effective NCD interventions to address prevention as well as management of NCDs was identified in preparation for the United Nations High Level Meeting on NCDs in 2011 (Table 2.5) (30-32). Population-based best buy interventions address tobacco and harmful alcohol use, as well as unhealthy diet and physical inactivity. Individual-based best buy interventions are delivered in primary health care settings and include, for example, counselling and drug therapy for persons with or at high risk of cardiovascular disease,
plus measures to prevent cervical cancer. The cost of implementing such a package of best-buy interventions was estimated to represent an additional annual investment of under US$ 1.27 per person in a lower middle-income country, like Sri Lanka (30, 31). All best buy interventions also have a good return on investment (33) (Table 2.5) and implementing them need to be one of the first steps in addressing NCDs and moving towards Universal Health Coverage (34). Sri Lanka has laid the foundation to implement best buys by setting 10 national NCD targets, which set the direction of the national NCD program (see Chapter 3 to Chapter 11) (Table 2.5).

Table 2.5 Very cost effective NCD interventions (WHO best buys) and return on investment
(Sources; Scaling up action against NCDs. How much will it cost. World Health Organization. Geneva 2011 and Saving lives, spending less; a strategic response to noncommunicable diseases. World Health Organization. Geneva 2018)

<table>
<thead>
<tr>
<th>Priority area</th>
<th>Best buys (very cost effective high impact NCD interventions)</th>
<th>Return on Investment by 2030 (per dollar invested)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National NCD target 1-Premature mortality</td>
<td>Implement all NCD best buy interventions listed below</td>
<td>US $ 7.00</td>
</tr>
</tbody>
</table>
| National NCD Target 2 -Alcohol | **Taxes**: Increase excise taxes on alcoholic beverages  
**Advertising**: Enact and enforce bans or comprehensive restrictions on exposure to alcohol advertising (across multiple types of media)  
**Availability**: Enact and enforce restrictions on the physical availability of alcohol in sales outlets (via reduced hours of sale) | US$ 9.13 |
| National NCD Target 3  
-Physical activity | *Education:* Implement community-wide public education and awareness campaigns for physical activity, including mass-media campaigns combined with other community-based education, motivational and environmental programmes aimed at supporting behavioural change around physical activity levels | US$ 2.8 |
|--------------------|-------------------------------------------------------------------------------------------------|--------|
| National NCD Target 4  
-Salt | **Reduce salt consumption**  
Reformulation of food: Reduce salt intake through the reformulation of food products to contain less salt, and the setting of maximum permitted levels for the amount of salt in food  
Supportive environments: Reduce salt intake through establishing a supportive environment in public institutions such as hospitals, schools, workplaces and nursing homes, to enable low-salt options to be provided  
Education: Reduce salt intake through behaviour change communication and massmedia campaigns  
Packaging: Reduce salt intake through the implementation of front-of-pack labelling | US$ 12.82 |
| National NCD Target 5  
-Tobacco | Taxes: Increase excise taxes and prices on tobacco products  
Packaging: Implement plain/standardized packaging and/or large graphic healthwarnings on all tobacco packages  
Advertising, promotion and sponsorship: Enact and enforce comprehensive bans on tobacco advertising, promotion and sponsorship  
Smoke-free public places: Eliminate exposure to second-hand tobacco smoke in all indoorworkplaces, public places and public transport  
Education: Implement effective mass-media campaigns that educate the public about the harms of smoking/tobacco use and second-hand smoke | US $ 7.43 |
| National NCD Target 6  
Hypertension | Reduce salt consumption** and treat those with high cardiovascular risk*** | See ** and *** |
### National NCD Target 7
Obesity / diabetes

- *Improve physical activity levels*

See *

### National NCD Target 8-
Heart attacks and strokes

- ***Drug therapy and counselling***
  Provide drug therapy (including glycaemic control for diabetes mellitus and control of hypertension using a total risk approach) and counselling for individuals who have had a heart attack or stroke and for persons with high risk (≥ 30%) of a fatal or non-fatal cardiovascular event in the next 10 years

US $ 3.29

### Cancer

- **Vaccination:** Vaccination against human papillomavirus (2 doses) of girls aged 9 to 13 years
- **Screening:** Prevention of cervical cancer by screening women aged 30 to 49 years, either through: visual inspection with acetic acid linked with timely treatment of pre-cancerous lesions; pap smear (cervical cytology) every 3–5 years, linked with timely treatment of pre-cancerous lesions; human papillomavirus test every 5 years, linked with timely treatment of precancerous lesions

US $ 2.74

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**Conclusion and future perspectives**

The fast growing NCD epidemic in Sri Lanka is causing disparities in coverage of NCD services, threatening financial protection and derailing the attainment of Universal Health Coverage and Sustainable Development Goals. NCD prevention and control saves lives, improves health and workforce participation and economic productivity. It also limits the financial burden of health costs from NCDs on individuals, families and the State. Sri Lanka Government has prioritized the very cost effective NCD intentions (WHO best buys) that give a good return on investment. In order to consolidate the health gains of the past and advance the development agenda, Sri Lanka needs to increase government expenditure on health and scale-up the implementation of NCD best buys island-wide.
References


PART II
NCD Targets and SDG Targets

Introduction

Recognizing the devastating social, economic and public health impact of NCDs, in September 2011, world leaders adopted a political declaration containing strong commitments to address the global burden of NCDs (1). World Health Organization was tasked with the development of the WHO Global action plan for prevention and control of noncommunicable diseases 2013–2020, including global targets and a global monitoring framework. The Global NCD Action Plan and the global targets were adopted by the World Health Assembly in 2013 (2).

The nine voluntary global NCD targets underscore the importance of prioritizing country action to reduce harmful use of alcohol, insufficient physical activity, salt/sodium intake, tobacco use and hypertension; halt the rise of obesity and diabetes; and improve coverage of treatment for prevention of heart attacks and strokes and access to basic technologies and essential medicines. Country efforts in all these areas are essential to attain the overarching target, which is a 25% reduction of premature mortality from the four major NCDs by 2025.

The Government of Sri Lanka has provide strategic leadership in mainstreaming NCDs in the development agenda. Accordingly, the Ministry of Health in close collaboration with relevant Ministries and other stakeholders developed the National Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases 2016-2020 (3) underpinned by a set of national targets consistent with global NCD targets to be attained by 2025.

They are:

National NCD target 1: A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases

National NCD target 2: At least 10% relative reduction in the harmful
use of alcohol.

National NCD target 3: A 10% relative reduction in prevalence of insufficient physical activity.

National NCD target 4: A 30% relative reduction in mean population intake of salt/sodium.

National NCD target 5: A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years.

National NCD target 6: A 25% relative reduction in the prevalence of raised blood pressure.

National NCD target 7: Halt the rise in diabetes and obesity.

National NCD target 8: At least 50% of eligible people receive drug therapy and counselling (including glycaemic control), to prevent heart attacks and strokes.

National NCD target 9: An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major NCDs in both public and private facilities.

In addition, Sri Lanka adopted a tenth target to address household air pollution – a major health hazard in Sri Lanka, particularly for women and children - due to burning of solid biomass fuel and secondhand smoke.

Targets 2 to 10 contribute to the realization of the overarching Target 1; to reduce premature mortality. Part II of this document takes stock of the progress Sri Lanka has made in attaining these NCD targets distilling lessons learned.

The Ministry of Health, Nutrition and Indigenous Medicine recognizes that the public health benefits of measures to attain the National NCD targets, are far more likely to be realized if a multisector approach is adopted engaging a wide range of stakeholders. Thus, the National NCD Action Plan stakeholders include Ministries of Health, Education, Finance, Plan Implementation, Mass Media, Agriculture, Trade and Commerce, Social Services, Youth Affairs, Women’s Affairs,
Environment and Natural Resources, Academia, Non-Governmental Organizations, Civil Society Organizations, the Private Sector, United Nations Agencies and Development and Donor Agencies. The Ministry of Health, Nutrition and Indigenous Medicine together with other stakeholders have identified suitable indicators, data sources and baselines for monitoring progress in the attainment of national targets. Every year the Action Plan is reviewed by the National NCD Programme, and activities are prioritized based on achievements and available resources.

**Integrating NCDs in the national response to attain SDGs**

There is synergy between many aspects of the 2030 Sustainable Development Agenda (3) and national NCD targets of the NCD Action Plan 2016-2020. Goal 3 of the Sustainable Development Agenda is to ‘Ensure healthy lives and promote well-being for all at all ages’. Some of the 13 targets under Goal 3 are closely related to NCDs and the progress in attaining them will be monitored by indicators shown in Table. 3.1

Other SDGs are also relevant to the NCD agenda, including SDG target 1 (ending poverty), SDG target 2 (ending all forms of malnutrition), SDG target 4 (ensuring education), SDG target 5 (achieving gender equality), SDG target 8 (decent work), SDG target 11 (making cities safe and sustainable), SDG target 10 (reducing inequality), SDG target 12 (ensuring sustainable consumption and production patterns), SDG target 13 (climate change), SDG target 16 (promoting peace and justice), and SDG target 17 (strengthening partnerships).
Table 3.1 NCD related targets of Goal 3 of the Sustainable Development Agenda and indicators for measuring progress towards their attainment

<table>
<thead>
<tr>
<th>Targets of Sustainable Development Goal 3</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4 By 2030, reduce by one third premature mortality from NCDs through prevention and treatment and promote mental health and well-being</td>
<td>3.4.1 Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease</td>
</tr>
<tr>
<td>3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol</td>
<td>3.5.2 Harmful use of alcohol, defined according to the national context as alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol</td>
</tr>
<tr>
<td>3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all</td>
<td>3.8.1 Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)</td>
</tr>
<tr>
<td>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</td>
<td>3.8.2 Number of people covered by health insurance or a public health system per 1,000 population</td>
</tr>
<tr>
<td>3.A Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate</td>
<td>3.9.1 Mortality rate attributed to household and ambient air pollution</td>
</tr>
<tr>
<td>3.B Support the research and development of vaccines and medicines for communicable and noncommunicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all</td>
<td>3.A.1 Age-standardized prevalence of current tobacco use among persons aged 15 years and older</td>
</tr>
<tr>
<td></td>
<td>3.B.1 Proportion of the population with access to affordable medicines and vaccines on a sustainable basis</td>
</tr>
<tr>
<td></td>
<td>3.B.2 Total net official development assistance to medical research and basic health sectors</td>
</tr>
</tbody>
</table>
The Ministry of Health has the leadership role in addressing NCDs within the national SDG response using a public health approach and forging a coalition between relevant sectors to spearhead the journey.

References


National NCD target 1: Reduce premature mortality

A 25% relative reduction in overall mortality from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases by 2025.

Key messages

- Globally, four major NCDs (cardiovascular diseases, cancer, chronic respiratory diseases and diabetes) are responsible for 79% of NCD deaths.

- In Sri Lanka, NCDs currently cause more deaths than all other causes combined and NCD deaths are projected to increase further.

- Premature NCD deaths in people under the age of 70 are largely avoidable; in Sri Lanka, nearly half (45%) of NCD deaths are under the age of 70 years.

- A well-functioning civil/vital registration system is vital for monitoring progress of this target.

- In order to attain the premature mortality target, cost-effective policies and interventions aimed at attaining all other nine NCD targets, need to be prioritized and implemented.
• Sri Lanka has made good progress in achieving national NCD targets 2, 5 and 9. Some progress has also been made in the attainment of targets 6, 7 and 8. Activities related to targets 3, 4 and 10 need to be accelerated.

• Sri Lanka demonstrates, that a home-grown public health model financed with domestic resources, can advance the NCD agenda in a viable manner in low-middle-income country settings.

**Mortality from NCDs**

A total of 57 million deaths occurred worldwide during 2016. Of these, 41 million (71%) were due to NCDs, mainly cardiovascular diseases, cancer and chronic respiratory diseases (1). The four major NCDs were responsible for 79% of NCD deaths, cardiovascular disease (17.9 million deaths; accounting for 44% of all NCD deaths); cancer (9.0 million deaths; 22%); chronic respiratory disease (3.8 million deaths; 9%); and diabetes (1.6 million deaths; 4%).

Over three quarters of deaths from cardiovascular disease and diabetes, and nearly 90% of deaths from chronic respiratory diseases, and more than two thirds of all cancer deaths occur in low- and middle-income countries (2).

The number of NCD deaths has increased worldwide since 2000, when there were a total 31 million NCD deaths. In the WHO South East Asia Region which includes Sri Lanka, NCD deaths have increased from 6.7 million in 2000 to 8.5 million in 2012. In 2015 in Sri Lanka, there were 113600 deaths due to NCDs (60000 deaths in males, 53600 deaths in females) (3).

Globally, the age-standardized NCD death rate is 539 per 100 000. Age-standardized death rates reflect the risk of dying from NCDs, regardless of the total population size or whether the average age in the population is high or low. The rate was lowest in high-income countries and highest in low-income countries. In Sri Lanka the age
standardized death rate was 510.8 per 100,000 population (606 and 429.3 per 100,000 population in males and females respectively), in 2015 (3).

Premature death is a major consideration when evaluating the impact of NCDs on a given population. Globally, nearly half (48%) of all NCD deaths occurred before the age of 70 years in 2015. The majority of premature deaths (5.4 million of the total 6.2 million, 86%), are in low- and middle-income countries. Figure 3.1 shows the proportion of NCD deaths by cause in 2012 among people under the age of 70 years. Cardiovascular diseases were responsible for the largest proportion of NCD deaths under the age of 70 years (37%), followed by cancers (27%), and chronic respiratory diseases 8%. Diabetes was responsible for 4% and other NCDs were responsible for approximately 23% of deaths.

Figure 3.1 Proportion of global NCD deaths under the age 70 years, by cause of death, comparable estimates, 2012 (Source; Global Status Report 2014)
In Sri Lanka, 65% of all deaths are due to NCDs (Figure 3.2). Of the NCD deaths, nearly half (45%) are under the age of 70 (54% of male NCD deaths and 36% of female NCD deaths) (3). Prevention and control strategies need to be prioritized and targeted to reduce premature mortality caused by NCDs, as it has a devastating impact on labour productivity and economic development (4, 5).

**Figure 3.2 Distribution of mortality (Source: WHO country profiles 2011)**

**Monitoring premature mortality from NCDs**

The premature mortality target is, a 25% reduction in overall mortality from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases by 2025 (referred to as “25×25”). The probability of dying between the ages of 30 and 70 years from these four diseases, is the indicator in the global monitoring framework that monitors progress in attaining this target by 2025.
The probability of dying from one of the four main NCDs between ages 30 and 70, worldwide is shown in Figure 3.3. In 2016, a 30-year-old man had a higher risk of dying before reaching the age of 70 from one of the four main NCDs than a 30-year-old woman (22% compared to 15% respectively). Adults in low- and lower-middle-income countries faced the highest risks (21% and 23% respectively) - almost double the rate for adults in high-income countries (12%). Globally, the risk of dying from any one of the four main NCDs between ages 30 and 70 decreased from 17% between 2000 and 2015 (Fig. 3.4). However, the global rate of decline is inadequate meet the target of a one-third reduction in premature mortality from NCDs by 2030, as specified in SDG target 3.4 (1, 3).

This probability varied by region, from 15% in the Region of the Americas to 25% in the South-East Asia Region, and by country, from greater than 30% in seven low- and middle-income countries to less than 10% in three countries in Europe and in Australia, Japan and the Republic of Korea.

In Sri Lanka, the probability of dying between ages 30 and exact age 70 from any of cardiovascular disease, cancer, Diabetes and chronic
respiratory disease in 2015 was 17.7 % (SD 16.8-18.7 %); much higher for males (22.4 %, SD 21.2-23.6 %), compared to females (13.4%, SD 12.7-14.2%).

**Figure 3.4** Probability of dying from one of the four main noncommunicable diseases between the ages of 30 and 70 years, in males, females and both sexes - Sri Lanka 2000-2015 (Source: WHO. Global Health Observatory data; 2016)

Population growth and improved longevity are leading to increasing numbers and proportions of older people in many parts of the world, including in Sri Lanka. As populations age, annual NCD deaths are projected to rise substantially (6).

**Health system – oversight and organization**

Sri Lanka has a well organized health system that can make a major contribution for the attainment of National Target 1 – reduce premature mortality from NCDs, provided that cost effective NCD interventions (best buys and good buys, see Chapter 2 and Chapter 13) are prioritized, adequately resourced and implemented island-wide.
Sri Lanka’s health sector is regulated by the Ministry of Health, Nutrition and Indigenous Medicine. The expanding private sector is regulated by the Private Health Services Regulatory Council, which was established under the Private Medical Institutions (Registration) Act No. 21 of 2006 (7). Other government entities involved in the health sector include the Medical Research Institute; the Migration, Health and Development Unit; the National Institute of Health Sciences; and the National Poison and Drug Information Centre, among others.

The government operates a network of public sector health facilities for provision of inpatient care. There are around 631 government sector medical institutions with indoor health facilities. It includes 16 Teaching Hospitals, 3 Provincial General Hospitals, 20 District General Hospitals, 71 Base Hospitals, 482 Divisional Hospitals, and 14 Primary Medical Care Units with Maternity Homes and 25 specialized hospitals. There are 460 Primary Medical Care Units which provide outdoor clinical facilities only. Ministry of Health Offices (n=341), headed by Medical Officers of Health, carry out preventive services for defined geographic areas (see Chapter 11) (8, 9).

Each district has a Medical Officer /NCD who functions as the focal point for NCD activities in the district. The NCD unit of the Ministry of Health conducts regular review meetings for Medical officers /NCD to facilitate exchange of information on NCD best practices in all districts.

In the private sector, there are 225 private hospitals, with a total bed capacity of 6,330, administering western medicine. In addition, there are 22 Ayurvedic private hospitals with a total of 326 beds. There are 521 full-time general medical practices, 24 full-time medical specialist practices, 967 medical laboratories and 502 medical centres registered under the Ministry of Health (8, 9).

There are 3.6 beds for every 1,000 persons in the state sector. The public system, which employs more than 90% of all nurses and doctors, is widely accessible. There is a reasonably good road network island-wide and people are, on average, within 1.4 km of a basic health clinic and 4.8 km from a health care facility. There are 1600 specialist medical officers providing services in hospitals. Overall there are 87 doctors
per 100,000 population (total 18,243). However, maldistribution is notable. For example, there are 182, and 32 doctors per 100,000 population in Colombo and Nuwara Eliya respectively (9). There are 202 nurses per 100,000 population (total 42,420).

There is a unit with responsibility for NCDs within the Ministry of Health. The National Steering Committee and the National Advisory Body for NCDs provide guidance for implementation of the National NCD Action Plan. Government revenues are allocated through the Department of Health services for health care for NCDs. Funding for primary prevention, health promotion, surveillance, monitoring and evaluation and capacity strengthening is disbursed through other relevant units of the Ministry of Health including the NCD unit. Taxes on tobacco, alcohol and food with high sugar content are used to raise general domestic revenues. There are no earmarked taxes to fund NCD activities.

**Key barriers to attaining this target**

There are two key barriers to attaining this target; the lack of a well-functioning death registration system for monitoring and equity gaps in health care service delivery.

**Death registration**

Death registration data, with medical certification of the cause of death coded using the International Classification of Diseases (ICD), are the preferred source of information for monitoring mortality by cause, age and sex. Only 49 countries produce high-quality cause-of-death data, meaning that more than 90% of deaths are registered and fewer than 10% of deaths are coded to ill-defined signs and symptoms (10). There are persisting coverage issues and major gaps in quality of the death registration in Sri Lanka. Although the completeness of death registration is nearly 90% (11), (Figure 3.5), the quality of death registration statistics is poor, with about one third of deaths categorized
as being due to "signs, symptoms, and ill-defined causes"(12).

Once a death occurs, it has to be registered before the deceased can be cremated or buried. For deaths that occur outside hospitals—about 80% of deaths—the Registrar of Deaths, determines the cause of death by interviewing the relatives regarding events preceding the death. Sudden deaths (which are a small proportion of total deaths) that occur outside a hospital are attended by an Inquirer into sudden death. The majority of the Registrars are lay people with no training on how to decide on the probable cause of death. For deaths that occur in hospitals, cause of death is declared by the medical officer who attended the deceased (13).

If the cause-of-death information given on the death certificate is incorrect, incomplete or missing, it reduces the utility of the data for public health monitoring purposes. The high percentage of deaths certified as "signs, symptoms, and ill-defined causes" is an indicator of the poor quality of cause-of-death information in Sri Lanka. In a study that measured the accuracy of registered causes of death and quality of medical records in hospitals in Colombo, the concordance between the underlying cause of death in the vital registration data and that from medical records review was reported as 41.4%. Major misclassification errors were found in identifying deaths due to vascular diseases and diabetes mellitus (14). Further research is needed to periodically evaluate the quality of cause of death reporting, at both local and national levels.
Equity gaps

To attain National NCD target 1, equity gaps in NCD prevention and control need to be addressed. Equity gaps are particularly pronounced in districts with high levels of poverty (15). As the current Government expenditure for health is inadequate, people often have to pay out-of-pocket for diagnostics and medicines even in the public sector where services should be free at the point of delivery (see Chapter 2). In low-income families, people with NCDs are often unable to pay for long-term care, out-of-pocket. They then fail to seek timely treatment due to lack of affordability and develop complications -such as a stroke or a heart attack- drastically increasing the risk of impoverishment. These gaps can be addressed only if there is at least a modest increase in public spending coupled with stronger investment in population-wide prevention and primary care (16, 17). According to National Health Accounts, only 4.5% of current health expenditure was invested in preventive care services, compared to nearly 91% spent on curative care services. Increasing investment in population-wide prevention and primary care will particularly benefit the poor segments of the population, who suffer most from the consequences of the high cost
of diagnostic tests and drugs and inadequate accessibility to health
care in general (18).

**Progress made**

To attain the overarching premature mortality target (national NCD
target 1) activities across all other targets need to be strengthened
with a major focus on population-wide prevention and primary care.

The Government of Sri Lanka has given priority to NCD prevention
and Control in the National Development Agenda. Surveys have been
conducted to establish baselines for NCD risk factor levels and for
surveillance (19, 20). A new cadre of Medical Officers dedicated to
NCD prevention has been established and the first batch has been
trained and deployed at the district level.

More Government resources have been directed for population-wide
prevention and primary care. Sri Lanka has made good progress in
tobacco control (national NCD target 5, see Chapter 7), reducing
harmful use of alcohol (national NCD target 2, see Chapter 4) and
improving access to essential NCD medicines (national NCD target
9, see Chapter 11). Some progress has also been made in moving
towards the attainment of national target 6 (halt obesity and diabetes,
see Chapter 8), national NCD target 7 (reduce prevalence of
hypertension, see Chapter 9) and national NCD target 8 (prevent heart
attacks and strokes, see Chapter 10). Activities related to reduction of
physical inactivity (national NCD target 3, see Chapter 5), salt intake
(national NCD target 4, see Chapter 6), indoor air pollution (national
NCD target 10, see Chapter 12) and intake of transfat require a major
boost. More resources are being directed to strengthen primary care
to provide quality care and longterm follow-up for those detected
as having NCDs through Healthy Lifestyle Centers (see Chapter 10).
Planned reforms in service delivery are aimed at improving access to
cost effective NCD treatment interventions at all levels of care (see
Chapter 13).
Reform of health service delivery for Universal Health Coverage

The Government of Sri Lanka has recently approved a health care reform policy for accelerating progress towards Universal Health Coverage (21). The planned reforms aim to respond to the evolving health care needs of the ageing population and people with NCDs and to reduce catastrophic health spending in lower - middle income groups. The expected outcomes of the policy are:

- Coverage of essential health services improved
- Health facilities at primary, secondary and tertiary care level are equitably distributed
- A first contact care Family Doctor for every 5000 population
- Skill mix of Human resources for Health is improved to address the current requirements for health care
- Access to essential medicines and laboratory facilities are improved
- Access to emergency care is improved
- Efficiency in health service delivery is improved
- Male participation in health screening programs is increased
- Overall participation in health screening programs are improved
- Increased knowledge on health and healthcare among the population
- Staffing of Community health services is improved to support continuity of care
- All adults will have a personal health record and a personal health identification number.
- Systems to support shared clinical exchange are in place (shared Electronic Health Record)
According to National Health Accounts, 38% of the allocation for curative care services was spent on primary care delivered through all levels of hospitals consisting of primary, secondary and tertiary hospitals, while 49% and 13% were allocated for secondary and tertiary level care respectively (22).

As part of reorganization of health service delivery, plans are under way to strengthen primary care and improve linkages between primary and specialized care through a model known as the “shared care cluster system” (21). The aim is to provide universal health access through a family doctor who is responsible for a smaller population (5000 people) in the curative system. Services are to be grouped around a hospital providing specialist care at the apex with surrounding primary care curative institutions at divisional and primary level. It is hoped that this reorganization will improve access to essential diagnostics and medicines as well as continuity of care. Importantly, the plan is to design a system to enhance accountability for care including greater regulation of the private sector. A quality secretariat has also been established and has developed quality standards for primary care, which also need to be implemented (9). The success of these reforms and their impact on NCD prevention and control is heavily contingent on the ability of the Government to increase current expenditure on health, through enhanced domestic resource mobilization (see Chapter 2) (23, 24).

**Conclusions and future perspectives**

Sri Lanka has a public health sector with a good track record and an island-wide primary health care network. As the new policy for health reform demonstrates, the Government will not shy-away from undertaking major reforms, to make health services fit-for-purpose to address NCDs.

Moving forward, the following **key actions** (and others highlighted in Chapters 4 to 14) will be critical in dismantling barriers and consolidating progress to pave the way to attain National NCD Target 1:
1. Mobilize more domestic revenues for sustainable, transparent and long-term funding of population-based prevention activities at district, provincial and central levels and for primary care reform.

2. Establish a high-level interministerial platform/commission to facilitate, endorse and evaluate multisectoral collaboration for prevention and control of NCDs.

3. Continue to strengthen the workforce addressing NCDs at district, provincial and central levels to deliver population-based prevention of NCDs with a special focus on reducing tobacco use, harmful use of alcohol, physical inactivity, population salt intake, obesity and indoor air pollution.

4. Strengthen national surveillance systems for NCDs, including vital registration that is capable of reporting cause of death, cancer registries, and risk factor surveillance, and ensure these are integrated into national health information systems, to enable regular reporting/auditing/benchmarking and monitoring of progress.

5. Increase resources to scale up the implementation of very cost-effective interventions island-wide (see Chapter 2).

6. Further strengthen the health system at all levels, with emphasis on primary care, to achieve universal health coverage dynamically and incrementally.

7. Continue to protect the implementation of public health policies for NCD prevention and control from interference by vested interests, through comprehensive legislation and enforcement of national laws and regulations.

8. Strengthen training of the health workforce and the scientific basis for decision-making, through NCD-related research and partnerships.
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National NCD target 2: Reduce harmful use of alcohol

At least 10% relative reduction in the harmful use of alcohol by 2025.

Key messages

• There is a causal relationship between harmful use of alcohol and the morbidity and mortality associated with cardiovascular diseases, cancers and liver disease.

• In 2012, more than half of the estimated 3.3 million deaths, or 5.9% of all deaths worldwide, attributable to alcohol consumption were from NCDs.

• Implementing very cost-effective population-based policy options – such as the use of taxation to regulate demand for alcoholic beverages, restriction of availability of alcoholic beverages, and bans on alcohol advertising – are key to attaining this target.

• Total per capita consumption is one of the most reliable indicators of alcohol exposure.

• In Sri Lanka, the total alcohol consumption per capita (≥ 15 years of age) is 4.3 litres of pure alcohol.
• In Sri Lanka in 2015, the estimated costs related to treatment of alcohol related disorders and lost earnings due to mortality and morbidity caused by hazardous alcohol use were LKR 119.7 billion.

• Sri Lanka is implementing several cost effective interventions to attain this target including taxing and pricing policies, drink-driving countermeasures, measures to reduce the availability of alcohol and regulate marketing of alcoholic beverages.

• The attainment of this target will reduce premature mortality from NCDs and also contribute to attainment of other NCD targets (targets 6, 7 and 8).

Health consequences of harmful use of alcohol

Harmful use of alcohol has multiple detrimental effects on health and wellbeing. The poorest in the society are at greater risk of alcohol’s harmful impacts on health, because poverty reduces the resilience to disease. Harmful use of alcohol increases the risk of developing NCDs, mental and behavioural disorders, including alcohol dependence, suicide, road traffic accidents and violence. There is also a causal relationship between harmful use of alcohol and incidence of tuberculosis. Alcohol consumption in pregnancy may cause fetal alcohol syndrome and pre-term birth complications (1). High levels of alcohol consumption increases the risk of cancers of the mouth, nasopharynx, oropharynx, larynx, oesophagus, colon, rectum, liver and female breast (2). At high levels, alcohol consumption also causes liver cirrhosis and pancreatitis (3).

Alcohol consumption can have detrimental effects on hypertension, atrial fibrillation, haemorrhagic stroke and cardiomyopathy (3, 4). The relationship between alcohol consumption and ischaemic heart disease and cerebrovascular diseases is complex. The beneficial cardioprotective effect of relatively low levels of drinking for ischaemic
heart disease and ischaemic stroke disappears with heavy drinking occasions, which is highly prevalent in many countries (1, 5, 6).

In 2012, 3.3 million deaths, (5.9% of all global deaths), were attributable to alcohol consumption. There are sex differences in the proportion of global deaths attributable to alcohol. For example, in 2012, 7.6% of deaths among males and 4.0% of deaths among females were attributable to alcohol. More than half of the deaths attributable to alcohol resulted from NCDs – cardiovascular diseases and diabetes (33.4%), cancers (12.5%) and gastrointestinal diseases, including liver cirrhosis (16.2%). In 2012, 139 million DALYs (disability-adjusted life years), or 5.1% of the global burden of disease and injury, were attributable to alcohol consumption. Cardiovascular diseases, cancers and gastrointestinal diseases (largely due to liver cirrhosis) are responsible for more than one third (37.7%) of this burden (1).

The inclusion of a target to strengthen the prevention and treatment of harmful use of alcohol, under the health goal in the United Nations’ 2030 Agenda for Sustainable Development, acknowledges the importance of reducing the harmful use of alcohol for global and national development (7). SDG target 3.5 is to strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol by 2030.

**Alcohol consumption**

The level of alcohol consumption worldwide in 2016 was estimated at 6.4 litres of pure alcohol per person aged 15 years and over. The highest levels of alcohol consumption were found in middle- and high-income countries of the WHO European Region and Region of the Americas (1, 7). There is a wide variation in total alcohol consumption between different countries. Prevalence of heavy episodic drinking in past 30 days, is shown in Figure. 4.1. The prevalence of heavy episodic drinking is associated with the overall levels of alcohol consumption and is highest in the European Region and Region of the Americas (see Table 4.1) (1, 7).
Figure. 4.1. Age standardized heavy episodic drinking (aged 15 years and over) in past 30 days (%), 2010 (Source: Global status report on noncommunicable diseases 2014. World Health Organization. Geneva 2014.)

Table 4.1 Total alcohol consumption per capita (in litres of pure alcohol) and prevalence of heavy episodic drinking (%) in the total population aged 15 years and over, and among drinkers aged 15 years and over, by WHO region and the world, 2010 (Source: Global status report on noncommunicable diseases 2014. World Health Organization. Geneva 2014).

<table>
<thead>
<tr>
<th>WHO region</th>
<th>Among all (15+ years)</th>
<th>Among drinkers only (15+ years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per capita consumption</td>
<td>Prevalence of heavy episodic drinking (%)</td>
</tr>
<tr>
<td>African Region</td>
<td>6.0</td>
<td>5.7</td>
</tr>
<tr>
<td>Region of the Americas</td>
<td>8.4</td>
<td>13.7</td>
</tr>
<tr>
<td>Eastern Mediterranean Region</td>
<td>0.7</td>
<td>0.1</td>
</tr>
</tbody>
</table>
In general, the greater the economic wealth of a country, more the alcohol that is consumed (see Table 4.2). In 2010 in Sri Lanka, per capita consumption of pure alcohol in litres was for males 7.3 (SD 6.1-8.5), females 0.3 (SD 0.2-0.3) and both sexes 3.7 (SD 3.1-4.3). Per capita consumption has increased from 2.2 litres in 2005 to 3.7 litres in 2010. The 12 month prevalence (%) of alcohol use disorders was for, males 5.5 (SD 3.1-7.9), females 0.6 (SD 0.0-1.5) and both sexes 3.0 (SD 1.7-4.3). The prevalence of heavy episodic drinking among current drinkers, in the total population aged 15 years and over, was for males 0.8 (SD 0.0-1.8), females 0.0 (0.0-0.2) and both sexes 0.4 (0.0-0.9) (7). According to the latest WHO estimates, in Sri Lanka, the total alcohol consumption per capita (≥ 15 years of age) in litres of pure alcohol, in 2016, was 4.3 litres (Figure 4.2), (8).

<table>
<thead>
<tr>
<th>Region</th>
<th>10.9</th>
<th>16.5</th>
<th>16.8</th>
<th>22.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South-East Asia Region</td>
<td>3.4</td>
<td>1.6</td>
<td>23.1</td>
<td>12.4</td>
</tr>
<tr>
<td>Western Pacific Region</td>
<td>6.8</td>
<td>7.7</td>
<td>15.0</td>
<td>16.4</td>
</tr>
<tr>
<td>World</td>
<td>6.2</td>
<td>7.5</td>
<td>17.2</td>
<td>16.0</td>
</tr>
</tbody>
</table>
In a National Survey conducted in 2014 to investigate alcohol use, the prevalence of current drinkers among males and females was 39.6% and 2.4% respectively. (9). Adult per capita recorded alcohol consumption among people living in 18 districts that were not directly exposed to the armed conflict has increased markedly after the end of the conflict in 2009, with a dramatic acceleration in the trend of per capita beer consumption (10).
Table 4.2 Total alcohol per capita consumption, prevalence (%) of current drinkers, and prevalence of heavy episodic drinking among current drinkers, in the total population aged 15 years and over, by World Bank income group and the world, 2010 (Source: Global status report on noncommunicable diseases 2014. World Health Organization. Geneva 2014).

<table>
<thead>
<tr>
<th>Income group</th>
<th>Per capita consumption</th>
<th>Prevalence of current drinkers (%)</th>
<th>Prevalence of heavy episodic drinking among drinkers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-income</td>
<td>3.1</td>
<td>18.3</td>
<td>11.6</td>
</tr>
<tr>
<td>Lower middle-income</td>
<td>4.1</td>
<td>19.6</td>
<td>12.5</td>
</tr>
<tr>
<td>Upper middle-income</td>
<td>7.3</td>
<td>45.0</td>
<td>17.2</td>
</tr>
<tr>
<td>High-income</td>
<td>9.6</td>
<td>69.5</td>
<td>22.3</td>
</tr>
<tr>
<td>World</td>
<td>6.2</td>
<td>38.3</td>
<td>16.0</td>
</tr>
</tbody>
</table>

Liver cirrhosis is a largely preventable cause of ill health and premature mortality. Variations in cirrhosis mortality at the country level reflect differences in prevalence of risk factors such as alcohol use and hepatitis B and C infection. As shown in Figure 4.3 deaths from liver cirrhosis in Sri Lanka between 1980 and 2010 have more than trebled from 1047 (785-1387) to 3435 (1648-5191) (11). In comparison, the number of deaths from liver cirrhosis in Australia (with a population of similar size), which has strong policies to control harmful use of alcohol, has shown only a slight increase.
Policies and interventions for reducing harmful use of alcohol

WHO’s Global strategy to reduce the harmful use of alcohol and the Global NCD Action Plan highlight several evidence based policy areas for multisectoral national action to reduce harmful use of alcohol and protect the health of populations (12, 13). They include:

- leadership, awareness and commitment;
- health services response;
- community action;
- drink-driving policies and countermeasures;
• availability of alcohol;
• marketing of alcoholic beverages;
• pricing policies;
• reducing the negative consequences of drink-driving and alcohol intoxication;
• reducing the public health impact of illicit alcohol and informally-produced alcohol;
• monitoring and surveillance.

Some interventions for reducing harmful use of alcohol are very cost-effective, or “best buys” (see Table 1.2). When implemented in health services, individual interventions such as counselling, and treatment of alcohol dependence, are also effective in reducing the harmful use of alcohol. However, their implementation requires more resources than for population-based measures (14-17).

**Monitoring harmful use of alcohol**

The three indicators of the global monitoring framework, for monitoring progress towards attaining this target are (7):

• total (recorded and unrecorded) alcohol consumption per capita (aged 15 years and over) within a calendar year, in litres of pure alcohol, as appropriate within the national context;

• age-standardized prevalence of heavy episodic drinking among adolescents and adults, as appropriate within the national context; heavy episodic drinking among adults is defined as consumption of at least 60 g or more of pure alcohol on at least one occasion in the previous 30 days;

• alcohol-related morbidity and mortality among adolescents and adults, as appropriate within the national context.

Total per capita consumption is one of the most reliable indicators
of alcohol exposure. Effective monitoring of trends in the prevalence of heavy episodic drinking requires a well-developed system for surveillance of alcohol consumption in populations. Sri Lanka has to choose to report against the indicator/s most appropriate to the national circumstances. There are significant challenges in measuring and reporting alcohol-related morbidity and mortality, since reporting on these indicators is significantly influenced by the organization of the surveillance and monitoring system and functioning of the health system.

**Global Progress**

Growing numbers of countries have developed national alcohol policies and action plans since the Global strategy to reduce the harmful use of alcohol (12) was endorsed by the World Health Assembly in 2010. Of 76 countries with a written national policy on alcohol, 52 have taken steps to operationalize it (18). Higher minimum legal drinking ages and controls over alcohol sales reduce both alcohol sales and consumption (19). Some 160 WHO Member States have regulations on age limits for sale of alcoholic beverages, with 18 years as the most frequent age limit for all beverage types and 20–21 years in some countries (e.g. Iceland, Indonesia, Japan, Sweden, United States of America (USA) (1). Some countries have set up national networks of governmental and nongovernmental organizations, to increase public awareness, formulate policies and establish a legal environment to reduce the consequences of alcohol use (1, 20).

**Actions to attain this target in Sri Lanka**

**Political leadership and commitment**

The successful implementation by governments of public health interventions to reduce harmful use of alcohol depends on sustained political commitment and societal support. One of the key indicators which demonstrates leadership, awareness and commitment is the
presence of a written national alcohol policy. Sri Lanka launched a National Policy on Tobacco and Alcohol in 2016 (1). The same year, President Maithripala Sirisena launched a National Campaign called “A Country Free of Intoxicants” demonstrating political commitment to at the highest level to curb the consumption of alcohol, tobacco and illicit drugs. He appointed a Presidential Task Force that has the ambitious goal of gradually eliminating the overall consumption of alcohol, tobacco and illicit drugs. The task force formulates and implements joint initiatives at the grassroots and national levels. The police and all three branches of the military have pledged to provide support to implement this National Campaign (see Annex 1).

**Governance and administration**

The Excise Department of Sri Lanka established in 1913, is vested with the responsibility of implementing the Excise Ordinance, and enforcing the Tobacco Tax Act and National Authority on Tobacco and Alcohol Act, No.27 of 2006. Sri Lanka Police, acts as the principal parallel agency for enforcement of law under these ordinances and acts. The Excise Department works in close collaboration with the National Dangerous Drugs Control Board, National Authority on Tobacco and Alcohol and the Presidential Special Task Force on Alcohol. The Excise Department grants approval to Divisional Secretaries to issue licenses for manufacturing, storing, transporting and selling liquor. Liquor manufacturing plants, warehouses, distilleries and toddy taverns operate under the supervision of the Excise Department. Local liquor (Arrack), country made foreign liquor, wine, sake, bottled toddy and beer are manufactured under license. In 2016 there were 21 liquor/beer manufacturers, 30 bottled toddy manufacturers and 14 distilleries operating under license (21).

Sri Lanka is taking action in the following policy areas that have been shown to be cost-effective:

- taxing and pricing policies;
- drink-driving policies and countermeasures;
• availability of alcohol;
• marketing of alcoholic beverages.

**Taxing and pricing policies**

Models of a range of fiscal policy scenarios from a number of countries have indicated the high cost effectiveness of taxation and pricing policies in reducing hazardous drinking and alcohol-attributable mortality, as well as in raising revenue (6, 14, 22, 23). In Sri Lanka, tax rates on alcohol products have been increased in successive budgets. Currently, excise duties contribute to 27% of the total tax revenue in Sri Lanka (Figure 4.4). In 2016, excise tax on liquor increased (by 14.2%), to LKR 120.2 billion due to upward revision of excise tax rates (24).

**Figure 4.4 Composition of Government Revenue 2016 (Source: Report of the Ministry of Finance 2016)**
Although alcohol is a key source of Government revenue, it is also responsible for massive health and societal costs. According to a study conducted by World Health Organization and the National Authority on Tobacco and Alcohol, the health and social costs of alcohol use were LKR 119.7 billion, in 2015 (26). While the costs for alcohol-related cancers was LKR 9.8 billion, the cost for alcohol related to NCDs was LKR 109.9 billion. The study took into consideration costs related to curative care for alcohol related disorders and lost earnings due to mortality and morbidity.

When applying price control policies, it is important to keep them evidence based. In the recent past the alcohol industry successfully lobbied to reduce the tax on beer, making false claims that the lower price of beer will result in a drop in the consumption of strong liquor and illicit alcohol.

Sri Lanka could also consider setting a minimum price per unit for alcohol in retail sales which can complement taxation measures and result in health benefits, as demonstrated in statistical models for England and Canada (22, 23). At present, a total of 154 WHO Member States have some form of excise tax on beer, wine or spirits, but the effectiveness of these measures in protecting population health depends on their scale and their impact on the demand for alcoholic beverages.

**Drink-driving policies and countermeasures**

Sri Lanka has launched nationwide awareness-raising activities about the harmful effects of alcohol including awareness-raising targeting drink-driving. Drink-driving countermeasures are cost-effective strategies to reduce harmful use of alcohol and the burden of alcohol-attributable traffic accidents. Traffic crashes attributed to alcohol are more likely when drivers have blood alcohol concentrations above 0.04% (26, 27). The establishment of maximum blood alcohol concentration limits for drivers and the enforcement of drink-driving policies with random breath testing is a cost-effective strategy, and
has been reported to reduce traffic accidents by roughly 20% (27). Sri Lanka has set the maximum legal blood alcohol concentration when driving a vehicle at 0.08%. Worldwide, the maximum permissible blood alcohol concentration for drivers in the general population most commonly lies between 0.05–0.07% (61 countries) or 0.08–0.15% (46 countries) (1).

Availability of alcohol

Strategies regulating availability of alcohol are categorized as very cost-effective policy options to reduce the harmful use of alcohol. Examples of evidence-based strategies to reduce the availability of alcohol include regulating the density of alcohol outlets, limiting the days and hours when alcohol is sold and national minimum legal age at which alcohol can be purchased or consumed (1). In 2006, an anti-tobacco and alcohol bill was ratified by the Sri Lanka parliament related to the control of sale of tobacco and alcohol to young adults below 21 years, banning of advertisement and maintenance of a 1 Km alcohol free perimeter from religious places. The bill set out a total ban on alcohol and tobacco advertisement in media or on billboards as well as free distribution of tobacco or alcohol related products as a means of promotion. The bill also prohibits installation of automatic vending machines that dispense any tobacco or alcohol related products. More recently, a countrywide ban has been introduced on the sale of liquor on all Poya days and 19 special holidays including the World Alcohol Prevention Day. The ban requires all liquor shops, wine stores, bars, taverns and liquor outlets in restaurants and hotels to be closed on these days.

Conclusions and future perspectives

Sri Lanka has made significant progress in implementing policies and interventions to reduce harmful use of alcohol (see Table 4.3)
### Table 4.3 Policies and interventions to control harmful use of alcohol in Sri Lanka (Source: Global status report on alcohol and health 2014. Geneva: World Health Organization; 2014)

<table>
<thead>
<tr>
<th>Policy</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excise tax on beer / wine / spirits</td>
<td>Yes / Yes / Yes</td>
</tr>
<tr>
<td>National legal minimum age for off-premise sales of alcoholic beverages</td>
<td>21 / 21 / 21</td>
</tr>
<tr>
<td>National legal minimum age for on-premise sales of alcoholic beverages</td>
<td>21 / 21 / 21</td>
</tr>
<tr>
<td>Restrictions for on-/off-premise sales of alcoholic beverages:</td>
<td></td>
</tr>
<tr>
<td>Hours, days / places, density</td>
<td>No, Yes / Yes, Yes</td>
</tr>
<tr>
<td>Specific events / intoxicated persons / petrol stations</td>
<td>Yes / No / Yes</td>
</tr>
<tr>
<td>Legally binding regulations on alcohol advertising / product placement</td>
<td>Yes / Yes</td>
</tr>
<tr>
<td>Legally binding regulations on alcohol sponsorship / sales promotion</td>
<td>Yes / Yes</td>
</tr>
<tr>
<td>Legally required health warning labels on alcohol advertisements /</td>
<td>No / No</td>
</tr>
<tr>
<td>containers</td>
<td></td>
</tr>
<tr>
<td>National government support for community action</td>
<td>Yes</td>
</tr>
<tr>
<td>National monitoring system(s)</td>
<td>—</td>
</tr>
</tbody>
</table>

In some countries health warnings have been introduced to inform consumers about the risks associated with drinking alcohol and to stimulate reduced consumption. Recent studies recommend highly visible pictorial health warnings, in order to influence recall, perceptions and drinking behaviours (28, 29). Sri Lanka could consider labelling alcoholic drinks to help consumers to estimate their alcohol content and potentially choose a drink with less alcohol. In India, where these labels are currently in use, the Excise Department gathers information on the requirement of labels from each distillery, procures the required quantity from the press and provides the labels to the distilleries. Each distillery is responsible for affixing labels on all bottles that leaves their premises. Such warning labels can help to decrease alcohol abuse, increase collection of tax revenue, as well, help to control illicit liquor production.
It is estimated that about 65% of the total alcohol market in Sri Lanka is illicit, consisting of hard liquor (30%) and beer (5%) (30). Illegal alcohol industry deprives the Government of tax revenue and thrives due to corruption and political patronage. It is the responsibility of the Excise Department to develop a strategy to minimize the production capacity of this sector. The Excise Department conducts regular raids to control unlawfully manufactured liquor. Legal reforms and stronger enforcement of existing legislation are required to control the illicit alcohol production. Recently a Legal Division has been established under the direct supervision of the Commissioner General of Excise to strengthen legal action against violations of the Excise Ordinance.

Some policy measures for reducing alcohol consumption may lead to the unintended result of increasing illicit alcohol use. Although reducing price of legal alcohol products cannot contain the production of illegal products, there is a mistaken notion among some, that the illegal alcohol market can be controlled by reducing the price of legal alcohol products. Worsened criminality and harmful impact on health associated with illicit alcohol are also serious concerns (31). In the long-term, community-wide processes including community empowerment and poverty alleviation measures are likely to be more effective in controlling the illicit alcohol market than those with a narrow focus only on illicit alcohol production (32).

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National NCD target 3: Reduce physical inactivity

A 10% relative reduction in prevalence of insufficient physical activity by 2025.

Key messages

- Regular physical activity reduces the risk of cardiovascular disease, diabetes, cancer and improves fitness, bone health and mental health.

- Worldwide, 23% of adults and 81% of adolescents aged 11-17 years do not meet the global recommendations for physical activity.

- In Sri Lanka among adults, 28% of men and 44% of women, do not satisfy the WHO recommendations for physical activity.

- The majority of Sri Lankan adolescents aged 13-15 years, (83% of boys 89% of girls), do not satisfy WHO recommendations for physical activity.

- A sizeable proportion of Sri Lankan adults (34% males, 45% females) are in sedentary occupations and about half the adults do not use a mode of transport which provides significant physical activity.
• Increasing physical inactivity of the population is a major cause of obesity, diabetes, cardiovascular disease and other NCDs in Sri Lanka.

• Strategies to improve physical activity should aim to create an enabling environment for active living and active transport for children, adults and the elderly.

• The attainment of this target will contribute to attainment of targets related to reducing obesity, diabetes, hypertension, heart attacks and strokes and premature mortality from NCDs.

Insufficient physical activity and its impact on health

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure – including activities undertaken while working, walking, playing, carrying out household chores, travelling, and recreation. Insufficient physical activity is one of the 10 leading risk factors for global mortality, causing some 3.2 million deaths each year (1). In 2010, insufficient physical activity caused 69.3 million Disability Adjusted Life Years (DALYs) – 2.8% of the total – globally (1).

Regular physical activity is a key determinant of energy expenditure and is therefore fundamental to energy balance, weight control and prevention of obesity (2). Recent evidence indicates that high levels of continuous sedentary behavior (such as sitting for long periods of time) are associated with abnormal glucose metabolism and cardiometabolic morbidity (3-5). Regular physical activity reduces the risk of ischaemic heart disease, stroke, diabetes and breast and colon cancer. Regular physical activity is important for protecting the health of children, adolescents, adults and the elderly. At all ages, regular physical activity reduces body fat, improves cardiovascular and metabolic disease risk profiles, enhances bone health, and reduces
symptoms of anxiety and depression (2). In the elderly, physical activity is key to maintaining functional independence which declines due to reduction of muscle mass, and a decline in balance ability and cognitive performance.

**WHO recommendations on physical activity**

Children and adolescents aged 5-17 years (3)

- Should do at least 60 minutes of moderate to vigorous-intensity physical activity daily.
- Physical activity of amounts greater than 60 minutes daily will provide additional health benefits.
- Should include activities that strengthen muscle and bone, at least 3 times per week.

Adults aged 18–64 years (3)

- Should do at least 150 minutes of moderate-intensity physical activity throughout the week, or do at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
- For additional health benefits, adults should increase their moderate-intensity physical activity to 300 minutes per week, or equivalent.
- Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

Adults aged 65 years and above (3)

- Should do at least 150 minutes of moderate-intensity physical activity throughout the week, or at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
- For additional health benefits, they should increase moderate-
intensity physical activity to 300 minutes per week, or equivalent.

- Those with poor mobility should perform physical activity to enhance balance and prevent falls, 3 or more days per week.
- Muscle-strengthening activities should be done involving major muscle groups, 2 or more days a week.

The intensity of different forms of physical activity varies between people. In order to be beneficial for cardiorespiratory health, all activities should be performed in bouts of at least 10 minutes duration.

**Global prevalence of insufficient physical activity in adults**

The prevalence of insufficient physical activity in men and women aged 18 years and over in different parts of the world is shown in Figures 5.1 and 5.2. respectively. In 2010, 23% of adults aged 18 years and over did not meet the global recommendations for physical activity. Women were less active than men, with 27% of women and 20% of men not reaching the recommended level of activity (4). The prevalence of physical inactivity varies considerably within and between countries. It increases with economic development, owing to the influence of changing patterns of transportation, use of technology and urbanization (5).
Figure 5.1. Age standardized prevalence of insufficient physical activity in men aged 18 years and over, comparable estimates, 2010 (Source: Global status report on noncommunicable diseases 2014. Geneva: World Health Organization; 2014)
Figure 5.2. Age standardized prevalence of insufficient physical activity in women aged 18 years and over, comparable estimates, 2010 (Source: Global status report on noncommunicable diseases 2014. Geneva: World Health Organization; 2014)

Global prevalence of insufficient physical activity among adolescents

Children and adolescents engaging in at least 60 minutes of physical activity of moderate to vigorous intensity daily have higher levels of cardiorespiratory fitness, muscular endurance and strength, compared to their inactive peers, (2). Globally, 81% of adolescents aged 11–17 years were insufficiently physically active in 2010. Adolescent girls were less active than adolescent boys, (see Figures. 5.3 and 5.4).
Figure 5.3. Global prevalence of insufficient physical activity for adolescent boys aged 11–17 years, comparable estimates, 2010 (Source: Global status report on noncommunicable diseases 2014. Geneva: World Health Organization; 2014)

Figure 5.4. Global prevalence of insufficient physical activity for adolescent girls aged 11–17 years, comparable estimates, 2010 (Source: Global status report on noncommunicable diseases 2014. Geneva: World Health Organization; 2014)
Insufficient physical activity among adults in Sri Lanka

The 2015 STEPs survey provides data on physical activity (6). The distribution of level of physical activity in men and women is shown in Tables 5.1 and 5.2 respectively. In the age group 18-69, low physical activity based on WHO recommendations, was reported by 28.1% of men and 44.2% of women. Mean number minutes of work related physical activity per day was higher in males (153.7, 95% CI 141.6-165.8), than in females (80.8, 95% CI 73.2-88.4). Mean number of minutes of transport related physical activity per day was also higher in males (36.1, 95% CI 30.7-41.4) than in females (21.0, 95% CI 18.5-23.5).

Table 5.1 Distribution of level of daily total physical activity in women (Source: WHO STEPs 2015)

<table>
<thead>
<tr>
<th>Age Group(years)</th>
<th>n</th>
<th>% Low</th>
<th>95% CI</th>
<th>% Moderate</th>
<th>95% CI</th>
<th>% High</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>503</td>
<td>49.2</td>
<td>43.8-54.5</td>
<td>25.7</td>
<td>21.5-29.9</td>
<td>25.0</td>
<td>20.8-29.3</td>
</tr>
<tr>
<td>30-44</td>
<td>1133</td>
<td>38.7</td>
<td>35.0-42.4</td>
<td>23.8</td>
<td>20.8-26.8</td>
<td>37.5</td>
<td>33.5-41.5</td>
</tr>
<tr>
<td>45-59</td>
<td>989</td>
<td>40.8</td>
<td>36.9-44.7</td>
<td>22.8</td>
<td>19.8-25.9</td>
<td>36.4</td>
<td>32.4-40.3</td>
</tr>
<tr>
<td>60-69</td>
<td>496</td>
<td>52.0</td>
<td>46.4-57.6</td>
<td>18.7</td>
<td>14.6-22.8</td>
<td>29.3</td>
<td>24.4-34.1</td>
</tr>
<tr>
<td>18-69</td>
<td>3121</td>
<td>44.2</td>
<td>41.2-47.1</td>
<td>23.6</td>
<td>21.6-25.7</td>
<td>32.2</td>
<td>29.3-35.1</td>
</tr>
</tbody>
</table>

Table 5.2 Distribution of level of daily total physical activity in men (Source: WHO STEPs 2015)

<table>
<thead>
<tr>
<th>Age Group(years)</th>
<th>n</th>
<th>% Low</th>
<th>95% CI</th>
<th>% Moderate</th>
<th>95% CI</th>
<th>% High</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>289</td>
<td>25.5</td>
<td>19.5-31.5</td>
<td>23.0</td>
<td>17.6-28.4</td>
<td>51.5</td>
<td>45.2-57.9</td>
</tr>
<tr>
<td>30-44</td>
<td>660</td>
<td>29.2</td>
<td>25.1-33.4</td>
<td>17.8</td>
<td>14.6-21.0</td>
<td>53.0</td>
<td>48.4-57.6</td>
</tr>
<tr>
<td>45-59</td>
<td>675</td>
<td>28.9</td>
<td>24.9-32.9</td>
<td>12.9</td>
<td>10.3-15.6</td>
<td>58.2</td>
<td>53.7-62.6</td>
</tr>
<tr>
<td>60-69</td>
<td>361</td>
<td>31.7</td>
<td>26.3-37.1</td>
<td>16.4</td>
<td>12.2-20.6</td>
<td>51.9</td>
<td>45.9-57.8</td>
</tr>
<tr>
<td>18-69</td>
<td>1985</td>
<td>28.1</td>
<td>25.0-31.2</td>
<td>18.2</td>
<td>16.0-20.5</td>
<td>53.7</td>
<td>50.5-56.9</td>
</tr>
</tbody>
</table>

Work related activity was an important contributor to regular physical activity for a high proportion of both males (63.7%) and females (59.2%). However, nearly 34% of males and 45% of the females engaged in sedentary work. In 43% of males and 46% females, mode of transport did not require significant physical activity. Majority of adults (79.3%
males and 94.1% females) were not engaged in recreation related physical activity. Men engaged in recreation related physical activity for a longer duration (mean 12.6 minutes 95% CI 10.1-15.0) compared to females (mean 2.4 minutes, 95% CI 1.7-3.2).

Several key findings that emerge from this survey are important when formulating policies to promote physical activity. Overall, women are physically less active than men. A sizable proportion of adults are engaged in sedentary occupations. Occupational and domestic activity are important contributors to regular physical activity. Transport is not contributing to physical activity in more than half the adults. The vast majority of adults do not engage in leisure time physical activity.

**Insufficient physical activity among children, adolescents and youth in Sri Lanka**

Findings of the Global School based Student Health Survey (2008) (7) in Sri Lanka, show that among students 13-15 years, only 17.4% (SD ±3.0) of boys are physically active for a total of at least 60 minutes per day on all 7 days of the week. For girls the corresponding figure was even less (11.1% SD ± 2.3). In this age group, 34.6 %(SD± 3.6) of boys and 33.5% (SD± 2.4) of girls spent three or more hours per day, sitting and watching television, playing computer games, talking with friends, or doing other sedentary activities. While a small proportion of children and adolescents engage in regular physical activity, about one third spend many hours a day engaged in sitting activities; a behaviour pattern that promotes obesity. Findings of the Global School based Student Health Survey (2016), shown in Table 5.3, indicate that physical inactivity continue to be a serious behavioural problem in children and adolescents (8). Present day youth also seem to be engaged in a more sedentary lifestyle. According to the results of the National Youth Survey, among males, 57.2% of 15-19 year old youth and 55% of 20-24 year old youth are not engaged in any manual work. The respective values for females are 72.1% and 75.7% . Almost half (48.3%), give a history of watching television, video films, video games or internet on five or more days a week. (9).
Cost-effective policies and interventions for reducing insufficient physical activity

Many evidence based interventions – focusing on policy and environment, mass media, school settings, workplaces, the community and primary health care – can be implemented to increase people’s physical activity (2-5). Multicomponent interventions that use the existing social structures and participation of all stakeholders are the most successful.

The Global Action Plan on Physical Activity recommends multifaceted policies to create active societies, active people, active environments and active systems (5). The built environment plays an important role in facilitating physical activity for large portions of the population, by ensuring that walking, cycling and other forms of non-motorized transport are accessible and safe for all. The physical environment also provides sports, recreation and leisure facilities and ensures that there are adequate safe spaces for active living. School-based physical activity interventions show consistent improvements in knowledge, attitudes and behaviour of children (8). Workplace interventions reduce individual risk-related behaviours, including physical inactivity (10).
Monitoring insufficient physical activity

There are two indicators for monitoring insufficient physical activity (11):

1. prevalence of insufficient physical activity in adolescents, defined as less than 60 min of physical activity of moderate to vigorous intensity daily;

2. age-standardized prevalence of insufficient physical activity in persons aged 18 years and over, defined as NOT meeting any of the following criteria:
   - 150 min of moderate-intensity physical activity per week;
   - 75 min of vigorous-intensity physical activity per week;
   - an equivalent combination of moderate- and vigorous-intensity physical activity, accumulating at least 600 MET-min\(^1\) per week.

Global progress achieved

Global progress in attaining this target has lagged behind. Although, by 2013, 80% of countries reported having policies, plans or strategies for addressing physical inactivity, only 56% indicated that these were operational (12). Only a few countries (8%) reported tax incentives to promote physical activity – including tax exemptions on sports equipment, fitness programmes or gym membership, and higher taxation on items such as home entertainment equipment that encourage sedentary lifestyles. As a result of implementation of national policies and programmes to improve physical activity, several high-income countries, including Canada and Finland, have reported increased physical activity over the last decade (13, 14). In recent years more low- and middle-income countries have set up initiatives to address physical inactivity (15).

\(^1\) MET refers to metabolic equivalent. It is the ratio of a person’s working metabolic rate relative to the resting metabolic rate. One MET is defined as the energy cost of sitting quietly, and is equivalent to a caloric consumption of 1 kcal per kg per hour.
Actions to promote physical activity in Sri Lanka

A comprehensive set of policy options to improve physical activity is listed in the National Multisectoral Action Plan for Prevention and Control of Noncommunicable Diseases 2016-2020 (16 ). Ministries of Health, Sports, Education, Higher Education, Social services, Public Administration, Child Care and Women Development, Youth Affairs and Urban development are making efforts to implement them through various initiatives discussed below.

Research to identify factors that influence the outcomes of physical activity initiatives

Many social and physical (built) environment factors influence the pattern of physical activity in populations [17-22]. In Sri Lanka too, rising income levels, increased ownership and use of vehicles, land-use patterns, traffic safety and congestion, sedentary occupation, urban design, infrastructure for walking and cycling, availability of pavements, street lights, unattended dogs, enjoyable scenery, high levels of crime, easy access to recreation and retail shops, are important determinants of levels and patterns of physical activity. Income, equity, social acceptance, culture and social support are identified in literature as elements in the social environment that influence participation in physical activity [23, 24]. Local studies confirm the applicability of these findings to the Sri Lankan context (25-29). This information needs to be taken into consideration when designing and implementing physical activity initiatives.

Health promotion in schools

Sri Lanka has about 4 million school children distributed across 10,144 schools. Health promotion in schools has been recognized as an effective approach for early action against exposure to risk factors of NCDs, including physical inactivity. The Ministries of Health and Education have jointly adopted the concept of Health Promoting
Schools (30). The program underpinned by a School Health Promotion Policy, aims to create a sustainable health promoting school culture which enables children to adopt healthy behaviours and optimally benefit from educational opportunities provided. The key components of the program are skills based health education, safe and healthy school environment, access to health services and empowerment of the children to be agents of change, for promoting health of the family and the community. The School Health Unit of the Family Health Bureau and the Health Promotion Bureau provide technical guidance and training for Health Promotion in Schools. The program was evaluated in 2015. Based on the evaluation, about 3400 schools have been accredited as health promoting schools (30). In addition, the school curriculum on Health and Physical Education has been revised and introduced as a compulsory subject in secondary school, with the aim of strengthening skills to develop and maintain healthy behaviours (31). In 2015, the School Health Unit of the Family Health Bureau, together with the National Institute of Education and the Health Promotion Bureau designed the new “Health and Physical Education” curriculum for students giving special attention to health promotion, life skills development and strengthening of physical activity.

**Youth programmes**

The National Youth Policy of Sri Lanka (32), recognizes the importance of promoting healthy behaviors including physical activity to prevent NCDs. The Family Health Bureau has established a Technical Advisory Committee on Health of Young Persons with the participation of all stakeholders including the Ministries of Youth affairs and Skills Development and Education and Social Services. The Ministry of Youth affairs and Skills Development provides a range of services for youth including leadership and life skills development, vocational training, livelihood training and opportunities for recreation and sports. A Resource Pack for Health has been prepared and a training program has been initiated to strengthen the capacity of instructors of Youth Corps who conduct island-wide training programs for youth.
Promotion of physical activity in the community

The Ministry of Health launched the Healthy Lifestyle Centres program in 2011 to improve early detection of people at high cardiovascular risk at primary care level (see Chapter 10). People in age group 40-65 years utilize the service largely through self referral and are checked for behavioural and metabolic risk factors of NCDs. Counseling is provided as appropriate, to help modify behavioural risk factors including physical inactivity (see Chapter 10). Regular physical exercise sessions are organized for local communities in Healthy Lifestyle Centers, public playgrounds, and premises of various government institutions by medical officers/NCD. Ministry of Sports and the Ministry of Health have also launched an initiative to set up public fitness centers in all districts to facilitate physical activity in low-income populations.

Promotion of physical activity through health promotion settings

The Health Promotion Bureau plays a key role in promoting physical activity by providing guidance and establishing healthy settings; in preschools, workplaces, villages and hospitals. In 2016, 1425 preschools, 520 workplaces, 580 villages and 78 hospitals were identified as health promotion settings.

Effective workplace health programmes have been shown to improve the health and well-being of employees, reduce absenteeism and increase productivity. Some private sector companies already provide their employees with membership at gymnasiums, swimming pools and fitness centres. The Ministry of Health in collaboration with the Ministry of Public Administration is taking steps to introduce a policy on physical fitness/activity to be implemented in state and private institutions, starting with the institutions attached to the Ministry of Health. There are challenges ahead, as workplace physical fitness initiatives require identification of key stakeholders, attitude change, senior and middle management commitment, time allocation, as well as collaboration between employers and employees at the individual
workplaces.

Urban development

Modern urban development projects are increasingly paying attention to the health and wellbeing of people (31). For example, in the Metro Colombo Urban Development Project, the Colombo Municipal Council is improving the 480 km road network in the Colombo city, for the benefit of pedestrians as well as motorists. Steps are being taken to improve walkability by providing more convenient and clean walkways with better street lighting. Existing walkways will be connected to the new network for more efficient use. In addition to reducing traffic congestion and improving the image of the city, it will make the capital city physical- activity friendly. Other major cities could follow this example in urban development projects.

Mother Support Groups and health promotion

Mother Support Groups have the potential to contribute to modification of behavioural risk factors in families including physical activity. Nutrition Coordination Unit and the Health promotion Bureau in collaboration with UNICEF has set up Mother Support Groups in all districts, to improve family health by improving practices that promote healthy living (29). Mother Support Groups also assist Medical Officers of Health through their Public Health Midwives in several other tasks: to increase growth monitoring in children under 5 years, increase early detection of pregnancy and to reduce rates of anaemia among pregnant mothers. In addition, these groups engage in efforts to address important social issues such as early school dropout and teenage pregnancies. The project has also facilitated self employment of participating women and enhanced communication between the public health network and the target community.
Conclusions and future perspectives

Declining levels of physical activity among adolescents and adults in Sri Lanka will hasten the growth of the NCD burden. It is important that the general public understand that physical activity is essential for good health and that it can be undertaken at work, while engaging in day to day activities around the home and in many different ways: walking, running, cycling, sports and active forms of recreation. All forms of physical activity can provide health benefits if undertaken regularly and of sufficient duration and intensity.

Active play and recreation are key elements for prevention of childhood obesity (5, 34, 35), and need to be further strengthened through the school health program. Quality physical education and a health promoting school environment can inculcate health literacy for active lifestyles and prevention of NCDs. Many adults will benefit if worksites can be fashioned to promote physical activity and to reduce sitting/sedentary behavior. Culturally sensitive, affordable approaches also need to be developed to promote physical activity in women and the elderly.

The global action plan on physical activity (2018-2030), provides a prioritized list of policy actions that can be taken, to address the multiple cultural, environmental and individual determinants of physical inactivity by engaging with other sectors (5). Sri Lanka needs to identify a strategic combination of affordable policy responses for implementation over the short term (2–3 years), medium term (3–6 years), and longer-term (7–12 years).

A major national effort backed by adequate human and financial resources, is needed to implement a portfolio of physical activity initiatives across provincial, district and divisional secretariat levels, to target all segments of the population. The Presidential Secretariat and relevant units of the Ministry of Health can be the driving forces that support the strategic implementation of the national physical activity initiative. However, alone, they have only limited opportunities to organize and sustain such an initiative, in the long-term. Success will depend on the stronger engagement of a wide range of partners
including; Ministries of Health, Sports, Education, Higher Education, Social services, Public Administration, Transport, Child Care and Women Development, Youth Affairs, Urban development, Labour and Labour relations, Institute of Occupational Safety and Health promotion institute and the Ceylon Chamber of Commerce, among others.

A national physical activity task force, with representation from all relevant Ministries, multiple sectors, agencies, non-governmental organizations and the private sector could provide guidance in implementing the national physical activity plan. As part of the national NCD programme, there is also a need to advocate for physical activity and mobilize communities through social marketing and mass media campaigns – including education of the public on the benefits of physical activity (e.g. NCD prevention, less air pollution as a result of reduced traffic). Programme development to promote physical activity should be encouraged and adequately resourced in all 25 districts, in cooperation with relevant sectors, through activities of daily living and across a range of settings such as schools, universities, workplaces, health-care services, and the local and wider community. Operational research is essential to identify best practices and assess population reach and impact of such programs(36).

References


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CHAPTER 6

National NCD Target 4: Reduce salt consumption

A 30% relative reduction in mean population intake of salt/sodium by 2025

Key messages

- Consumption of too much sodium (over 2 grams per day, equivalent to 5 grams of salt per day), increase the risk of heart attacks and strokes.

- Reduction of salt intake can reduce systolic blood pressure as well as diastolic blood pressure and contribute to prevention of hypertension, heart attacks and strokes.

- WHO recommends a reduction of sodium/salt intake to <2 g/day sodium (5 g/day salt) in adults.

- The population mean intake of salt in Sri Lanka is almost double the recommended amount, and contributes to the high prevalence of hypertension.

- Reducing salt intake has been identified as one of the most cost-effective measures for addressing hypertension and improving cardiovascular health.

- Multisectoral collaboration is required to improve access to products with lower sodium content.

- Work related to this target in Sri Lanka need to be accelerated through the implementation of health promotion programs, food labelling and regulation of salt content in processed foods.
• The attainment of this target will contribute to the attainment of the targets on reducing the prevalence hypertension and premature mortality from NCDs.

Salt/sodium intake and its impact on health

Globally, 1.7 million annual deaths from cardiovascular causes have been attributed to excess sodium (salt) intake (1). Excess consumption of sodium increase the risk of hypertension which is a major cause of heart disease and stroke (1−4). The main dietary source of sodium worldwide is salt. Many scientific studies have consistently demonstrated that a modest reduction in salt intake lowers blood pressure (5-8). The blood pressure lowering effect is shown in people with high blood pressure, normal blood pressure, in all age groups, and in all ethnic groups. Reducing sodium intake results in a decrease in resting systolic blood pressure of 3.4 mmHg and a decrease in resting diastolic blood pressure of 1.5 mmHg (8). High sodium consumption (over 2 grams per day, equivalent to 5 grams of salt per day) contributes to high blood pressure. Sodium consumption is also associated with cardiovascular disease events in persons who consume more than 3.5 g/day of sodium (9−11). Worldwide, people consume more salt than they should (Figure 6.1). Reduction in salt intake is one of the most cost-effective population-based interventions to reduce the prevalence of hypertension, heart disease and stroke and is categorized as a World Health Organization best-buy (12, 13 ) (see Chapter 2).

Worldwide salt intake

Worldwide, there is a rise in production of processed food, which are also becoming readily available and more affordable. As a result people consume more processed foods (such as ready meals, processed meats like ham, bacon, sausages and salami, cheese, salty snack foods, salted fish and instant noodles, among others), that are high in salt, saturated fat, trans fat and sugar. At the same time, there is
a drop in the consumption of fruits, vegetables, and whole grains, that are key components of a healthy diet. Salt is consumed in processed foods, either because they are particularly high in salt or because they are consumed frequently (such as bread, cheese, and processed cereal products). Salt is also added to food during cooking (sometimes as bouillon and stock cubes) or at the table (pickles, soy sauce, fish sauce, and table salt).

**Recommendation of the World Health Organization**

WHO recommends a reduction in sodium intake to reduce blood pressure and risk of stroke and coronary heart disease in adults (4, 14). A reduction in sodium intake is also recommended to control blood pressure in children. WHO recommends a reduction to <2 g/day sodium (5 g/day salt) in adults (4). For children, it is recommended that the maximum level of intake of 2 g/day sodium (5 g/day salt) in adults, be adjusted downward based on the energy requirements of children relative to those of adults (4).

**Population salt intake in Sri Lanka**

Accurate data on population mean sodium intake are currently available mainly for high- and high-middle-income countries. In Sri Lanka, available data indicate that the average salt intake is around 9-12 g/day (15-17); very much higher than the recommended intake. One study investigated the salt intake of government employees using 24-hour sodium excretion in urine. Mean salt intake levels measured by 24-hour sodium excretion in hypertensives and normotensives were 202.56 (SD ± 85.45) mmol/day and 176.79 (SD ± 82.02) mmol/day, respectively. This is equivalent to a daily salt intake of 11.9 g (SD ± 5)/day and 10.3 g (SD ± 5)/day in hypertensives and normotensive respectively (17).

In Sri Lanka most of the salt consumed comes from salt added during food preparation at home. In the most recent STEPs survey, more
than half of the target households (52.8%), reported adding salt to rice while cooking (18). Salt added at the table, salt in processed foods and ready-made meals, contribute to the total daily intake to a lesser extent. According to the findings of the STEPs survey, 27% of adults gave a history of consuming processed food often. With greater availability of processed foods as well as ready made meals, sources of sodium intake is rapidly shifting towards these food items, particularly in urban areas.

**Figure 6.1. Mean sodium intake in persons aged 20 years and over, comparable estimates, 2010 (Source: Global Status Report on NCDs 2014. Geneva: World Health Organization)**

**Monitoring population intake of salt/sodium**

The indicator for monitoring this target is age-standardized mean population intake of salt (sodium chloride) in grams per day in persons aged 18 years and over (19). The baseline level of population salt/sodium intake need to be established by gathering data from a population-based (preferably nationally representative) survey. A subsample of the population used for the NCD STEPS survey could be used to estimate data on salt consumption. The recommended standard for estimating
salt intake is 24-h urine collection; however, other methods such as spot urine, single morning fasting urine and food frequency surveys may also be used to obtain provisional estimates.

**Progress achieved in other countries**

Many countries have national programs to reduce population salt consumption (20). Finland initiated a systematic approach to reduce salt intake in the late 1970s through mass media campaigns, cooperation with the food industry, and implementation of salt labeling legislation. The reduction in salt intake was accompanied by a decline in both systolic and diastolic BP of > 10 mmHg. Reduction in salt intake contributed to the reduction of mortality from heart disease and stroke in Finland during this period (21, 22). The salt reduction programme in the United Kingdom started in 2004. Since then there has been reduction in salt content in many processed foods and a 15% reduction in 24-h urinary sodium over 7 years (from 9.5 to 8.1 g per day). The United Kingdom salt reduction programme reduced the population’s salt intake by gradual reformulation on a voluntary basis (23, 24). Argentina, Brazil, Chile, Canada, Mexico, and the USA have also promoted voluntary national reformulation targets and timelines with the food industry. Most of these countries are targeting salt reduction in packaged foods and bread, while Mexico has focused on foods available in the school environment (20, 25). In 2011, The Ministry of Public Health of Thailand, along with other stakeholders, initiated a campaign aimed at reducing salt consumption by 50%. Attention was mainly on foods popular among children, particularly snacks. Food producers were requested to reformulate their products reducing the salt content. This strategy resulted in many good market products, such as potato chips with sodium reduced by 50%, and instant noodles with sodium reduced by 20% (using potassium chloride) (26).

While some WHO Member States have opted for setting voluntary targets for salt reformulation, others, including Argentina, South Africa, Pacific islands and Kiribati have opted for legislative and regulatory approaches to set specific targets for various food groups. Both methods
involve dialogue with the private sector to facilitate reformulation. In addition public need to be educated, so that as informed consumers they can make full use of the enabling environment (27-29).

**Actions to attain this target in Sri Lanka**

According to the findings of the STEPs survey in Sri Lanka, while about 27% consumed processed food often, 23% limited the consumption of processed food in order to control salt intake. Only 6% reported that they looked at the salt or sodium content in the food labels, and only 3% stated that they buy low salt or sodium alternatives. Salt is added to taste when preparing curries and sometimes even rice, in Sri Lankan households (18). Average monthly household consumption of bread in the urban sector in Sri Lanka is 5.6 kg/month (30). Although this cannot be the main lever to reduce salt intake, it can play a contributory role in reducing salt consumption in the urban population. In China, where salt is added during home cooking, culturally tailored salt-restriction strategies have already been launched, including the use of special spoons for adding salt during cooking and substitutes for cooking salt (31, 32).

**Mandatory labeling of processed food**

In Sri Lanka, the Food Control Administration Unit in the department of Environmental and occupational Health and food safety, has initiated a legal process for mandatory inclusion of a nutrition panel on processed food packages. The nutrition panel will indicate the content of salt, sugar and other nutrients of the processed food item (see Chapter 8). Plans are also underway to mark processed food items with recommended levels of salt, sugar and fat, with a special logo. There is evidence that mandating the use of “nutrition facts” panels can improve dietary patterns, by influencing the food industry to reformulate products. This intervention has the potential to reduce salt intake among those who consume processed food.
Food based dietary guidelines

Food based dietary guidelines have been developed by the Nutrition Division of the Ministry of Health. They contain up-to-date information and recommendations on salt intake (33). They are user friendly and are available in Sinhalese, English and Tamil Languages and can be downloaded free from the internet.

National health promotion program

The National Health Promotion Policy and the Strategic Plan have been developed by the Health Promotion Bureau of the Ministry of Health. Reduction of population intake of salt is one of the objectives of the national health promotion programme. The Health Promotion Bureau oversees, guides and monitors the implementation of health promotion activities island-wide. Guidelines, circulars and training manuals are available for implementing health promotion activities in multiple settings; hospitals, preschools, schools, work places, villages and cities. These provide entry points for implementing specific activities to reduce salt intake. Capacity strengthening workshops are held at national provincial and district levels, encompassing advocacy, communication, health education, community mobilization and community empowerment. The School health promotion programme is regularly evaluated by the Family Health Bureau. Preschool, hospital, workplaces, village health promotion projects are regularly evaluated by the Health Promotion Bureau. Sustainability is a major concern for health promotion programmes in the context of a resource constrained environment. Often, after having incurred significant start-up costs in human and technical resources, funds run-out before health promotion activities have reached full fruition. Efforts are being made to institutionalize projects in settings and to develop networks of community volunteers to ensure continuity of health promotion programs.
Monitor iodization of salt

The iodination program in Sri Lanka was implemented about two decades ago to avoid iodine deficiency disorders in the population. Non-iodised salt is not available in the Sri Lankan market today. Recent studies report a high prevalence of iodine induced hyperthyroidism, autoimmune thyroiditis and raised iodine levels (34). This may be due to excessive iodine intake from high intake of salt. A study conducted to assess iodine in commercial salt products report that, the mean iodine content was above the recommended upper limit of 40 mg/kg in commercial iodized salt products in the local market (35). Chronic exposure to high iodine concentrations is a concern in view of possible iodine induced immune phenomena (34). There is a need for better monitoring of the salt iodization, taking into consideration the recommended salt intake and an optimal iodine status of the population.

Conclusions and future perspectives

Work related to the attainment of this target in Sri Lanka is at an early stage. Sri Lanka needs to accelerate action on this target by developing and implementing a national salt reduction strategy.

The key components of a National Salt Reduction Strategy as outlined by WHO (36) are:

(i) Set up a steering group with strong leadership and scientific credibility;

(ii) Determine salt intake by measuring 24-h urinary sodium;

(iii) Identifying the main sources of salt by dietary record;

(iv) Implement nutrition labelling;

(v) Conduct consumer awareness and education programs;

(vi) Set progressively lower salt targets for different categories of processed food, with a time frame for the industry to achieve
targets;

(vii) Monitor progress by periodic surveys

(viii) Repeat 24-h urinary sodium every 5 years as part of the STEPs survey.

An important first step would be a survey to estimate salt intake using 24-hour urinary sodium excretion in a representative population sample. This baseline data is key for monitoring of progress toward achieving the target. As alluded to earlier, the next NCD STEPs survey provides an opportunity to estimate data on salt consumption using 24-h urine collection or a single morning fasting urine sample.

Data are also required on the following:

- The main sources of sodium in the diet (current food intake and sodium contribution of different foods);
- Daily food intake and discretionary (consumer-controlled) salt use;
- Data on the sodium content of foods (food composition data);
- Relevant sodium content targets for manufactured foods;
- Reductions required in sodium content of foods and discretionary salt use to achieve a 30% reduction in population salt intake.

There is a need to further strengthen the public education campaign on reducing salt intake. Public education has a better chance of succeeding, when combined with other policy measures such as mandatory food labeling. It is well known that modification in peoples’ behavior is only slowly achieved through long-term health education, when supported and reinforced by environment and social change.

Actions to attain of this target will help Sri Lanka to reduce the population prevalence of hypertension and cardiovascular morbidity and mortality. Countries such as Finland and the United Kingdom that have successfully reduced salt intake have demonstrated a reduction
in population blood pressure and cardiovascular mortality, with major cost savings to the health service.

References


National NCD target 5: Reducing tobacco use

A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years by 2025

Key messages

• Tobacco use causes 7 million preventable deaths per year globally.

• Inclusion of a target for tobacco control in the Sustainable Development Agenda 2030, recognizes the harm tobacco use can impose on sustainable development.

• Tobacco control measures are highly cost effective and the public health benefits are far more likely to be realized if they are implemented as part of a comprehensive approach that will lead to full implementation of the WHO Framework Convention on Tobacco Control.

• In 2015, in Sri Lanka, the economic cost of tobacco to society (costs to treat the conditions caused by tobacco and costs due to premature mortality and absenteeism), was Rs. 89.37 billion (US$ 662.0 million).

• In most economies, including in Sri Lanka, the economic cost of tobacco related to medical care and loss of productivity exceeds total tobacco tax revenues.

• Sri Lanka was the first country in Asia and the fourth globally to ratify the WHO Framework Convention on Tobacco Control.
• Significant progress has been made in implementing tobacco-control measures in Sri Lanka, but much still remains to be done.

• Tobacco-control efforts must be sustained over a long period of time and reinforced, to have any lasting impact on reducing tobacco prevalence.

• The attainment of this target is vital for the attainment of the national target on reducing premature mortality from NCDs.

**Tobacco use; harmful impact on health**

Both direct use of tobacco and exposure to second-hand smoke are harmful to health. Tobacco use increases the risk of cardiovascular disease, cancer, chronic respiratory disease, diabetes and premature death. Seven million people are currently estimated to die each year from tobacco use (1). Unless strong action continues to be taken by countries, the annual toll is projected to increase to 8 million deaths per year by 2030, or 10% of all deaths projected to occur that year (2, 3). Tobacco use also imposes an economic burden in medical costs and from lost productivity. In most economies, including in Sri Lanka, the economic cost from tobacco related health care and loss of productivity exceeds the total tobacco tax revenue(s). Inclusion of a target for tobacco control in the Sustainable Development Agenda 2030, recognizes the harm of tobacco use can impose on overall development. Under Sustainable Development Goal 3, target 3.A, is to strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate (4).

Manufactured cigarettes are the most common form of smoked tobacco. In addition, tobacco is smoked in cigars, pipes, hookahs, bidis and other forms. There is no form of tobacco that is safe. With more than 1.1 smokers using tobacco products worldwide, tobacco smoke releases significant amounts of toxic products and pollutants...
directly into the environment causing harm even to non-smokers and children (5).

In 2016, globally more than 1.1 billion people aged 15 years or older smoked tobacco (34% of all males and 6% of all females in this age group). Globally smoking prevalence is about five times higher among men than among women (see Figure 7.1. and Figure 7.2.). Smoking prevalence is higher in high income countries (25%) than in middle-income countries (22%) and low-income countries (18%) (1-3).

**Figure 7.1. Age-standardized prevalence of current tobacco smoking in males aged 15 years and over, comparable estimates, 2012 (Source: WHO Global Status Report on NCDs 2014. Geneva. World Health Organization)**
Figure 7.2. Age-standardized prevalence of current tobacco smoking in females aged 15 years and over, comparable estimates, 2012 (Source: WHO Global Status Report on NCDs 2014. Geneva. World Health Organization)

Tobacco use; economic and social costs in Sri Lanka

Latest available data on tobacco prevalence in Sri Lanka is shown in Table 7.1. Prevalence of current tobacco use in youth (13-15 years) in males and females is 6.7% and 0.7% respectively (7). The prevalence of current tobacco smoking in adults (18-69 years), in males and females is 29.4% and 0.1% respectively (8).
Table 7.1 Prevalence of tobacco (%) use in Sri Lanka (Source: Global Youth Tobacco Survey 2015 and WHO STEPs survey Sri Lanka 2014)

<table>
<thead>
<tr>
<th></th>
<th>Youth tobacco use</th>
<th>Adult tobacco smoking</th>
<th>Adult smokeless tobacco use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current tobacco use</td>
<td>Current cigarette smoking</td>
<td>Current</td>
</tr>
<tr>
<td>Male</td>
<td>6.7</td>
<td>2.9</td>
<td>29.4</td>
</tr>
<tr>
<td>Female</td>
<td>0.7</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>3.7</td>
<td>1.5</td>
<td>15.0</td>
</tr>
</tbody>
</table>

The economic and social costs of tobacco was estimated in a study conducted by the National Authority on Tobacco and Alcohol (NATA) and the World Health Organization (WHO), in collaboration with the Ministry of Health and Nutrition of Sri Lanka, the Sri Lanka Medical Association and the Health Intervention Technology Assessment Programme of the Ministry of Public Health, Thailand (9). In 2015, the direct and indirect costs of tobacco in Sri Lanka was estimated to be Rs. 89.37 billion. (US$ 662.0 million). The costs for tobacco related cancers was Rs. 16.3 billion (US$ 121.1 million), while for tobacco related NCDs it was Rs. 73.0 billion (US$ 540.7 million). Ischemic heart diseases and stroke were the biggest contributors to costs of tobacco related NCDs. Oral cancer cost was the major contributor to cancer costs of tobacco.

**Cost-effective policies and interventions to reduce tobacco use**

Most governments have already engaged in strengthening their tobacco control measures, to attain, the global NCD target and the Sustainable Development Goal target on tobacco control (4, 10). The World Health Organization Framework Convention on Tobacco Control (11) and its guidelines (12) represent the global instrument that enables its Parties to attain the tobacco reduction targets (13).
A comprehensive set of policy options for tobacco control is listed in the global NCD action plan (14), including the most cost-effective interventions (“best buys”) for tobacco control (15) (see Chapter 2, Table 2.5). Evidence shows that the very cost-effective World Health Organization Framework Convention on Tobacco Control reduction measures for reducing national tobacco use are:

- reducing the affordability of tobacco products by increasing tobacco excise taxes;
- creating by law, completely smoke-free environments in all indoor workplaces, public places and public transport;
- alerting people to the dangers of tobacco and tobacco smoke through effective health warnings and mass media campaigns; and
- banning all forms of tobacco advertising, promotion and sponsorship.

Full implementation of the WHO Framework Convention on Tobacco Control involves adopting several other measures; demand reduction measures such as helping tobacco users to quit and regulating tobacco products; supply reduction measures such as combating illicit trade, providing alternative livelihoods to tobacco farmers, and banning the sale or provision of tobacco products to minors; countering tobacco industry interference; and establishing a national multisectoral and interministerial coordinating mechanism for the implementation of the WHO Framework Convention on Tobacco Control.

**Monitoring tobacco use**

The global monitoring framework indicators, for monitoring progress towards attaining this target are (14):

- prevalence of current tobacco use among adolescents;
- age-standardized prevalence of current tobacco use among persons aged 18+ years.
Tobacco control; the global momentum

Governments use the tobacco control measures in the WHO Framework Convention on Tobacco Control, to reduce the prevalence of tobacco use and exposure to tobacco smoke. WHO has introduced the MPOWER package (Monitor tobacco use and prevention policies, Protect people from tobacco smoke, Offer help to quit tobacco use, Warn about the dangers of tobacco, Enforce bans on tobacco advertising, promotion and sponsorship, Raise taxes on tobacco), to assist countries to implement demand reduction measures contained in the WHO Framework Convention on Tobacco Control.

Nearly two thirds of countries (121 of 194) – comprising 63% of the world’s population – have now introduced at least one MPOWER measure at the highest level of achievement. Overall progress has been steady, with roughly 15 new countries reaching best-practice level on one or more measures every 2 years. As a result, about 4.7 billion people are now covered by at least one best-practice policy intervention at the national level (1). More than a third of countries (71) have two or more MPOWER measures in place at the highest level of achievement, protecting a total of 3.2 billion people (43% of the world’s population). Eight countries (Brazil, Islamic Republic of Iran, Ireland, Madagascar, Malta, Panama, Turkey and the United Kingdom of Great Britain and Northern Ireland), have four or more MPOWER measures in place at the highest level (1).

Since 2015, an additional 2.3 billion people in 42 countries have been protected by at least one new or strengthened measure at the highest level of achievement. Of these 42 countries, 19 are low- and middle-income countries with a combined 1.9 billion population. There are 10 countries (with a total 1.4 billion people) that have introduced two new or strengthened measures, and 16 countries (with a total 1.8 billion people) have adopted a comprehensive MPOWER measure for the first time (1).
While many countries had banned some forms of tobacco advertising, promotion and sponsorship (TAPS) in 2016, only 15% had completely banned all its forms.

The most cost-effective tobacco-control strategy is to increase the price of tobacco products by raising tobacco tax, but this measure has progressed slowly. According to WHO estimates, a tax increase that increases tobacco prices by 10% decreases tobacco consumption by about 4% in high-income countries and about 5% in low- and middle-income countries. Even so, by 2016, Only 32 countries, with 10% of the world’s population, have introduced taxes on tobacco products so that more than 75% of the retail price is tax (1) (Figure 7.3).

Monitoring is an essential component of the WHO Framework Convention on Tobacco Control, but as of 2016 only about one third of countries, with a total of 2.9 billion people, have comprehensive monitoring systems in place at best-practice level. The comprehensive
level requires recent, representative and periodic surveys for both adults and youth to have taken place (1).

More countries are extending their smoke-free policies to cover outdoor settings such as public parks, outdoor cafes and markets, as well as settings that were not traditionally covered by such regulations, such as prisons and private vehicles when carrying children.

There has been a move towards very large pictorial warnings (occupying, in general, more than 60% of principal display areas) on tobacco packages, and standardized (or plain) packaging in line with the obligations of the WHO Framework Convention on Tobacco Control (11-13). The 181 Parties to the WHO Framework Convention on Tobacco Control have agreed, through Article 11 of the Convention, to implement effective packaging and labelling measures and, through Article 13, to undertake a comprehensive ban (or restrictions) on tobacco advertising, promotion and sponsorship. In December 2012, Australia was the first country to fully implement tobacco plain packaging (also known as “standardized packaging”). Plain packaging prohibits the use of logos, colours, brand images and promotional information on tobacco products and packaging, other than brand and product names in a standardized colour and font. Three sets of challenges were brought against the plain packaging legislation of Australia: a constitutional challenge in the High Court of Australia brought by British American Tobacco, Imperial Tobacco, Japan Tobacco and Philip Morris; an investment challenge by Philip Morris Asia under the Hong Kong–Australia bilateral investment treaty, and a set of World Trade Organization disputes brought by several countries. The constitutional challenge and the investment challenge were dismissed in 2012 and 2015 respectively. In June 2018, a World Trade Organization (WTO) Panel ruled against complaints brought by Ukraine, Honduras, the Dominican Republic, Cuba and Indonesia concerning Australia’s tobacco packaging law. The panel decided that Australia’s policy on plain packaging is consistent with World Trade Organization law. The ruling clears another legal hurdle thrown up in the tobacco industry’s efforts to block tobacco control and is likely to accelerate implementation of plain packaging around the world. Today,
six other countries have implemented plain packaging laws (Hungary, Ireland, France, New Zealand, Norway and the United Kingdom), another six have passed laws yet to be implemented (Burkina Faso, Canada, Georgia, Romania, Slovenia and Thailand).

Progress achieved in tobacco control in Sri Lanka

Political leadership and commitment

Sri Lanka ratified the WHO Framework Convention for Tobacco Control on 11th November 2003 and was the first country in Asia to ratify the Framework Convention on Tobacco Control, and the fourth globally. As a result of steadfast political commitment from the highest levels of government, Sri Lanka has made good progress in implementing tobacco control measures ((Table 7.2). Both H.E the President Maithripala Sirisena and the current Minister of Health, Dr. Rajitha Senarathna are the recipients of the WHO Director General’s Tobacco Award for their leadership and commitment for tobacco control (16).

Legislation

Sri Lanka is also the first country in the South East Asian Region to introduce tobacco control legislation. A National Authority was established under Section 2 of the National Authority on Tobacco and Alcohol Act, No. 27 of 2006, with the responsibility to reduce tobacco and alcohol related harm through public health policy development and implementation, and advocacy (17).

The National Authority on Tobacco and Alcohol (NATA) Act prohibits;

- sale of any tobacco or alcohol product to or by persons under 21 years of age;
- installation of vending machines for tobacco products;
- sale of tobacco products without health warning and the tar, nicotine content in each tobacco product;
• tobacco advertisements and sponsorships of any type including free distribution, promotion etc of tobacco products;

• smoking in public places as defined in the Act.

The Cabinet has also decreed that no tobacco should be sold within 100 metres of any school in the country. In addition to the current authorized officers (police and excise personnel, food and drugs inspectors and the public health inspectors of the Ministry of Health), Medical Officers of Health have also been added as Authorized Officers under the Act. Medical Officers of Health are the key health personnel who coordinate and supervise public health activities at the divisional level.

Recently, NATA filed legal action against a movie (‘Adaraneeya kathawak’), for the violation of Section 35 of National Authority on Tobacco and Alcohol Act No.27 of 2006. A writ application was filed in the Court of Appeal against the Censor board to prevent them giving approval to movies which violate the provisions of the National Authority on Tobacco and Alcohol Act. The experience in implementation of the National Authority on Tobacco and Alcohol Act for nearly a decade has helped to identify a number of loopholes and weaknesses in the Act are being rectified by Cabinet decisions.

**Packaging and Labelling Regulations**

Government issued a gazette notification on August 8th 2012, requiring 80% pictorial health warnings on all cigarette packages. Due to tobacco industry litigation, it was implemented three and a half years later. The court ruling reduced the size of the pictorial health warnings to 60% of the front and back panels of the cigarette pack (18). The National Authority on Tobacco and Alcohol (Amendment) Act, No. 3 of 2015 was passed in March 2015, which increased the size of the health warnings to 80% of the front and back of the package as was originally proposed. On 1 June 2015, Sri Lanka implemented pictorial health warnings covering 80% of the top surface area of both front and back covers of tobacco packets (Figure 7.4), which also includes a text
warning message in all three languages used in the country (Sinhala, Tamil and English).

**Figure 7.4 Pictorial Warnings in cigarette packages in Sri Lanka**

The National Authority on Tobacco and Alcohol has initiated the process to introduce plain packaging in Sri Lanka. The cabinet of Ministers has approved the plain packaging legislation that was proposed and it is being drafted to be submitted to the Parliament as a bill.

**Price and Tax Measures**

Tobacco tax in Sri Lanka is governed by the Tobacco Tax Act. In 2016, government revenue from tax on cigarettes was LKR 88.8 billion, a 11% increase compared to the previous year (19). In 2016, the reported gross turnover of the Ceylon Tobacco Company (CTC) PLC Ltd. was LKR 121.5 billion and the net revenue was LKR 31.7 billion(20). Based on a Tobacco Tax proposal presented by the National Authority on Tobacco and Alcohol, in September 2016 cabinet approval was obtained for a 74% increase in tax on cigarettes (a 15% increase in Value Added Tax on cigarettes and an increase in production tax by LKR 5 per cigarette. The cess tax imposed on cigarettes was increased from LKR 2000 per kg to LKR 3000 per kg. This tax revision made taxation on cigarettes in Sri Lanka the third highest in Asia. The price of cigarettes still remains
below a level that would significantly affect the affordability. In order to reduce tobacco consumption, the National Authority on Tobacco and Alcohol, is negotiating with the Government to introduce a taxation formula and schedule which reduces affordability, by keeping in step with the increase in the per capita income and the purchasing power of the population. the National Authority on Tobacco and Alcohol has also initiated the process to ban single stick sales of cigarettes.

**Monitoring Tobacco Industry Interference**

The tobacco industry has interfered with the country's attempts to introduce tobacco control policies. In 2012, for example, the Ceylon Tobacco Company took legal action against the then Minister of Health, Honourable Maithripala Sirisena, over the implementation of 80% pictorial health warnings on tobacco packets (16, 18).

The Ceylon Tobacco Company is also accused of point-of-sale advertising and promotion, strategic targeting of youth and women in marketing campaigns and influencing communities via retailers and Corporate Social Responsibility based activities (21).

Tobacco industry interference in multiple covert ways (lobbying policy makers, disguised promotion under Corporate Social Responsibility activities, organizing tobacco farmers as a pressure group, bribing the retail sellers with unauthorized incentives, etc.), remains the single largest obstacle to progress in tobacco control.

In June 2016, Sri Lanka launched the Centre for Combating Tobacco (CCT), a Framework Convention on Tobacco Control tobacco industry observatory. The remit of this Centre is to monitor tobacco industry interference and disseminates information on tobacco industry violations of the Framework Convention on Tobacco Control Article 5.3. In August 2017, the new Centre initiated the first ever public hotline, giving public the opportunity to report violations of Article 5.3.
Framework Convention on Tobacco Control Protocol to Eliminate Illicit Trade in Tobacco Products

On 8th February 2016, Sri Lanka endorsed the Framework Convention on Tobacco Control Protocol to Eliminate Illicit Trade in Tobacco Products, becoming the first country in the WHO South-East Asia Region, and the fourteenth country in the world to do so. This protocol provides tools to prevent illicit trade in tobacco products by securing the supply chain, establishing an international tracking and tracing system, as well as measures for law enforcement which enable international cooperation.

Table 7.2 Some aspects of the Sri Lanka National Tobacco Control Programme (Source: WHO report on the global tobacco epidemic, 2017, Country profile)

<p>| Government’s expenditures on tobacco control, 2016. | LKR 63 000 000 |
| % of GDP per capita required to purchase 100 packs of the most sold brand of cigarettes (the higher the %, the less affordable) | 17.49% |
| Cigarettes are less affordable in 2016 compared to 2014 | Yes |
| Price of lowest cost brand of cigarettes (Capstan) Tax inclusive retail sales price (TIRSP) for a pack of 20 cigarettes | LKR 560.00 |
| Price of premium brand cigarettes (B&amp;H / Dunhill) Tax inclusive retail sales price (TIRSP) for a pack of 20 cigarettes | LKR 1060.00 |
| Price most sold brand of cigarettes (JP Gold Leaf) | LKR1000.00 |
| Total taxes on the most sold brand (% of retail price) | 62.1%* |
| Specific excise tax | 47.5% |
| Value added tax (VAT) or sales tax 10.7% | 10.7% |
| Other taxes (National Building Tax and Economic Service Charge) | 3.9% |</p>
<table>
<thead>
<tr>
<th>Compliance score on bans of direct tobacco advertising (score 0 to 10)</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law requires fines for violations of direct advertising bans</td>
<td>Yes</td>
</tr>
<tr>
<td>Bans on tobacco promotion and sponsorship-compliance scores</td>
<td>10</td>
</tr>
<tr>
<td>Free distribution</td>
<td>5</td>
</tr>
<tr>
<td>Promotional discounts</td>
<td>6</td>
</tr>
<tr>
<td>Non-tobacco products identified with tobacco brand names</td>
<td>4</td>
</tr>
<tr>
<td>Appearance of tobacco brands in television and/or films (product placement)</td>
<td></td>
</tr>
<tr>
<td>Appearance of tobacco products in television and/or films</td>
<td></td>
</tr>
<tr>
<td>Sponsorship (contributions / publicity of contributions) (compliance score)</td>
<td>5</td>
</tr>
<tr>
<td>Ban on Corporate Social Responsibility activities (Instructions have been sent to all government departments in Sri Lanka not to accept any offers of Corporate Social Responsibility activities from the tobacco industry but the industry uses devious means to do so.)</td>
<td>No</td>
</tr>
</tbody>
</table>

§ A score of 0-10. Scores of 8 and above= high compliance, *excludes VAT

**Impact Assessment**

Ten years after the Framework Convention on Tobacco Control was adopted, the Conference of Parties, at its fifth session in 2013, acknowledged the need to conduct an overall assessment on the impact of the Framework Convention on Tobacco Control on the implementation of tobacco control measures and its effectiveness as a tool to reduce tobacco consumption and prevalence. Sri Lanka was chosen as one of twelve countries for this impact assessment.
The National Authority on Tobacco and Alcohol, in collaboration with WHO supported the impact assessment by facilitating meetings with the relevant stakeholders for tobacco control and the visiting group of experts who conducted the study.

**Combating the threat of smokeless tobacco**

In Sri Lanka, smokeless tobacco in the form of betel chewing is a deep seated lifestyle habit especially in the villages and estate sector labour communities. Betel chewing ingredients such as betel leaf, tobacco, areca-nut and lime are available in the open market or are home grown. No taxes are levied on the entire supply chain. Further, commercial preparations such as mawa, gutka, panparag, hans, babul and beeda are becoming popular among the younger generation in Sri Lanka in urban and semi-urban communities. In the last quarter of 2018, Sri Lanka in collaboration with the World Health Organization and the Centre for Disease Control will conduct the first Global Adult Tobacco Survey, which will provide comprehensive data on the use of smokeless tobacco. A subcommittee on smokeless tobacco was established under the National Authority on Tobacco and Alcohol in August 2015. It aims to monitor smokeless tobacco use and formulate preventive policies to protect the health of the population from smokeless tobacco. On the recommendations of the National Authority on Tobacco and Alcohol, in September 2017 the Government issued a regulation that bans the import, marketing and sale of any type of smokeless tobacco product in the country. The implementation of these regulations have met with some difficulties on account of the historical and cultural context of smokeless tobacco in Sri Lanka.

**Other tobacco control activities of the National Authority on Tobacco and Alcohol**

The general public of Sri Lanka, namely, community based organizations, non-governmental organizations and community
groups organized informally, play a major role in tobacco and alcohol control. Public pressure and support has helped policy makers and politicians to select decisions favourable for public health over alternatives favourable for the industry; for example, price increases, pictorial health warnings and advertising bans. To strengthen the civil society, the National Authority on Tobacco and Alcohol is supporting the establishment of smoke free villages and towns through Medical Officers of Health and Public Health Inspectors, using a multisectoral approach. Local government officials, Divisional Secretaries, Community and Religious leaders are extending their support to the initiative. A series of health education and awareness programmes are being carried out, targeting a wide cross-section of the community including children, young adolescents adults.

The Tobacco Quit Programme has been identified as a priority area for Sri Lanka. A tobacco quitline first established in 2010 at the Regional Director of Health Services Office at Anuradhapura is being strengthened and expanded with the introduction of new software. The quitline will be a key activity in a more comprehensive service for cessation, and will include a network of trained counselors and mental health specialists to provide high level advice and supervision. Preparations, including training of health personnel are also underway to provide support for smoking cessation through Healthy Lifestyle Centers (see Chapter 10).

**Conclusions and future perspectives**

The significant progress in tobacco control in Sri Lanka is attributable to high level political commitment, an active lead agency (the National Authority on Tobacco and Alcohol) and an engaged civil society. In recognition of the outstanding achievements in tobacco control, the National Authority on Tobacco and Alcohol in Sri Lanka was conferred with the prestigious WHO South-East Asia Region’s “World No Tobacco Day Award” on 31 May 2017.

National Authority on Tobacco and Alcohol is in the process of
building up a resource team to implement and monitor tobacco and alcohol prevention activities in each district. Programs are conducted to strengthen capacity to implement tobacco control measures by authorized Officers who implement the National Authority on Tobacco and Alcohol act, including Food and Drugs Inspectors, Public Health Inspectors, Police Officers, Excise Officers, High court judges and Magistrates. Similar programmes are focusing on strengthening the tobacco control skills of Grama Niladhari officers and Divisional Secretariat office staff.

A system for regular review is being developed to monitor and evaluate the growing portfolio of activities of the National Authority on Tobacco and Alcohol at the national, provincial and district levels, as it continues to take forward the tobacco control agenda of Sri Lanka.

References


National NCD target 6: Reduce prevalence of hypertension

A 25% relative reduction in the prevalence of raised blood pressure by 2025

Key messages

- Hypertension is one of the leading risk factors of cardiovascular disease.

- The global prevalence of raised blood pressure (defined as systolic and/or diastolic blood pressure ≥140/90 mmHg) in adults aged 18 years and over was around 22% in 2014.

- The prevalence of hypertension in adults 18-69 years of age in Sri Lanka is 26 %.

- Reducing the incidence of hypertension through implementation of population-wide policies to reduce behavioural risk factors, including harmful use of alcohol, high salt intake, physical inactivity and obesity is critical for attaining this target.

- Detection and treatment of hypertension become very cost effective, only if it is done through a total cardiovascular risk approach.
• Sri Lanka is implementing a total-risk approach for early detection and cost-effective management of hypertension, to prevent heart attacks, strokes and other complications such as kidney disease.

• All with blood pressure levels at or above 160/100 mmHg and those with lower degrees of persistent hypertension (≥140/90 mm Hg), who have moderate-to-high cardiovascular risk need to be treated with medicines.

• The attainment of this target will contribute to attainment of the target on reducing premature mortality from NCDs.

Hypertension as a cardiovascular risk factor

Raised blood pressure (hypertension), is a major cardiovascular risk factor. Globally, raised blood pressure is estimated to have caused 9.4 million deaths and 7% of disability – as measured in Disability Adjusted Life Years (1). If left uncontrolled, hypertension can lead to stroke, myocardial infarction, cardiac failure, dementia, renal failure and blindness (2, 3). There are health benefits of lowering blood pressure through behavioural and pharmacological interventions (4–6). For instance, a reduction in systolic blood pressure of 10 mmHg is associated with a 22% reduction in coronary heart disease and 41% reduction in stroke in randomized trials (5), and a 41–46% reduction in cardiometabolic mortality (6) in epidemiological studies.

Causes of hypertension

Hypertension is defined as a systolic blood pressure equal to or above 140 mm Hg and/or diastolic blood pressure equal to or above 90 mm Hg (2). Normal levels of both systolic and diastolic blood pressure are particularly important for the efficient function of vital organs such as the heart, brain and kidneys and for overall health. In about 10% of people with hypertension an aetiological cause can be identified, such
as a renal or endocrine disorder. Majority of people with hypertension (90%), have no such secondary cause and are said to have primary or essential hypertension.

Many factors contribute to the development of essential hypertension (see Figure 8.1.):

- eating food containing too much salt and fat;
- not eating enough fruits and vegetables;
- overweight and obesity;
- harmful use of alcohol;
- physical inactivity;
- ageing;
- genetic factors;
- psychological stress;
- socioeconomic determinants;

Most of these factors are modifiable. The presence of several of the above factors, increase the risk of developing hypertension. A large body of epidemiological evidence indicates a strong relationship between high salt intake and high blood pressure (2). It has been convincingly demonstrated that a potassium rich (high fruits and vegetables), low salt, low-fat diet can reduce blood pressure in normotensives as well as hypertensives. Lowering sodium intake from high to low can result in a mean decrease of systolic blood pressure of about 7 mmHg in normotensives and about 11 mmHg in hypertensives (7). Lowering population salt consumption is a best buy (very cost effective) NCD intervention which can reduce the incidence of hypertension and reduce antihypertensive drug requirements (see Chapters 2 and 6).
The global prevalence of hypertension (defined as systolic and/or diastolic blood pressure ≥140/90 mmHg), in adults aged 18 years and over was around 22% in 2014 (8). The proportion of the world’s population with high blood pressure or uncontrolled hypertension fell modestly between 1980 and 2010. However, because of population growth and ageing, the number of people with uncontrolled hypertension has risen from 600 million in 1980 to around 1 billion in 2010. Age-standardized prevalence of raised blood pressure in men and women is shown in Figures 8.2 and 8.3 respectively.
Fig. 8.2 Age-standardized prevalence of raised blood pressure in males aged 18 years and over (defined as systolic and/or diastolic blood pressure equal to or above 140/90 mm Hg), comparable estimates, 2014 (Source: Global Status Report on Noncommunicable Diseases. Geneva. World Health Organization)

Fig. 8.3 Age-standardized prevalence of raised blood pressure in females aged 18 years and over (defined as systolic and/or diastolic blood pressure equal to or above 140/90 mm Hg), comparable estimates, 2014 (Source: Global Status Report on Noncommunicable Diseases. Geneva. World Health Organization)
Prevalence of hypertension in Sri Lanka

In Sri Lanka, based on the most recent nationally representative risk factor survey, the prevalence of hypertension in adults 18-69 years of age is 26.1 % (25.4 % in males and 26.7 % in females) (9). The prevalence of hypertension rapidly increases with age. While only about one tenth (9.4 %) of the youngest age group (18-29 years) is hypertensive, more than half (57 %) of the oldest age group (60-69 years) is hypertensive (Table 8.1). Results of scientific studies show that in addition to increasing age, physical inactivity (odds ratio: 1.7), presence of diabetes (odds ratio: 2.2) and central obesity (odds ratio: 2.3) are significantly associated with hypertension (10).

The prevalence of modifiable risk factors that lead to hypertension, is unacceptably high in the Sri Lankan population. They include high intake of salt in the diet (see Chapter 6), low levels of regular physical activity (see Chapter 5), overweight and obesity (see Chapter 9), harmful use of alcohol (Chapter 4) and low intake of fruits and vegetables. In Sri Lanka, only 17.5 % of the adult population consume five or more servings of fruits and/or vegetables per day, which is the daily recommended amount (2, 9). Unless public health policies are implemented to address this unhealthy risk profile at the population level, the incidence and prevalence of hypertension in Sri Lanka will progressively increase, with ageing of the population, outstripping the capacity of the health system to handle the disease burden caused by hypertension.
Table 8.1 Prevalence of hypertension (including those on medications) in adults in Sri Lanka (Source: WHO STEPs 2015)

<table>
<thead>
<tr>
<th>Age Group (years)</th>
<th>Men</th>
<th></th>
<th></th>
<th>Women</th>
<th></th>
<th></th>
<th>Both Sexes</th>
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<tr>
<td></td>
<td>n</td>
<td>%</td>
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<td>%</td>
<td>95% CI</td>
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<td>18-29</td>
<td>262</td>
<td>10.0</td>
<td>6.1-13.9</td>
<td>470</td>
<td>8.8</td>
<td>5.9-11.6</td>
<td>732</td>
<td>9.4</td>
<td>6.9-11.9</td>
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<td>30-44</td>
<td>617</td>
<td>22.8</td>
<td>19.2-26.4</td>
<td>1067</td>
<td>17.3</td>
<td>14.8-19.8</td>
<td>1684</td>
<td>20.1</td>
<td>17.8-22.4</td>
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<td>45-59</td>
<td>643</td>
<td>40.1</td>
<td>35.7-44.4</td>
<td>954</td>
<td>42.0</td>
<td>38.4-45.6</td>
<td>1597</td>
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<td>60-69</td>
<td>338</td>
<td>47.8</td>
<td>41.5-54.0</td>
<td>473</td>
<td>66.4</td>
<td>61.6-71.1</td>
<td>811</td>
<td>57.0</td>
<td>53.0-61.0</td>
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<td>18-69</td>
<td>1860</td>
<td>25.4</td>
<td>23.0-27.9</td>
<td>2964</td>
<td>26.7</td>
<td>24.7-28.6</td>
<td>4824</td>
<td>26.1</td>
<td>24.4-27.7</td>
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</tbody>
</table>

Cost-effective policies and interventions to reduce the prevalence of hypertension

Although hypertension can be controlled with drug therapy, it should not be used as the sole control strategy. Drug therapy alone has opportunity costs and unaffordable and unsustainable in developing countries with resource constraints and rising prevalence of hypertension due to ageing populations. Drug therapy for hypertension should always be complemented with public health policies to reduce physical inactivity (see Chapter 5), salt consumption (see Chapter 6) harmful use of alcohol (see Chapter 4), overweight and obesity (see Chapter 9) and promote intake of fruits and vegetables and a healthy diet. Such a combined approach can reduce the incidence and prevalence of hypertension in a cost effective and affordable manner (8, 11). Drug therapy for hypertension should be based on a total cardiovascular risk approach as explained below. This comprehensive public health approach will result in a shift of the population distribution of blood pressure to an optimal profile, reduce the incidence of hypertension and benefit all age groups (8, 11).

High-income countries have begun to reduce hypertension by implementing public health policies to reduce salt in processed food, improve the availability and affordability of fruits and vegetables, and create environments that promote physical activity (8). Declining trends in blood pressure, together with declines in smoking, body mass index and serum cholesterol, may have accounted for nearly half the decline in cardiovascular mortality in some high-income countries (4).
People with hypertension are often asymptomatic until they develop end-organ damage (2, 3). Consequently, proactive cost-effective approaches must be adopted for early detection of hypertension. Evidence indicates that targeted screening for total cardiovascular risk with blood pressure measurement (and blood glucose testing) is more cost effective than screening the whole population for blood pressure alone, and is more likely to identify individuals at high cardiovascular risk for a lower cost (12–13). In settings with access to well-developed primary health-care systems (i.e. where physicians can identify patients at high risk of developing diseases when they see them for other reasons, and can intervene when necessary), adding an organized screening programme to usual practice may not be required. Indeed, in such settings, systematic screening of the population has not resulted in a reduction in incidence of ischaemic heart disease compared to control groups that have access to usual care (14).

Once detected hypertension requires long-term follow-up (15). A total-risk approach is needed to improve the efficiency and sustainability of detection and management of hypertension (2, 3, 16). Decisions on drug treatment should be underpinned by evidence and based on total cardiovascular risk (16, 17). Evidence of benefit for lowering blood pressure levels at or above 160/100 mmHg with drug treatment and non-pharmacological measures is very clear (2, 3, 16). Lower degrees of persistent hypertension (≥140/90 mm Hg) with moderate-to-high cardiovascular risk also require drug treatment (2, 3, 17). On the other hand, lifelong drug treatment of persons with borderline hypertension and very low cardiovascular risk cannot be justified, particularly in resource constrained settings. People in this category, as well as the whole population, however, would benefit from population-wide interventions discussed above (2, 3).

As hypertension is defined by blood pressure cutoff levels, even small inaccuracies in blood pressure measurement can have considerable consequences as a result of mislabeling normotensives as hypertensives and vice versa. There are several barriers to accurate and affordable blood pressure measurement, particularly in low-and- middle-income countries (18, 19).
Challenges of attaining this target in Sri Lanka

Attaining this target will be a challenge for Sri Lanka because it has a fast ageing population. It is estimated that one in four Sri Lankans will be elderly by 2041 (20). More than half of them will be hypertensive adding to the national burden of hypertension. Once hypertension develops, it may require lifelong treatment with medicines. Because of the high prevalence, even if medicines are inexpensive, the total expenditure of drug treatment can be substantial. However, neglecting treatment when it is required, entails interventions that are even more costly, such as cardiac bypass surgery, carotid artery surgery and renal dialysis, draining both individual and government budgets. The only solution is to control hypertension using affordable treatment approaches, and concurrently take action to reduce the incidence of hypertension using population-wide prevention.

Sri Lanka has started to implement the following public health policies to reduce the incidence of hypertension:

- harmful use of alcohol (see Chapter 4);
- physical inactivity (see Chapter 5);
- population intake of salt/sodium (see Chapter 6);
- overweight and obesity (see Chapter 9).

However, there are gaps and shortcomings in all these areas which need to be identified and addressed. Monitoring of these programmes is particularly weak and need strengthening.

Addressing hypertension through a total risk approach

It is laudable that almost a decade ago, Sri Lanka and several other developing countries adopted the WHO recommended total-risk approach to improve the efficiency and sustainability of detection and management of hypertension (8, 21-23). Despite covert pressure from
various entities that wish to increase profits from the sale of medicines (24), the Ministry of Health has persevered in implementing the total-risk approach throughout the primary health care network in Sri Lanka. Instead of focusing on hypertension alone, this approach uses hypertension and diabetes as entry points to reduce the overall risk of heart attacks, strokes and other complications such as kidney disease. Decisions on drug treatment are underpinned by evidence and based on total cardiovascular risk protocols and WHO guidelines adapted to suit the local context (22). Hypertension and diabetes often coexist and they cannot be dealt with in isolation. Adopting this integrated approach ensures that limited resources are used for proper treatment of those at medium and high risk.

**Balancing costs and health gains of controlling hypertension**

The total risk approach also prevents unnecessary drug treatment of people with borderline hypertension and very low cardiovascular risk. Inappropriate drug treatment exposes people to unwarranted harmful effects and increases the cost of health care. Both should be avoided. Balancing costs with health gains is a very important consideration when making antihypertensive treatment decisions because hypertension affects a large segment of the population (25). The current per capita expenditure on medicines is LKR 79.81. At current high prevalence rates of hypertension (26%), the annual cost to treat all hypertensives (at a 140/90 mmHg cut off) in the public sector, even with an inexpensive antihypertensive drug (costing one LKR a day), is nearly LKR 1.5 billion a year (Table 8.2). In reality, the total drug costs are much higher because most moderate to severe hypertensives need more than one drug and most drugs cost more than one LKR a day. The main purpose of the total-risk approach is to ensure that all with blood pressure levels at or above 160/100 mmHg and lower degrees of persistent hypertension (≥140/90 mm Hg) with moderate-to-high cardiovascular risk get treated with medicines. These people with high cardiovascular risk may also have to be provided statins to prevent
heart attacks and strokes. Drug treatment decisions should only be made when there is robust evidence from well conducted large scale clinical trials. Sri Lanka fortunately has not blindly followed the practice of giving drugs even to people with borderline hypertension (and low cardiovascular risk), labeling them as pre-hypertensive. (26, 27).

Table 8.2 Annual expenditure; for drug treatment of all with raised blood pressure (≥140/90 mm Hg), using an antihypertensive drug that costs one LKR a day in Sri Lanka

<table>
<thead>
<tr>
<th>Age group (Years)</th>
<th>Population (2012)</th>
<th>Prevalence of hypertension</th>
<th>Number of people with hypertension</th>
<th>Annual cost (LKR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>3085731</td>
<td>9.4%</td>
<td>290,058</td>
<td>105,871,170</td>
</tr>
<tr>
<td>30-44</td>
<td>4407701</td>
<td>20.1%</td>
<td>885,948</td>
<td>323,371,020</td>
</tr>
<tr>
<td>45-59</td>
<td>3569519</td>
<td>41.1%</td>
<td>1,467,072</td>
<td>535,481,280</td>
</tr>
<tr>
<td>60-69</td>
<td>1551199</td>
<td>57%</td>
<td>884,183</td>
<td>322,726,795</td>
</tr>
<tr>
<td>70+</td>
<td>970374</td>
<td>60%</td>
<td>582,224</td>
<td>212,511,760</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4109485</td>
<td>1,499,962,025</td>
</tr>
</tbody>
</table>

In Sri Lanka, expenditure on medicines as a share of total expenditure on health is high, and during the period 2000-2010 has been estimated to be about 22%. Overall, about 87% of the expenditure to supply medicines is privately financed, mostly by household out-of-pocket spending. Expenditure on drugs is likely to have a large impact at the level of individual households and therefore indirectly on the national economy. Additionally, studies show that out-of-pocket drug costs reduce medication adherence among patients with hypertension (28, 29).

Undetected and untreated hypertension and diabetes

Survey results indicate that one third of Sri Lankan adults (30.7%) have never had their blood pressure checked. Only 57.7% of adults with hypertension are on medications. Similarly, while 58.4% had never measured their blood sugar, only 69.5% of those with diabetes are
taking medications.

The Ministry of Health in Sri Lanka initiated the Healthy Lifestyle Centres in 2011, to address gaps in early detection of NCDs at the primary care level. These centers are targeting 40–65 year old people to detect hypertension, diabetes and other risk factors early and improving access to specialized care for those with a higher risk of cardiovascular disease (see Chapter 10). Under-utilization of the service by men, weak staff adherence to clinical protocols and shortage of human resources are some of the challenges faced by this service (30).

**Monitoring progress**

In the global monitoring framework (31), the indicator for monitoring the prevalence of raised blood pressure is the age-standardized prevalence of raised blood pressure among persons aged 18+ years. Raised blood pressure is defined as systolic blood pressure $\geq$140mmHg and/or diastolic blood pressure $\geq$90 mmHg among persons aged 18+ years. For monitoring of progress at the country level, data should be gathered from a population-based (preferably nationally representative) survey such as a STEPs survey, in which blood pressure is measured (not self-reported).

**Conclusions and future perspectives**

The adult population in Sri Lanka has a high prevalence of hypertension as well as diabetes. With ageing of the population these prevalence rates are expected to increase even further. High rates of hypertension and diabetes are contributing to the growing burden of cardiovascular disease.

Hypertension and diabetes need to be tackled within integrated primary care programs and not as disease specific vertical programs. Drug treatment of hypertension and diabetes alone cannot provide a sustainable solution. The only solution is a public health one
which entails the simultaneous implementation of a combination of population wide prevention policies (to reduce the incidence of hypertension and diabetes), and individual total risk assessment and management through primary health care.

In order to reduce the incidence of hypertension and the medicine requirements to treat borderline to mild hypertension with low cardiovascular risk, Sri Lanka needs to fast-track national initiatives to reduce salt consumption (see Chapter 6) and physical inactivity (see Chapter 5) in the population. Good progress has been made in establishing Healthy Lifestyle Centers in primary care to implement the total risk approach, country-wide (see Chapter 10). Several measures have been introduced to improve the utilization of this service, including extended opening hours for Healthy Lifestyle Centers, outreach activities in workplaces, and integration with “well woman clinics”. In the long-term, further investments will be needed to improve the health-service infrastructure, competency of the health workforce and communication strategies to ensure high population coverage. In addition health information systems will need to be reformed to facilitate follow-up care as well as monitoring and evaluation of activities of Healthy Lifestyle Centres.

References


22. Implementation tools: package of essential noncommunicable (WHO-PEN) disease interventions for primary health care in low-resource


CHAPTER 9

National NCD target 7: Halt obesity and diabetes

Halt the rise in obesity and diabetes by 2025

Key messages

- Worldwide, obesity has more than doubled since 1980, and in 2014, 11% of men and 15% of women aged 18 years and older were obese.

- An estimated 42 million children under the age of 5 years were overweight in 2013.

- In Sri Lanka, among adults (18-69 years), 5.9% are obese (3.5% of men and 8.4% of women), while 23.4% are overweight (21% of men and 26% of women).

- There is a rising trend in childhood overweight and obesity in Sri Lanka.

- The global prevalence of diabetes was estimated to be 9% in 2014. The prevalence of diabetes in adults in Sri Lanka is 7.4%.

- In 2016, the Government of Sri Lanka enacted food colour coding regulations which mandates sweetened beverage makers to label the sugar content of their products; as a result the content of sugar in sweetened beverages has gone down.
• The Government of Sri Lanka imposed a sugar-tax on sugar sweetened beverages in 2017; as a result the price has gone up and the consumption of sugar sweetened beverages has dropped.

• The attainment of this target will contribute to the attainment of targets on reducing the prevalence of hypertension and on reducing premature mortality from NCDs.

**Overweight and obesity; harmful impact on health**

Obesity is an independent risk factor for many NCDs. Overweight and obesity increase the risk of coronary heart disease, ischaemic stroke, type 2 diabetes and cancers of the breast, colon, prostate, endometrium, kidney and gall bladder. Chronic overweight also contributes to osteoarthritis. Overweight (body mass index (BMI) ≥25 kg/m²) and obesity (BMI ≥30 kg/m²) were estimated to account for 3.4 million deaths and 93.6 million Disability Adjusted Life Years (DALYs) in 2010 (1). Globally, 44% of diabetes burden, 23% of ischaemic heart disease burden and 7–41% of certain cancer burdens are attributable to overweight and obesity (2, 3). Increased waist circumference and higher body mass index are associated with increased risk of type 2 diabetes, particularly in populations in South-East Asia (4). In South-East Asia, 41% of deaths caused by high body mass index occur under age 60, compared with 18% in high-income countries (2).

For optimal health, the median body mass index for adult populations should be in the range 21–23 kg/m², while the goal for individuals should be to maintain a body mass index in the range 18.5–24.9 kg/m². The risk of comorbidities increases with overweight (body mass index 25.0–29.9 kg/m²), and the risk is higher with obesity (body mass index greater than 30 kg/m²) (5).
Global and National Prevalence of overweight and obesity in adults

Figure. 9.1. Age-standardized prevalence of obesity in men aged 18 years and over (BMI ≥30 kg/m²), 2014 (Source: Global Status Report 2014. Geneva: World Health Organization 2014)
Figure 9.2. Age-standardized prevalence of obesity in women aged 18 years and over (BMI ≥ 30 kg/m²), 2014 (Source: Global Status Report 2014. Geneva: World Health Organization 2014)

Figure 9.3 Age standardized prevalence of obesity in adults aged 18 years and over (Source: Global Status Report 2014. Geneva: World Health Organization 2014)
In Sri Lanka, the mean body mass index of men is 22.4 and of females 23.5. As shown in Table 9.1, only about half of the adults (55.4%) have a normal body mass index value, between 18.5 - 24.9. 58.9% males and 51.6% of females have a normal body mass index value between, 18.5 - 24.9. Among adults, 5.9% are obese (3.5% males and 8.4% females), while 23.4% are overweight (21% males and 26% females) (6).


<table>
<thead>
<tr>
<th>Age Group (years)</th>
<th>n</th>
<th>% Underweight &lt;18.5</th>
<th>95% CI</th>
<th>% Normal weight 18.5-24.9</th>
<th>95% CI</th>
<th>% BMI 25.0-29.9</th>
<th>95% CI</th>
<th>% Obese ≥30.0</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>695</td>
<td>21.8</td>
<td>18.1-25.5</td>
<td>59.4</td>
<td>55.2-63.6</td>
<td>15.8</td>
<td>12.7-18.9</td>
<td>3.0</td>
<td>1.6-4.3</td>
</tr>
<tr>
<td>30-44</td>
<td>1659</td>
<td>11.7</td>
<td>9.8-13.7</td>
<td>53.5</td>
<td>50.7-56.4</td>
<td>27.4</td>
<td>24.9-29.8</td>
<td>7.3</td>
<td>6.0-8.7</td>
</tr>
<tr>
<td>45-59</td>
<td>1578</td>
<td>10.9</td>
<td>9.2-12.7</td>
<td>53.1</td>
<td>50.3-56.0</td>
<td>28.2</td>
<td>25.6-30.9</td>
<td>7.7</td>
<td>6.2-9.1</td>
</tr>
<tr>
<td>60-69</td>
<td>799</td>
<td>16.4</td>
<td>13.4-19.4</td>
<td>53.7</td>
<td>49.8-57.5</td>
<td>23.7</td>
<td>20.1-27.2</td>
<td>6.3</td>
<td>4.5-8.1</td>
</tr>
<tr>
<td>18-69</td>
<td>4731</td>
<td>15.3</td>
<td>13.7-16.9</td>
<td>55.4</td>
<td>53.5-57.3</td>
<td>23.4</td>
<td>21.9-24.9</td>
<td>5.9</td>
<td>5.1-6.7</td>
</tr>
</tbody>
</table>

Global and national prevalence of overweight and obesity in children

Excess intake of high calorie food and indulgence in indoor sedentary activities (e.g. television viewing, internet, and computer games), together with factors that dissuade walking and other outdoor activities, contribute to childhood obesity. Prevalence of childhood overweight is above 5% in most countries in the world (Figure 9.4). In 2013, an estimated 42 million children (6.3%) aged under 5 years were overweight (7). In 2016, there were 124 million obese children and adolescents aged 5-19 years. An additional 213 million were overweight in 2016 but fell below the threshold for obesity. Taken together this means that in 2016 almost 340 million children and adolescents aged 5-19 years or almost one in every five (18.4%) were overweight or obese globally.
The global prevalence of overweight and obesity in children aged under 5 years has increased from around 5% in 2000 to 6.3% in 2013 (8). It is estimated that the prevalence of overweight in children aged under 5 years will rise to 11% worldwide by 2025, if current trends continue (8). In the last four decades, there has been a tenfold increase in obesity in children and adolescents. The prevalence of overweight children is increasing fastest in low- and lower-middle-income countries.

There has been an increasing global recognition of the need for effective strategies to prevent and control childhood overweight and obesity. In 2012, the World Health Assembly agreed a target of no increase in childhood overweight by 2025 (9). WHO established a high-level Commission on Ending Childhood Obesity in 2014 to accelerate action against childhood obesity (10).

Figure 9.4 Age-standardized prevalence of overweight in children under five years of age, comparable estimates, 2013 (Source: Global Status Report 2014. Geneva:World Health Organization 2014)
In Sri Lanka, based on the results of the Global School Based Student Health Survey (2008), in the 13-15 year age group 4.5% are overweight and 0.5% are obese (11). Once a year, the Ministry of Health conducts a School Medical Inspection in students in grades 1, 4, 7 and 10 for assessment of nutritional status, immunization, detection and correction of health problems. In 2015, School Medical Inspections were conducted in 9,794 (96.7%) schools, (1,729,268 eligible children). Based on the results of this examination, (Figure 9.5.), 1.7%, 2.9%, 4.8% and 4.3% of children in Grades 1, 4, 7 and 10 respectively, were obese (12). The data also show that stunting and wasting coexist with obesity, and are significant problems among school children in Sri Lanka. As shown in Figure 9.6, there is a rising trend in childhood overweight. For example, during the period 2011 to 2015, rates of overweight is Grade 10 children has risen from 2.5% to 4.2%.
Overweight and obese children are likely to remain obese into adulthood and more likely to develop NCDs including diabetes at a younger age. Based on available data, Sri Lanka shows rising trends in overweight and obesity in children and adults which contribute to rising prevalence rates of diabetes.

**Global and national prevalence of diabetes and its impact on health**

Diabetes is an important cause of premature death and disability. Diabetes increases the risk of cardiovascular disease, kidney failure, blindness and lower-limb amputation. In pregnancy, poorly controlled diabetes increases the risk of fetal death and other complications (13-
Globally, an estimated 422 million adults were living with diabetes in 2014. Figures 9.7 and 9.8 show the age-standardized prevalence of diabetes, (Fasting glucose ≥ 7.0 mmol/L or on medication), in men and women respectively, in 2014.

The global prevalence (age-standardized) of diabetes has nearly doubled since 1980, rising from 4.7% to 9% in the adult population. This rise is largely driven by modifiable risk factors – particularly physical inactivity, overweight and obesity (16). Population ageing is also an important factor, as glucose intolerance increases with age.

Diabetes caused 1.5 million deaths in 2012. Higher-than-optimal blood glucose, caused an additional 2.2 million deaths, by increasing the risks of cardiovascular and other diseases. Forty-three percent of these 3.7 million deaths occurred before the age of 70 years (15). The global prevalence of diabetes (defined as a fasting plasma glucose value ≥7.0 mmol/L [126 mg/dl] was estimated to be 9% in 2014 (14).

Figure 9.7. Age-standardized prevalence of diabetes, (Fasting glucose ≥ 7.0 mmol/L or on medication), in men aged 18 years and over, comparable estimates, 2014
In general, low-income countries show the lowest prevalence and upper-middle-income countries show the highest prevalence of diabetes for both sexes.

The prevalence of diabetes in adults in Sri Lanka was 7.4% (7.3% in males and 7.6% in females) in 2015 (6). Much of the diabetes burden can be prevented or delayed by a healthy diet and regular physical activity. The target of no increase in prevalence of obesity and diabetes is closely linked with the target of decreasing physical inactivity (see Chapter 5). To maintain a healthy weight, there must be a balance between energy consumed (through diet) and energy expended (through physical activity).

**Monitoring obesity and diabetes**

Regular monitoring of the prevalence of obesity and diabetes should be instituted as part of routine NCD surveillance. Indicators in the global monitoring framework (17) for monitoring progress in attaining this target are:
• age-standardized prevalence of raised blood glucose/diabetes among persons aged 18+ years, or on medication for raised blood glucose;

• age-standardized prevalence of overweight and obesity in persons aged 18+ years;

• prevalence of overweight and obesity in adolescents.

The measurement of overweight in children under 5 years is included in the global monitoring framework on maternal, infant and young child nutrition (18). Overweight is defined as having a weight-for-height above two standard deviations from the median.

WHO defines overweight in school-aged children and adolescents (persons aged 10–19 years) as one standard deviation BMI-for-age (equivalent to BMI 25 kg/m² at 19 years), and obesity in the same group as two standard deviations BMI-for-age (equivalent to BMI 30 kg/m² at 19 years) from the median (18).

The WHO STEPwise approach to Surveillance of NCD Risk Factors (STEPS) can be used to track national prevalence data for obesity and raised blood sugar in adults (19). WHO’s Global school-based student health survey (20) is used in many countries to measure and monitor overweight and obesity in adolescents.

Cost-effective policies and interventions for reducing the prevalence of obesity and diabetes

WHO has developed a set of recommendations on the marketing of foods and non-alcoholic beverages to children, because there is good evidence that marketing of foods and non-alcoholic beverages influences children’s knowledge, attitudes, beliefs and preferences (21).

Changes in agricultural subsidies to encourage fruit and vegetable production, has been shown to improve the consumption of fruits and vegetables and improve dietary patterns (22). Pricing strategies
that increase incentives for purchasing healthier food options also increase the purchase of those options because price is often a barrier to the purchase and consumption of healthy foods (23, 24). Taxation schemes that produce large changes in price have been shown to change purchasing habits which are likely to improve health (25-27). Trade and regulatory measures have also proven effective in reducing the availability of unhealthy foods and changing population dietary patterns (28, 29).

Nutrition labelling- front-of-pack labels on packaged foods, or point-of-purchase information in grocery stores, cafeterias or restaurants- can be useful in orienting consumers to products that contribute to a healthier diet (30–32). Consumer awareness of healthy behavior can be achieved through sustained media and educational campaigns aimed at increasing consumption of healthy foods, or reducing consumption of less healthy ones and increasing physical activity (28). Schools, communities, workplaces, health care institutions and religious places are important settings to promote healthy diet and physical activity.

Diet and physical activity counselling through primary health care have the potential to change behaviours related to obesity and diabetes (33). The provision of dietary counselling, especially as a component of a total-risk approach, has the potential to be beneficial (33). Positive results of effective risk-factor control can be seen in a short time, since any reduction in body weight and increase in physical activity has a beneficial effect on the risk of diabetes. This intervention has been scaled up to the whole population in a few high-income countries with encouraging results on feasibility (34).

**Actions to attain this target in Sri Lanka**

**Sri Lanka – a pioneer in promoting and protecting breast feeding**

Failure to breastfeed, or a shorter duration of breastfeeding, is associated with a higher risk of overweight later in life (35).
Sri Lanka, is one of the first countries in the world to adopt the International Code of Marketing of Breast-milk Substitutes in 1981. The country has been successful in promoting breast feeding, with 82% of mothers exclusively breastfeeding their children. Despite the multiple benefits of breast feeding only 23 countries in the world including Sri Lanka (Bolivia, Burundi, Cabo Verde, Cambodia, Democratic People’s Republic of Korea, Eritrea, Kenya, Kiribati, Lesotho, Malawi, Micronesia, Federated States of Nauru, Nepal, Peru, Rwanda, São Tome and Principe, Solomon Islands, Sri Lanka, Swaziland, Timor-Leste, Uganda, Vanuatu, and Zambia), have achieved exclusive breastfeeding rates above 60% (36).

Reducing consumption of free-sugars to reduce the risk of childhood obesity

Consumption of high amounts of sugar, fat and starch result in surplus calorie intake, which lead to overweight and obesity. There is increasing concern that intake of free sugars – particularly in the form of sugar-sweetened beverages – increases overall energy intake leading to weight gain and increased risk of NCDs (37). Evidence shows that reduction of intake of free sugars is associated with reduced body weight (37). In order to prevent adverse health effects of sugar, WHO recommends reducing daily sugar intake to less than 10% of total energy intake (39). A further reduction to below 5% or roughly 25 grams (6 teaspoons) per day is recommended for additional health benefits (38).

Food colour - coding regulation

According to the findings of the 2012/2013 household expenditure survey in Sri Lanka, per capita consumption of sugar per month is 1104 grams (approximately 36 grams per day)(39). Sugar-sweetened beverages are a significant source of high free sugar intake in children in Sri Lanka (40, 41). A 330ml portion of sugar-sweetened carbonated soft
drink typically contains some 35g of sugar and provides approximately 140 calories of energy (39).

On the recommendation of the Food Advisory Committee established in 1981, regulations around labeling and advertising were enacted in 2005 within the existing Food Act 26 of 1980. However, the regulation did not contain provisions which require indicating the sugar, salt and fat contents of packaged foods and beverages. In 2013, the Ministry of Health developed and issued guidelines to local food and beverage manufacturers providing them information for labelling of food and beverages. The guidelines were intended to be followed voluntarily. The industry response was poor, resulting in the enactment of the Food Colour Coding Regulations by the Minister of Health on 22 April 2016 under the Food Act of 26 of 1980, which came into force from 1st August 2016. The regulation mandates makers of sweetened beverages in Sri Lanka to indicate the sugar content of different products visually on the packaging on three scales based on the level of sugar contained in them— high (red, over 11g of sugar/100ml), medium (amber-2-11g/100ml) and low (green - less than 2g/100ml). The colour coding system informs consumers about the sugar content of different beverages giving them latitude to make an informed choice. The private sector responded within a relatively short period of time reducing the sugar content in sweetened beverages to at least less than 11g of sugar/100 ml so that a red colour code would not deter consumers from buying their products.

This work was led by the Environment and Occupational Health and Food Safety Directorate of the Ministry of Health in collaboration with the NCD Bureau and the Nutrition Coordination Division of the Ministry of Health, Ministry of Education, Ministry of Trade and Commerce, and the Consumer Protection Authority. Monitoring the implementation of the Food Colour Coding Regulation will be important, and will be done by the Environmental and Occupational Health unit through Public Health Inspectors and Food and Drug Inspectors.
Sugar-tax on sugar - sweetened beverages

A sugar-tax was introduced in the National Budget and implemented from late 2017. The sugar tax is levied on sweetened carbonated beverages which has sugar over 6 g/100ml. Each gram of sugar above this level is taxed at 50 cents per gram per 100ml. This has resulted in 30-50% increase of prices of sugar sweetened beverages. As a result of the sugar tax, the demand for sweetened carbonated beverages dropped by a significant margin in 2017—an indication that the higher prices have pushed away consumers. Food and beverage firms like Ceylon Cold Stores and Nestlé Lanka recorded a significant drop in earnings. Ceylon Cold Stores PLC (CCS), a unit of John Keels Holdings (JKH), saw earnings for the quarter ending December 31, 2017 drop 32% to LKR 563.2 million (42). The company cited the sugar tax as the cause of the drop in sales, in addition to consumer discretionary spending.

Health Promoting Schools Policy

Many activities of the Health Promoting Schools policy/initiative (see Chapter 5) which was launched in 2007, contribute to the attainment of this target. The initiative has been designed within the internationally agreed framework for school health programming, the FRESH (Focusing Resources on Effective School Health) framework. This framework, provides a common platform for interagency School Health Initiatives (such as the Health Promoting School initiative of the World Health Organization and the Child-Friendly Schools initiative of the United Nations Children’s Fund). In 2015, all schools were evaluated using a tool developed by experts in the field. Nearly 3,400 schools were accredited as Health Promoting Schools, while 720 schools achieved gold standard (12). During the annual School Medical Inspection, nutritional and health status of children are assessed providing a means of monitoring this target. School Medical Inspections are conducted by Medical Officers of Health and organized by the Public Health Inspectors. In small schools (less than 200 children), all children are examined annually and in schools where enrolment is more than 200,
all students in grades 1, 4, 7 and 10 are examined annually.

In 2007, the Ministry of Education issued its first Circular (2007/02) on the Maintenance of School Canteens to all public schools supporting the “Healthy Canteens in Schools” programme; a joint programme of the Ministry of Education and the Ministry of Health. It sets guidelines for kind of food items that can be sold in public school canteens, with the objective of preventing obesity and improving the nutritional status of school children. The School Canteen Programme is being implemented in consultation and collaboration with all relevant stakeholders, including school principals, teaching staff, public health inspectors, parents and contractors running school canteens.

**Adolescent and youth Health Policy**

Young people aged 15 to 24 years constitute 15.6% of the total population in Sri Lanka (12). A National Youth Health Survey has been conducted in 2012/2013 by the School & Adolescent Health Unit and Research and Development Unit of the Family Health Bureau, with technical and financial support form the UNICEF and UNFPA (44 ). The survey investigated general health conditions, behaviours, socio-economic and lifestyle factors and food habits of 15-24 year old adolescents and youth. A considerable proportion of youth frequently consumed sweetened carbonated drinks (44%), pre-cooked food (20%) and salty food (25%), while 5.6% of youth were taking energy formulas. Half of them were not aware of the concept of body mass index as a measure of overweight. Nearly 50% of the males and 75% of females had not engaged in manual work in the preceding week. Only about 16% of males and 4.5% of females engaged in moderate to severe physical activity such as running, cycling, swimming and body building exercises. A significant proportion (approximately 44%) were spending five or more days in the preceding week as “screen time” (43). Findings which warranted focused efforts to inculcate skills to develop healthy behaviour with regard to diet and physical activity among adolescents and youth.
In 2014, an Adolescent and Youth Health component was added to the National Family Health Programme. For provision of services to adolescents and youth, Adolescent Youth Friendly Health Service (AYFHS) Centers known as “Yowun Piyasa” were established in government hospitals. Services provided at these centers include

- Medical examination;
- Counselling on life skills;
- Sexual and reproductive health services;
- Syndromic management of sexually transmitted diseases;
- Management nutritional problems and NCDs ;
- Prevention of substance use.

In 2015, national review of nine Adolescent Youth Friendly Health Service Centers was conducted with the participation of all relevant stakeholders to identify the gaps and barriers that had affected the programme. Based on this evaluation, standards for Adolescent Youth Friendly Health Service have been revised and quality assessment tools developed with input from international experts and the World Health Organization. At present such centers have been established in 7 districts . Plans are underway to establish these centers throughout the country in a phased- out fashion. Training of trainers has been conducted to improve capacity building of primary health care workers and other officers who are dealing with young persons at these centers, including at the district level (44).

A ‘Yovun Piyasa’ youth health web site has also been developed to provide youth friendly health information in all three languages. Information related to NCDs and their risk factors at this website could be further strengthened to empower youth to develop healthy behaviours in relation to tobacco and alcohol use, physical activity and healthy diet (45).
Conclusions and future perspectives

Being overweight and obese are largely preventable conditions. They are precursors of diabetes, cardiovascular disease and other NCDs. Preventing childhood and adult overweight and obesity will rely on facilitating the consumption of healthy foods and regular physical activity, including by ensuring that these are accessible, available and affordable options. A broad array of large-scale actions is needed if the rising tide of obesity is to be overturned. This will require the engagement of multiple sectors, including education, communications, commerce, urban planning, agriculture and health.

The Food control administration unit (under the Directorate of Environmental and occupational Health and Food safety), which is the regulatory authority under the food Act, is planning to include a Nutrition Panel in all packaged foods. Food (labelling and advertising) Regulations 2005, have been amended to make the nutrition panel mandatory in the future. When this regulation is implemented, it will be mandatory to include the nutritional panel in all packaged food items. A grace period of one year will be given for industry to comply with the regulation.

In addition, plans are afoot to label packaged foods with a healthy logo when the content of sugar, salt and fat is at healthy levels. The regulation to this effect has been drafted and will be enacted under the Food Act No.26 of 1980, providing better information to consumers to make healthy choices.

Other policy interventions to curb the rising tide of obesity and diabetes that need consideration include:

- Strengthen nutritional literacy among adults and children;
- Enact legislation and/or regulation, to restrict the marketing of foods and beverages to children, and to ensure that schools and sporting events where children gather are free from unhealthy food marketing or promotion;
- Strengthen regular good quality physical education in the school
curriculum for all children;

• Improve access to adequate and safe recreation and sports facilities in schools and communities.

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National NCD Target 8: Prevent Heart Attacks and Strokes

At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes.

Key messages

- Cardiovascular disease is the leading cause of NCD deaths and was responsible for 17.5 million deaths in 2012.

- Implementing population-wide policies to reduce exposure to cardiovascular risk factors (tobacco use, harmful use of alcohol, physical inactivity, unhealthy diet and air pollution) is essential for preventing heart attacks and strokes.

- Integrated programmes based on a total-risk approach need to be established in primary care, using hypertension, diabetes and other cardiovascular risk factors such as tobacco use as entry points.

- Prevention of heart attacks and strokes through a total cardiovascular risk approach is a very cost-effective individual intervention (best buy), which can be implemented in primary care even in resource-constrained settings.
• Since this individual intervention is more cost-effective than treatment decisions based on single risk factor thresholds, it should be part of the basic benefits package for pursuing universal health coverage.

• Sri Lanka has included prevention of heart attacks and strokes through a total risk approach (best buy) in the essential services package, and will provide basic technologies, medicines and human resources for its delivery.

• The attainment of this target is critical for reducing premature mortality from cardiovascular disease.

Cardiovascular disease: heart disease and stroke

Globally, cardiovascular disease is the leading NCD. It is responsible for 46% of all NCD deaths. Of the 17.5 million deaths due to cardiovascular disease in 2012, an estimated 7.4 million were due to heart attacks (coronary heart disease) and 6.7 million were due to strokes (1). Currently, over 80% of cardiovascular deaths occur in low- and middle-income countries. In 2012, heart disease and stroke were among the top three causes of years of life lost due to premature mortality globally (2).

Over the last four decades, the rate of death from cardiovascular diseases has declined in high-income countries, owing to reductions in cardiovascular risk factors and better management of cardiovascular disease (3). Recent studies indicate that, although the risk-factor burden is lower in low-income countries, the rates of major cardiovascular disease and death are substantially higher in low-income countries than in high-income countries (4).

In Sri Lanka, 40% of all deaths are due to cardiovascular disease (Figure 10.1) (5). Diabetes is also a major risk factor for cardiovascular disease, with about 10% of cardiovascular deaths caused by higher than optimal blood glucose (6). Coronary heart disease is the highest ranking cause of premature death in Sri Lanka followed by self harm,
diabetes and stroke (Figure 10.2) (7).

**Figure 10.1 Sri Lanka NCD Country Profile 2014 -Proportional Mortality (% of total deaths, all ages, both sexes) (World Health Organization - Noncommunicable Diseases (NCD) Country Profiles, 2014).**

The current high rates of premature cardiovascular death are unacceptable because very cost-effective interventions are available to prevent them. (8-12).
In order to attain target 8, the coverage of drug treatment and counselling of medium to high risk people including those with established disease, need to be improved. It is an affordable intervention that can be delivered through a primary health-care approach, even in resource-constrained settings, including Sri Lanka(8–12).
Tools for cardiovascular risk assessment and management are available. World Health Organization has updated the cardiovascular risk prediction charts and has provided 10-year cardiovascular risk prediction charts for 21 regions (Figure 10.3). They are calibrated for the specific risk factor levels and sex specific relative coronary heart disease and stroke rates of each region. Simplified charts are also available which can be used without laboratory measurement of total cholesterol. They will be useful in resource poor settings in order to identify a subset of high risk individuals for further assessment and management.
Cost-effective policies and interventions to prevent and control cardiovascular disease

In addressing cardiovascular disease the population-wide approaches described in relation to national targets 2-7 in Chapters 3 to 9, have great potential to decrease the disease burden at very affordable costs. However, population-wide strategies alone are not sufficient to protect people who are at high risk of developing disease. Cardiovascular risk of these individuals can be reduced considerably in the short- to medium-term if the population-wide approaches are complemented by health-care interventions targeting those who either already have cardiovascular disease or those who are at high risk (9, 11, 13). Target 8 prioritizes these interventions.

Treatment of high risk individuals with aspirin, blood pressure-lowering drugs, cholesterol –lowering drugs to prevent first heart attacks and stroke (primary prevention), is effective and cost effective (9, 11, 13 14). In addition to first attacks, recurrent heart attacks and strokes also need to be prevented in those with established disease (secondary prevention). These persons face considerably greater risk of recurrent vascular events and are much more likely to die in a recurrent event. Aspirin, beta-blockers, angiotensin-converting enzyme inhibitors, and statins together with smoking cessation, could prevent majority of recurrent heart attacks and strokes (10). Secondary prevention services are easier to deliver than primary prevention because the diagnosis of cardiovascular disease has already been made. However, a sole focus on secondary prevention is insufficient to attain target 8, as a considerable number of heart attacks and strokes are first attacks and many persons do not survive the first attack, particularly in low- and middle-income countries with fragile emergency health services.

It has been estimated that scaling up treatment to reduce cardiovascular risk, targeted at individuals who are at high absolute risk of cardiovascular disease or who have existing cardiovascular disease could avert a large number of heart attacks and strokes at affordable costs. For scaling up such a program the annual cost per head of population falls below US$ 1 in low-income countries, less
than US$ 1.50 in lower-middle income countries and averages US$ 2.50 in upper-middle income countries (15). From a public health perspective, an annual per capita investment of US$1-2.50 would appear to be a low price to pay for significantly reducing the massive burden of disease heart attacks and strokes. Further this intervention is affordable to low resource settings compared to costly procedures such as coronary stenting and coronary bypass grafting that may be necessary when detection and treatment are late and the patient reaches advanced stages of the disease.

From an economic perspective, the costs involved in mounting a scaled up response are very small compared with the massive losses in gross national product or social welfare that would occur if no scaled up action and investment are taken. However, the finances required to scale up this intervention represent a new demand on health budgets, especially in relation to the very low levels of current expenditure on prevention and control of these diseases. Based on the very high cost effectiveness, feasibility in implementing at the primary care level and potential for scalability, this intervention is categorized as a WHO best buy (8, 11, 13) (see Chapter 2).

It has been proposed that administration of a fixed-dose combination of aspirin, statin and antihypertensive medications (polypill) to all individuals aged over 55 years, regardless of cardiovascular risk status, is a suitable approach for preventing heart attacks and strokes (16). However, there is not enough evidence to support such mass drug treatment. The efficacy, long-term risks, sustainability and cost effectiveness of the polypill remain to be proven. Overall, results of clinical trials conducted to date show that fixed-dose combination therapy is associated with modest increases in adverse events, but better adherence to treatment, compared to multiple single agents (17). As yet, there are no clinical trials with any fixed-dose combinations that are powered to show differences in morbidity and mortality. Further research, including cost-effectiveness studies, is necessary before considering widespread use of fixed-dose combinations. Furthermore, the fixed-dose combination therapy does not offer a sustainable fix for the complex problem of addressing cardiovascular
diseases. Thus attempts to promote the use of the polypill should in no way undermine comprehensive public health approaches to NCD prevention and control, or efforts to strengthen health systems in low- and middle-income countries.

**Monitoring progress in the attainment of target 8**

The indicator for monitoring this target in the global monitoring framework (18) is the proportion of eligible persons receiving drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes.

Eligible persons are those aged 40 years and older with a 10-year cardiovascular disease risk ≥30%, including those with existing cardiovascular disease. Drug therapy is defined as taking medications for primary and secondary prevention of heart attacks and strokes, based on WHO recommendations (9-12). This includes medications for controlling diabetes, hypertension, blood cholesterol and blood coagulation, based on WHO recommendations. Counselling is defined as receiving advice from a doctor or other health worker to quit using tobacco or not start, reduce salt in the diet, eat at least five servings of fruit and/or vegetables per day, reduce fat in the diet, do more physical activity, maintain a healthy body weight, or lose weight.

**Global progress achieved in attaining this target**

In the global capacity assessment survey conducted in 2015, countries were asked if they had evidenced-based national guidelines/protocols for the management of major NCDs through a primary care approach. Guidelines for cardiovascular diseases and diabetes were available in 75% and 67% of countries respectively. In 90% of them they were fully or partially implemented. Twenty-one per cent (21%) of countries reported having more than 50% of primary health-care facilities offering cardiovascular risk stratification for the management of patients at high risk of heart attack and stroke; the highest responses came from
high-income countries (41%). Twenty-six per cent (26%) of countries reported having less than 25% of primary health-care facilities that offered cardiovascular risk stratification and 20% of countries offered no risk stratification (19).

The majority of countries reported having some basic technologies generally available for early detection, diagnosis and monitoring of NCDs in primary care facilities in the public health sector: 97% for blood pressure measurement, 95% for weight measurement, and 90% for height measurement. Blood glucose measurement was also widely available, with 85% reporting general availability in primary care facilities in the public health sector. Approximately two thirds of countries reported general availability for urine strips for glucose and ketone measurement (67%), urine strips for albumin assay (64%) and total cholesterol measurement (59%).

More detailed studies reveal significant gaps in the provision of interventions to prevent heart attacks and stroke, even in high-income countries. In a study conducted in 22 European countries, the proportion of patients with heart disease and prevalent diabetes reaching the treatment targets was 20% for blood pressure, 53% for low-density lipoprotein cholesterol and 22% for haemoglobin A\textsubscript{1c} (HbA\textsubscript{1c}) (20). In another European study on secondary prevention and risk-factor control in patients after ischaemic stroke, 50% of patients did not achieve optimal risk-factor targets (21). Not surprisingly, a much worse situation has been documented in low- and middle-income countries (22, 23). In one study, the percentage of those with heart attacks who received beta-blockers was 48%, angiotensin-converting enzyme inhibitors 40%, and statins only 21% (22). In a more recent study in three countries in South-East Asia, over 80% of patients received no effective drug treatment after heart attacks and strokes (23). Poor access to basic services in primary care, lack of affordability of laboratory tests and medicines, inappropriate patterns of clinical practice, and poor adherence to treatment were some of the main reasons for the treatment gaps.

In low- and middle-income countries, the primary care level of the health system, which has to play a critical role in delivering these
interventions, is often the weakest. An evaluation of the capacity of primary care facilities to implement interventions to prevent heart attacks, strokes and other NCD complications in eight low- and middle-income countries showed major deficits in health financing, service delivery, access to basic technologies and medicines, medical information systems, and the health workforce (24). Overall, in most low- and middle-income countries, coverage of this essential individual intervention for prevention of heart attacks and strokes is low, with very slow progress in scaling up. However, some low- and middle-income countries (e.g. Bahrain, Benin, Bhutan, Democratic People’s Republic of Korea, Eritrea, Ethiopia, Fiji, Guinea, Indonesia, Kazakhstan, Kiribati, Kyrgyzstan, Lebanon, Myanmar, Palestine, Philippines, Republic of Moldova, Samoa, Sierra Leone, Solomon islands, Sri Lanka, Sudan, Tajikistan, Timor Lest, Togo, Tonga, Turkey, Uzbekistan, Viet Nam) have taken steps to implement the total risk approach in primary care. Primary care workers, including family practitioners, are being trained to assess and manage cardiovascular risk, using tools of the WHO Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings (11, 26-28 ). Some of these countries including Sri Lanka have planned national scale-up in a phased out manner (28, 29).

At a joint meeting in July 2014, Economic and Health Ministers of Pacific Island countries agreed to improve the efficiency and impact of existing health budgets, by reallocating scarce health resources to targeted primary and secondary prevention of cardiovascular disease and diabetes, including implementation of WHO PEN (30).

What has been done to attain this target in Sri Lanka?

**Integrated approach implemented across the primary care network**

Sri Lanka has given priority to this very cost-effective high-impact NCD intervention (“best buy”). It has already adopted a total-risk approach
which enables integrated management of hypertension, diabetes and other cardiovascular risk factors in primary care (29). This approach targets available resources at persons most likely to develop heart attacks, strokes and diabetes complications, with a particular focus on primary health care.

Sri Lanka’s primary health care delivery structure is divided into preventive and curative care (Figure 10.4). The Medical Officer of Health units (MOH units) headed by Medical Officers deliver preventive care at the grass root level. There are 331 MoH areas in the country, each providing preventive health care and maternal and child health care for a population between 100,000 and 150,000. The MoH team includes nurses, public health midwives who have traditionally provided maternal health services and public health inspectors who provide environmental health and disease control services. The curative care network includes primary medical care units and hospitals. The curative network is organized into primary medical care units (n=474), divisional hospitals (n=493), base hospitals (n=68), district general hospitals (n=3), provincial general hospitals (n=3) and teaching hospitals (n=21) (Figure 10.4). The majority of Primary Health Care Units have one Medical Officer, one health assistant and/or a dispenser.

Recognizing that assessment of total cardiovascular risk, with access to diagnosis and treatment, can advance progress towards attaining this target and prevent heart attacks and strokes and diabetes complications, the Ministry of Health established Healthy Lifestyle Centers in primary health care institutions, in 2011 to promote self-referral and early detection.

**Healthy Lifestyle Centres for self-referral and early detection**

Experience from implementing three pilot projects was consolidated in the design of the Healthy Lifestyle Centers. They were the WHO Package of Essential Noncommunicable (PEN) disease interventions
for primary health care in low-resource settings (WHO-PEN) (25); the NCD Prevention Project piloted by the Japan International Cooperation Agency (31), and the community-based health-promotion component of the National Initiative to Reinforce and Organize General Diabetes Care in Sri Lanka (NIROGI Lanka) of the Sri Lanka Medical Association (32).

People in 40-65 age group are invited to come for cardiovascular risk assessment at the Healthy Lifestyle Centers. Primary Health Care Units are expected to conduct assessment of a minimum of 20 people, once a week. Supervision and coordination of the activities of Healthy Lifestyle Centers in each district has been assigned to a new cadre of Medical Officers (MO-NCD), who also coordinate NCD related activities at the district level. Trained health care workers assess clients for behavioural risk factors; tobacco use, harmful use of alcohol, physical inactivity and unhealthy diet. Body mass index, blood pressure and fasting blood sugar are checked. Cardiovascular risk is assessed using WHO risk prediction charts. Those at high risk of cardiovascular disease are referred to the next level of care. Counselling on behavioural risk factors are provided to all and follow-up visits are scheduled at the Healthy Lifestyle Centers for those at low cardiovascular risk.
Improving early detection of people through Healthy Lifestyle Centres is only the first step. Those at high risk have to be appropriately managed and followed up, long-term. The health care level at which medium/high risk patients are managed depends on the need for further investigation and treatment.
The number of Healthy Lifestyle Centers has grown from 126 in 2011 to 826 in 2016. Healthy Lifestyle Centers have been established across all levels of facilities – primary, secondary and tertiary care because people have the freedom to access all three levels when seeking health care. Coverage of the targeted population has increased from 2.5% in 2011 to 25% in 2016.

The Second Health Sector Development Project of the World Bank initiated in 2013 has contributed to the expansion of the Healthy Lifestyle Centres (33). Two of the disbursement-linked indicators for the Second Health Sector Development Project are (i) the percentage of Ministry of Health areas with at least two Healthy Lifestyle Centers and (ii) the percentage of persons aged over 40 years screened for selected NCDs at the Healthy Lifestyle Centers.

**Conclusions and future perspectives**

Sri Lanka has already laid a strong foundation to attain this NCD target by strengthening primary health care through Healthy Lifestyle Centers, using a very cost effective total risk approach and hypertension and diabetes as entry points to move towards universal health coverage. However, there are many challenges that need to be overcome to attain this target.

One challenge is to reach the population at risk with the limited resources available to NCD teams at the district level. District health teams are exploring ways to increase the community reach by advertising the services provided in Healthy Lifestyle Centers through social marketing and media campaigns and using mobile clinics to reach remote areas. In order to improve coverage of the target population and to increase male participation in the program, plans are under way to extend the opening hours of Healthy Lifestyle Centers and conduct “outreach” screening in workplace settings. An electronic health information system will be introduced to improve accuracy of data collection and coordination at the district level. Creating a new cadre of field health worker is also under consideration in order to improve participation
and follow up of the targeted population.

Another challenge is to ensure that once investigated, assessed and treated, majority of medium-high risk individuals are followed-up in primary health care units. Whether or not the patients are effectively managed and followed up in primary care depends on the quality of services provided at this level. Due to shortcomings in primary care facilities, currently, a high proportion of medium and high risk patients continue to utilize hospital out-patient clinics. This has led to overcrowding and poor quality of services at these clinics. In order to attain this NCD target, current shortcomings in health system components at all levels of the health system have to be systematically rectified including, access to basic technologies and medicines, the performance of the health workforce, service delivery, health information and referral and back referral links.

The recently approved health care reform policy, for making progress towards Universal Health Coverage (34 ) (see Chapter 3), addresses many health system issues that need to be tackled for the attainment of NCD target 8. This includes the inclusion of prevention of heart attacks and strokes through a total risk approach within the essential services package. There are many expected outcomes of implementing the new health care reform policy; improvement of coverage of essential health services, access to essential medicines and technologies, skill-mix of health care workforce, health information system, continuity of care and equitable distribution of primary, secondary and tertiary health care facilities, among others. Accelerated implementation of the health care reform policy will be essential for timely attainment of this target.
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National NCD target 9: Improve access to medicines and technologies

An 80% availability of the affordable basic technologies and essential medicines, including generics required to treat major NCDs in both public and private facilities by 2025.

Key messages

- Access to basic technologies and essential medicines is absolutely necessary to reduce premature deaths from NCDs.

- Minimal basic technologies for addressing NCDs in primary care include, a blood pressure measurement device, a weighing scale, height measuring equipment, blood sugar and blood cholesterol measurement devices with strips, and urine strips for albumin assay.

- Minimal medicine requirements for addressing NCDs in primary care include aspirin, a statin, an angiotensin-converting enzyme inhibitor, a thiazide diuretic, a long-acting
calcium-channel blocker, a beta-blocker, metformin, insulin, a bronchodilator and a steroid inhalant.

- In order to safeguard equity, people need to be provided access to basic NCD technologies and core NCD medicines at all levels of health care, before resources are allocated to other NCD technologies and other NCD medicines.

- Converging and competing interests of many players - policy makers, financing agencies, prescribers, pharmacies, health facilities, private companies and consumers - determine access to affordable medicines.

- The high level of political commitment to the provision of affordable and quality medicines has improved access to NCD medicines in Sri Lanka, particularly in the last 3 years.

- The National Medicines Regulatory Authority working together with the Ministry of Health and Indigenous Medicines and the World Health Organization is playing a key role in ensuring access to affordable medicines in Sri Lanka.

- Sri Lanka is continuing reforms to improve access and appropriate use of affordable quality medicines to advance the principles of Universal Health Coverage and Sustainable Development Agenda.

### Basic NCD technologies and medicines

For prevention and management of NCDs, individual interventions have to be effectively delivered, particularly at the primary care level. Inefficiencies are currently encountered in all components of health systems, including supply of essential medicines and technologies (1–5). Diagnostics, technologies and medicines are the most expensive commodities of health care. Evidence based rationalization and prioritization of diagnostics and medicines are necessary to contain
the health care expenditure, particularly in the public health sector. It is critical for sustainability of health systems that provide services free at the point-of-delivery - as in Sri Lanka.

NCD target 9, includes the basic requirement of medicines and technologies for implementing cost-effective primary care interventions to manage cardiovascular disease, diabetes and asthma (6). The core essential medicines include aspirin, a statin, an angiotensin-converting enzyme inhibitor, a thiazide diuretic, a long-acting calcium-channel blocker, a beta-blocker, metformin, insulin, a bronchodilator and a steroid inhalant. The basic technologies include, a blood pressure measurement device, a weighing scale, height measuring equipment, blood sugar and blood cholesterol measurement devices with strips, and urine strips for albumin assay. These are minimum requirements for implementing essential NCD interventions in primary care. Availability is defined as the percentage of public and private primary health-care facilities that have all of these medicines and technologies. As and when more resources become available, these lists of diagnostics and medicines could be expanded, but as a first step, the core set of medicines and diagnostics need to be made available at all levels of the health system.

**Impact of rational use of medicines on equity and health outcomes**

It is also important to recognize that in the public health sector, which usually has very limited resources, decisions regarding the selection of diagnostics and medicines for NCDs can have a significant impact on quality and sustainability of services as well as health outcomes and equity. For example, the diagnostics listed above need to be available at all health care levels country-wide, before providing electrocardiographs in primary care, where health workers are often not competent to read and correctly interpret electrocardiograms. Similarly, medicines listed above need to be available country-wide at all levels of health care, before the addition of more costly medicines. Further, because resources are limited, treatment guidelines need to
provide guidance to physicians on how to target medicines at those who will benefit the most from their use. For example, before treating borderline hypertension in large numbers of people— which can be addressed through population reduction of salt consumption— drug treatment should be ensured for those with hypertension and medium to high cardiovascular risk, who are highly vulnerable to develop heart attacks and strokes. In the case of respiratory diseases, steroid inhalers should first be provided to all with moderate to severe bronchial asthma before making them available for wider use. These issues may not be relevant to settings with high level of resources or good health insurance coverage. However, they are absolutely critical for the success of NCD prevention and control in a developing country such as Sri Lanka which is striving to provide health care free at the point of delivery (7, 8).

**Access to NCD medicines; global situation**

Access to medicines depends on rational selection, affordable prices, sustainable financing and reliable health and supply systems (9). Access to medicines is critical for both coverage of services and financial protection— for the attainment of Universal Health Coverage. Worldwide, medicines account for 68% of total health expenditure. In some countries, up to 90% of total expenditure for medicines is out-of-pocket. (10).

Recognizing the importance of access to medicines, the 2030 Sustainable Development Agenda also has included an ambitious target to improve access to Medicines (Target 3 b): “Support the research and development of vaccines and medicines for communicable and non-communicable diseases that primarily target developing countries, provide access to affordable essential medicines and vaccines in accordance to the DOHA declaration on the TRIPS Agreement and Public Health, affirm the right of developing countries to use the full provision in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health and in particular provide access to medicines for all.” (11)
In surveys conducted worldwide, there is a consistent pattern of lower availability of medicines in public sector facilities compared to the private sector, and lower availability in low-income and lower-middle-income countries (12-14, 16). An analysis of the availability of selected cardiovascular medicines (atenolol, captopril, losartan and nifedipine) in 36 countries concluded that availability in the public sector was poor (26.3%) compared to the private sector (57.3%) (14). A survey of the availability of asthma medicines listed on the WHO model list of essential medicines (15) found that, while salbutamol inhalers were available in 82.4% of private pharmacies, 54.8% of national procurement centres and 56.3% of public hospitals, the availability of beclometasone 100 μg puff inhalers, vital for treatment of asthma, was much lower (41.7%, 17.5% and 18.8% respectively) (16).

**Procurement and distribution of medicines in Sri Lanka**

Sri Lanka’s pharmaceutical market is estimated to be worth USD $ 400 million per year. The Government of Sri Lanka established the State Pharmaceuticals Corporation (SPC) in 1971 to provide high quality, safe, effective and affordable medicines. The national requirement of medicines for the public sector is estimated by the Medical Supplies Division (MSD) of the Ministry of Health on an annual basis. The national requirement of medicines is procured mainly through the State Pharmaceutical Corporation (SPC) which is the procurement agency for the Ministry of Health. In addition, when necessary, the Medical Supplies Division makes emergency procurement of locally manufactured pharmaceutical in the private sector.

The State Pharmaceuticals Corporation, procures medicines through an open, competitive tender system. All medicines imported into Sri Lanka need to be registered with the National Medicines Regulatory Authority. Suppliers who quote against the tenders of the State Pharmaceutical Cooperation also have to be registered with the National Medicines Regulatory Authority. Awards are made considering price quoted, past performance, quality of sample submitted and registration. Through
competitive global tenders, generic and bulk purchasing, the State Pharmaceuticals Corporation has been able to secure lower medicine prices and shield the public sector from high medicine costs.

The State Pharmaceuticals Manufacturing Corporation (SPMC) - founded in 1987 - is the main drug manufacturer in Sri Lanka, providing 43 drugs to the Ministry of Health at low profit margins. In 2015, SPMC and local manufacturers accounted for 15% of the total pharmaceutical market in Sri Lanka. The Cosmetics, Devices and Drugs Act 1980, is the legislative framework which provides the legal authority to regulate Cosmetics, Devices and Drugs in Sri Lanka. National Medicines Regulatory Authority is responsible for implementation of the provisions of the Act. The National Medicine Regulatory Authority was established in 2015, by the former Minister of Health and current President of Sri Lanka, H.E. Maithripala Sirisena (17, 18).

Distribution of medicines to government hospitals is the responsibility of the Medical Supplies Division. The Medical Supplies Division has a network of stores comprising of a Central Medical Store in Colombo and 26 Regional Medical Stores at the district level. Medicines are distributed directly to line ministry institutions by the Medical Supplies Division and to institutions under the provincial administration through Regional Medical Supplies Divisions (17, 18).

The State Pharmaceutical Corporation also procures medicines for an island-wide network of pharmacies known as Rajya Osu Sala outlets, and through them to other private health care facilities and private pharmacies. All expenses incurred in the purchases for the Health Ministry are advanced by the State Pharmaceutical Corporation from its own funds and subsequently collected from the Ministry. The State Pharmaceutical Corporation receives a service charge of 10% of the cost and freight value of goods for ordering and clearing expenses such as taxes, defence levy etc. (17, 18)

Supply of narcotics to public and private sectors is done only by the Medical Supplies Division (MSD) of the Ministry of Health. Government hospitals have pharmacies that provide medicines free of charge to patients who attend outpatient departments and hospital clinics.
Rational use, availability and affordability of medicines in Sri Lanka

The Essential Medicines list of Sri Lanka has been compiled based on disease patterns, evidence on efficacy, safety, stability and comparative cost effectiveness (19). Drug and Therapeutic committees have been established in more than 80 institutions. They help to promote rational use of medicines and to improve the quality and cost efficiency of treatment (18).

Several studies have been conducted on the availability and affordability of medicines in Sri Lanka (12, 20-22). Availability of medicines for management of NCDs in the private sector in Sri Lanka has been fairly high. In the public sector, availability of essential medicines for management of NCDs has improved over the last 10 years (12, 20). However, availability seem to fluctuate during the course of the year, with stock-out situations reported more often at the end of the year, particularly in primary care facilities. For example a World Bank study found that only 57.5% of primary health care institutions had a one-month buffer stock of 16 selected drugs for NCDs (23). At the district level, awareness programmes are conducted regularly by the Ministry of Health in collaboration with the State Pharmaceutical Cooperation, to improve medical supplies management and to minimize stock-out situations in public sector facilities.

It is estimated that the private sector accounts for between 50 and 60% of out patient care[24]. In the public sector, health services including medicines are free at the point of delivery (see Chapter 2). However, when medicines are not available in the public sector patients are compelled to purchase medicines from the private sector spending out of pocket. Out of pocket expenditure as a percentage of total health expenditure has been estimated to be 41.6-50.5% (24). Out of pocket expenditure as a percentage of private health expenditure has been estimated to be 80.8-87.6% (24).
Sri Lanka’s success story; access to affordable NCD medicines

Most developed countries have pricing policies to achieve affordability of medicines. Direct pricing policies include negotiated prices, maximum fixed prices, international price comparisons and price cuts. Indirect methods include profit regulation and reference pricing. (25). In 1989, the Government of Sri Lanka imposed price control on pharmaceuticals where the retail price was fixed at a maximum of 160% of the cost, insurance and freight by the Sri Lanka Government Gazette Extraordinary No. 552/7 in 1989. In November 2002, this was terminated by the Sri Lanka Government Gazette Extraordinary No. 1259/14. Even though medicines are exempt from certain taxes in Sri Lanka, this does not always result in lower prices for the patient. For example, private hospitals applied 15% V.A.T. on medicines provided to patients. Importers prices are based on the Cost, Insurance, and Freight (CIF) value of medicines. Importers declare the CIF value, which is not independently verified. In 2011, the Consumer Affairs Authority found that mark-ups on the CIF value of medicines were higher than 500% in certain cases (26).

There are many factors which distort demand and increase drug prices. These include: unethical drug promotion; lack of consumer awareness on generic brands; lack of monitoring of overcharging; irrational selection and use of medicines and unreliable supply systems. As a result of all these factors, since price control was abolished in 2003, people had to face the burden of steadily rising drug prices. It particularly took a toll on those suffering from NCDs.

The National Medicines Regulatory Authority is responsible for regulation and control of registration, licensing, manufacture, importation and other aspects pertaining to medicines (27). In 2016, at the request of the National Medicine Regulatory Authority, WHO conducted an analysis of Sri Lanka’s approach to pharmaceutical price control. This analysis provided useful insights on the strengths and weaknesses of various pricing formulas. Based on the findings of this analysis, on 21 October 2016, the Government issued a notice by Extraordinary
Gazette, setting a price ceiling for 48 essential medicines used to treat NCDs, such as diabetes, ischemic heart disease, hypertension, high cholesterol, and other common diseases (Table 11.1). The revised drug price formula ensures that core essential medicines for NCDs should be sold below a recommended maximum retail price at all times. The revised pricing policy is a major achievement in safeguarding patients’ rights to access affordable medicines.

Table 11.1 Reduction in price of diabetes and hypertension medicines due to new pricing formula based on maximum retail price

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Brands</th>
<th>Cost before new pricing (LKR)</th>
<th>Maximum Retail Price (LKR)</th>
<th>Reduction in cost due to new pricing formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amlodipine 50mg</td>
<td>8</td>
<td>21.00</td>
<td>15.32</td>
<td>29%</td>
</tr>
<tr>
<td>Losarten 50mg</td>
<td>23</td>
<td>28.00</td>
<td>10.30</td>
<td>64%</td>
</tr>
<tr>
<td>Atorvastatin 20mg</td>
<td>18</td>
<td>41.00</td>
<td>17.63</td>
<td>58%</td>
</tr>
<tr>
<td>Clopidogrel 75 mg</td>
<td>4</td>
<td>20.50</td>
<td>15.27</td>
<td>26%</td>
</tr>
<tr>
<td>Metformin 500mg</td>
<td>22</td>
<td>10.00</td>
<td>10.00</td>
<td>63%</td>
</tr>
<tr>
<td>Gliclazide 80mg</td>
<td>28</td>
<td>19.00</td>
<td>9.28</td>
<td>54%</td>
</tr>
</tbody>
</table>

Work is underway to reduce the prices of another 25 medicines; antibiotics, analgesics and medicines for diabetes, prostate diseases, asthma, cancer and neurological diseases.

Conclusion and future perspectives

Sri Lanka’s successful regulation of pharmaceutical prices demonstrate how a high level of political commitment, evidence based policies and public debate can protect patients’ rights and ensure affordable access to quality assured medicines (28). The new pricing policy sets a maximum cap on the price of core essential NCD medicines. Further safeguards will be required to ensure that tax reductions on medicines
result in lower medicine prices to the patient, particularly in the private sector.

Inexpensive generic NCD medicines are already available below the maximum retail price. However, the public are reluctant to purchase them because of concerns about their quality. The National Medicine Regulatory Authority is in the process of developing new guidelines to help ensure quality of generic medicines to improve their utilization.

An electronic Medicines Supply Management Information System (e-MSMIS), initiated in 2009 in Teaching Hospitals is being extended to the drug stores of Regional Medical Supplies Divisions (RMSDs) and to the smaller health facilities, where drug management is still done manually. Training of more staff in using the e-MSMIS is required. Methods of quantification and forecasting remain sub-optimal in some health facilities because these facility staff are still using manual methods, based on past drug consumption during which there were frequent stock-outs. The e-MSMIS portal will be used to disseminate information in the updating process of the national Essential Medicines List. Some of the other activities required to consolidate the progress and further improve access to medicines include the following:

- Harmonize action between State Pharmaceutical Cooperation and the Medical Supplies Division, to avoid delays;
- Coordinate the process of drug procurement with distribution and demand;
- Strengthen the National Medicine Regulatory authority by recruiting more technical staff, including pharmacists and inspectors;
- Strengthen Continuing Medical Education of prescribers at primary and secondary health care facilities on managing NCDs, using available resources and adhering to evidence based guidelines;
- Define key performance indicators and targets for improving medicines management including medicines use, implementation of regulations and the national drug policy (29).
There are several other Ministries and units, apart from the Ministry of Health, which play a key role in developing and implementing medicines-related policies. The Ministry of Finance and Treasury provides the budget and negotiates drug prices for public sector purchase from Sri-Lankan based manufacturers, together with the Ministry of Trade and Industry, Sri Lanka Manufacturers Association and the Sri Lankan Standards Institute. The Medical Supplies Division and the State Pharmaceutical Cooperation also provide input for this process. The Ministry of Trade and Industry sets rules for Medicine prices and duties and taxes on the importation of medicines together with Sri Lanka Manufacturers Association and the Sri Lankan Standards Institute. The Ministry of Higher Education is responsible for training programs and curricula for health professionals. The Public Services Commission decides on the number of posts in the Ministry of Health for management of pharmaceuticals. A high-level committee to oversee coordination between these various Ministries and units, with an executive committee within the Ministry of Health to carry out their recommendations, could help to streamline work related to medicines.

References


National NCD target 10: Reduce air pollution

50% relative reduction in the proportion of households using solid fuels as the primary cooking source.

Key messages

- About 12.6 million deaths a year (23% of global deaths), are linked to the environment and nearly two thirds of these deaths are due to NCDs.

- Environmental pollution including air pollution is a cross-sectoral issue where health is adversely affected as a result of ineffective policies in other sectors.

- Worldwide, one-quarter to one-third of NCD deaths are due to air pollution.

- According to WHO estimates, ambient (outdoor) and household (indoor) air pollution together caused 6.5 million NCD deaths in 2012.

- Air pollution - both indoor and ambient - is a major public health problem in Sri Lanka.

- Household air pollution is largely a problem of poverty and lack of access to clean fuels for people living in poorly
• The reduction in indoor air pollution due to combustion of firewood, can significantly improve health, especially of women and children.

Pollution of the environment and NCDs

In addition to behavioural risk factors, environmental factors like chemicals and air pollution are important risk factors of NCDs (Figure 12.1) (1-9). Environmental challenges that impact on health and NCDs such as pollution and climate change are interconnected and cannot be handled in isolation. For example, air pollution and climate change influence each other through complex interactions in the atmosphere. Increasing levels of greenhouse gases and air pollutants, alter the energy balance between the atmosphere and the earth’s surface which, in turn, can lead to temperature changes that change the chemical composition of the atmosphere.

World Health organization recommends a number of strategies to limit pollution including limiting industrial emissions, moving to clean energy sources, clean and efficient transport and reducing exposure to ionizing and ultra violet radiation and chemicals like pesticides, heavy metals, and asbestos (1-3, 8 ). In Sri Lanka, misuse of pesticides and fertilizer contaminated with heavy metals play a role in the etiology of chronic kidney disease of uncertain origin (see Chapter 13).
Air pollution

Air pollution is the most important environmental risk factor for NCDs—ischemic heart disease, stroke, cancer and chronic respiratory disease. It is also a major contributor to death due to lower respiratory tract infections in children. Other adverse effects of air pollution include tuberculosis, cataracts, and poor maternal outcomes (1, 7, 8).

Air pollution affects people of all age groups in all countries of the world. In 2015, 194 WHO Member States adopted the first World Health Assembly resolution to “address the adverse health effects of air pollution” (9). The two recent global developments that offer opportunities for synergies and efficiencies and are relevant to the implementation of this resolution are the Paris Agreement adopted at the twenty-first session of the Conference of the Parties to the United Nations Framework (10) and the 2030 agenda for Sustainable Development (11). The importance of air pollution for sustainable
development is reflected in its incorporation in the monitoring framework of Sustainable Development Goals. The three indicators that will be used for monitoring air pollution are, i) mortality due to air pollution (ambient and household) - an indicator for the health related SDG goal (SDG 3), ii) access to clean energy (particularly clean household fuels and technologies) – an indicator for sustainable energy (SDG 7) and iii) air pollution levels in cities - an indicator for urban sustainable development (SDG 11).

**Indoor air pollution**

Indoor air pollution, is due to the use of polluting technologies and fuels for cooking and lighting and indoor tobacco smoking, releasing smoke and other pollutants into the home. Poor ventilation exacerbates the health risks posed by indoor pollutants. In poorly ventilated dwellings, smoke in and around the home can exceed acceptable levels for fine particles, 100-fold (12).

Access to clean fuels and technologies for cooking, vary greatly between countries Figure 12.2). Globally an estimated 2.4 billion people use biomass fuel for cooking. In 2016, an estimated 3.8 million people died from indoor pollution from stoves that are inefficient and/or unvented (12, 13). Exposure is particularly high among women and young children, who spend the most time near the domestic fireplace. Exposure to household air pollution almost doubles the risk for childhood pneumonia and is responsible for 45% of all pneumonia deaths in children less than 5 years old (12).
Indoor air pollution in Sri Lanka

In Sri Lanka, like in many other developing countries, high fuel prices disproportionately affect the poor. Nearly 20% of households can be considered to be in “fuel poverty” needing to spend 10% or more of their income on fuel (14). These households are compelled to rely on cheaper energy sources, such as biomass fuel, that produce high concentrations of harmful indoor air pollutants. Biomass use in Sri Lanka is limited to wood and crop residues. Although over 80% of Sri Lankan households have electricity, this energy source is used for lighting because it is too expensive to use as cooking fuel. Overall around 66% of households use solid fuel for cooking; while the use of solid fuel in urban, rural and estate sectors is 25%, 74% and 80% respectively. In addition, 3% of households have no access to electricity and use kerosene for lighting as well (14).

Traditional biomass fuel stoves produce particulates, carbon monoxide, nitrous oxide, sulfur oxides, formaldehyde and carcinogens such as benzopyrene. Particulate matter consists of a mixture of solid and liquid particles of organic and inorganic substances suspended in the
air. It is generally used as a proxy indicator of exposure to air pollution. Particulates, especially PM2.5 (particulate matter with a diameter smaller than 2.5 microns), are harmful because they penetrate deep into the lungs causing bronchial irritation, inflammation and fibrosis. Carbon monoxide prevents hemoglobin from delivering oxygen to key organs and the developing fetus. Nitrogen dioxide and sulfur dioxide increase bronchial reactivity and lead to chronic respiratory disease (15, 16).

Number of deaths attributable to household air pollution in Sri Lanka is shown below (Table 12.1) (13). Heart disease, stroke and chronic respiratory disease are the main causes of death attributable to indoor air pollution in adults. Exposure to indoor air pollution also increases morbidity and mortality due to acute respiratory infections in children.

**Table 12.1 Deaths (over 18 years) attributable to household air pollution - Sri Lanka (2012)** (Source; WHO. Global Health Observatory (GHO) data; 2016 [http://www.who.int/gho/database/en/])

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Number of deaths (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic heart disease</td>
<td>10449 (8471-12538)</td>
</tr>
<tr>
<td>Stroke</td>
<td>5587 (4375-6614)</td>
</tr>
<tr>
<td>Cancer (trachea bronchus)</td>
<td>586 (319-752)</td>
</tr>
<tr>
<td>Chronic respiratory disease</td>
<td>2552 (1403-3540)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19302 (16244-22896)</strong></td>
</tr>
</tbody>
</table>

A national study of cook stove types has not been done yet. Available data indicate that the majority of cookstoves used are either three stones or semi-enclosed stove types. An improved cookstove made of clay known as “Anagi” is used widely, but it has not been adequately evaluated for emissions[17]. About 65% of households use biomass fuel for cooking inside the house. Only 72% of them have a chimney and about 9% have a separate building for cooking [18]. Kitchens in which wood is used with traditional stoves have average 24 hour PM2.5 concentrations exceeding 1200 μg/m³ [19].
Remedial measures to address indoor air pollution

Indoor air pollution requires cross sectoral remedial measures involving multiple Ministries; Ministries of Health, Power and Energy, Finance, Social services and Housing. There are no specific interventions implemented at national level to reduce indoor air pollution or to minimize the exposure of vulnerable groups to indoor air pollutants. There is a lack of reliable indoor air quality data and determinants of indoor air quality in Sri Lanka. This is a priority issue that needs to be addressed (20).

The use of cleaner fuels such as Liquified Petroleum Gas (LPG) would reduce the load of household air pollutants to a great extent but economic barriers for the use of Liquified Petroleum Gas need to be sorted out through government policies and subsidies. Currently, only 29% of households use Liquified Petroleum Gas for cooking (urban sector 67%, rural sector 23% and estate sector 15%) (14).

Improved cook stoves can help to reduce the emission from firewood and significantly increase the efficiency and speed of cooking (21-28). However, an 85% reduction in exposure to particulate matter is required to achieve a desired health effect from improved cook stores (16). Lack of public awareness of the problem and affordable stoves and fuels have stifled the success of this approach (21-29).

Every attempt must be made to improve the ventilation in houses, by implementing building guidelines to ensure better ventilation including through chimneys. For example in a study done in Sri Lanka, houses with a chimney using traditional cook stoves had a PM$_{2.5}$ level of about 70 μg/m$^3$ compared to households using traditional cook stoves without a chimney, which had PM$_{2.5}$ levels of about 310 μg/m$^3$ (21).

People need to be educated about the efficiency of cleaner fuels, improved cook stores and the importance of taking measures to improve ventilation in the house; through the use of elevated kitchen platforms to facilitate quicker exit of smoke, the use of a chimney, or the addition of windows or doors. They need to be informed that using indoor plants, wet-mopping of floors and refraining from smoking
indoors can contribute to the reduction of household air pollutants.

**Ambient air pollution**

Health damaging ambient air pollutants include particulate matter, ozone, nitrogen dioxide, carbon monoxide and sulfur dioxide. The major components of particulate matter are sulphates, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water (15, 16). The most health-damaging particles are those with a diameter of 10 μm or less. Fine particulate matter can penetrate and lodge deep inside the lungs, enter the bloodstream, and travel to organs. Small particulate pollution have adverse health impacts even at very low concentrations; no threshold has been identified below which no damage to health is observed. The WHO 2005 guideline limits are aimed to achieve the lowest concentrations of Particulate Matter (PM) possible. They are PM$_{2.5}$ 10 μg/m$^3$ annual mean, 25 μg/m$^3$ 24-hour mean and PM$_{10}$ 20 μg/m$^3$ annual mean and 50 μg/m$^3$ 24-hour mean. Data in Table 12.2 indicates, that people in Sri Lanka are exposed to more than double the air pollution levels recommended by WHO (15, 16).

**Table 12.2 Population exposure to particulate matter; annual median concentration (range) of particulate matter of an aerodynamic diameter of 2.5 mm or less in Sri Lanka, compared with selected high income and low-middle-income countries (13).**

<table>
<thead>
<tr>
<th>Country</th>
<th>Urban and rural areas, particulate matter 2.5 or less (μg/m$^3$), median (range)</th>
<th>Urban areas particulate matter 2.5 or less (μg/m$^3$), median (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri Lanka</td>
<td>27 (14-51)</td>
<td>28 (15-55)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>14 (9-23)</td>
<td>18 (11-28)</td>
</tr>
<tr>
<td>New Zealand</td>
<td>5 (4-8)</td>
<td>5 (4-8)</td>
</tr>
<tr>
<td>Australia</td>
<td>6 (4-8)</td>
<td>6 (4-9)</td>
</tr>
</tbody>
</table>
Adverse impact of ambient air pollution on health

Globally, 3 million and 4.2 million deaths were attributable to ambient air pollution in 2012 and 2016 respectively (1-8, 12, 13). About 87% of these deaths occur in low- and middle- income countries, which represent 82% of the world population (12). Almost 94% of deaths due to exposure to air pollution worldwide, are due to NCDs in adults, such as ischemic heart disease (30%), stroke (30%), chronic obstructive pulmonary disease (8%) and lung cancers (14%) (1). The remaining deaths occur in children under five years of age due to acute lower respiratory infections. Worldwide, the fraction of each individual disease attributable to ambient air pollution in Disability Adjusted Life Years (DALYs), ranges from 8% for chronic obstructive pulmonary disease to 25% for lung cancers. Acute lower respiratory infection (ALRI), stroke and Ischemic Heart Disease lie in the middle with population attributable fraction of around 16%. Table 12.3 shows the number of deaths, Years of Life lost (YLLs) and Disability Adjusted Life years (DALYs) attributable to ambient air pollution by disease in Sri Lanka. In Sri Lanka 99.6% of deaths, 98.5% of Years of Life lost and 98.4 Disability Adjusted Life Years attributable to air pollution are due to NCDs.

Table 12.3 Deaths, Years of Life lost (YLLs) and Disability Adjusted Life years (DALYs) attributable to ambient air pollution by disease in Sri Lanka (2012)(13)

<table>
<thead>
<tr>
<th></th>
<th>ALRI</th>
<th>COPD</th>
<th>Lung cancer</th>
<th>IHD</th>
<th>Stroke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths attributable to ambient air pollution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>13</td>
<td>90</td>
<td>100</td>
<td>1745</td>
<td>961</td>
<td>2915</td>
</tr>
<tr>
<td>Males</td>
<td>19</td>
<td>178</td>
<td>266</td>
<td>3101</td>
<td>1312</td>
<td>4877</td>
</tr>
<tr>
<td>Both sexes</td>
<td>33</td>
<td>275</td>
<td>365</td>
<td>4846</td>
<td>2273</td>
<td>7792</td>
</tr>
<tr>
<td></td>
<td>1208</td>
<td>1644</td>
<td>2741</td>
<td>35253</td>
<td>19846</td>
<td>60692</td>
</tr>
<tr>
<td></td>
<td>1773</td>
<td>3328</td>
<td>7293</td>
<td>81936</td>
<td>33116</td>
<td>127446</td>
</tr>
<tr>
<td></td>
<td>2981</td>
<td>4972</td>
<td>10034</td>
<td>117189</td>
<td>52962</td>
<td>188138</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ALRI</th>
<th>COPD</th>
<th>Lung cancer</th>
<th>IHD</th>
<th>Stroke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of Life Lost (YLLs), attributable to ambient air pollution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>1208</td>
<td>1644</td>
<td>2741</td>
<td>35253</td>
<td>19846</td>
<td>60692</td>
</tr>
<tr>
<td>Males</td>
<td>1773</td>
<td>3328</td>
<td>7293</td>
<td>81936</td>
<td>33116</td>
<td>127446</td>
</tr>
<tr>
<td>Both sexes</td>
<td>2981</td>
<td>4972</td>
<td>10034</td>
<td>117189</td>
<td>52962</td>
<td>188138</td>
</tr>
</tbody>
</table>

225
Disability Adjusted Life years (DALYs) attributable to ambient air pollution

<table>
<thead>
<tr>
<th></th>
<th>Females</th>
<th>1281</th>
<th>4155</th>
<th>2756</th>
<th>35646</th>
<th>20868</th>
<th>64706</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td>1851</td>
<td>5807</td>
<td>7326</td>
<td>82420</td>
<td>34109</td>
<td>131513</td>
</tr>
<tr>
<td>Both sexes</td>
<td></td>
<td>3132</td>
<td>9962</td>
<td>10083</td>
<td>118065</td>
<td>54977</td>
<td>196219</td>
</tr>
</tbody>
</table>

Causes of ambient air pollution in Sri Lanka

The major outdoor air pollution sources include vehicle emissions, power generation, manufacturing industry, waste incineration, agriculture activities and mining operations. Emissions from automobile engines is a major cause of air pollution that is difficult to tackle because there is growing reliance on them for transporting people and goods. From 2008 to 2015 the number of motor vehicles plying on the roads in Sri Lanka has doubled (Figure 12.3), worsening air pollution as well as traffic congestion (30).

Electric power generation from renewable resources such as solar, geothermal, and wind, generally does not contribute to climate change or local air pollution since no fuels are combusted. In Sri Lanka in 2014, primary energy supply for generation of electricity consisted of biomass (42%), petroleum (40%), coal (8%), hydro (8%), and renewable sources (3%) (30, 31). Coal is projected to be the major source of power with its share estimated to reach 40% by 2020 (32, 33).

**Mitigating air pollution; importance of intersectoral collaboration and policy coherence**

Policies to address air pollution also generate a range of benefits to human health, not only through air quality improvements but also other health benefits, such as accident and injury prevention, enabling physical activity and reducing exposure to harmful substances in the environment.

Health sector has a challenging role to play in tackling ambient air pollution because policies that contribute to air pollution are made by non-health sectors. Policymakers in non-health sectors have portfolios that require them to advance other public goods of high priority to government and society. Initiatives to promote employment, economic growth, transportation infrastructure, power generation and community development are deliberated by decision makers who often overlook the impact on health. Thus, to reduce air pollution, health sector needs to act across relevant government sectors - such as transport, power and energy, agriculture - and identify opportunities to establish cross-sectoral commitments in order to promote co-benefits and to reduce negative impacts on health.

It is also important to recognize that air pollution is closely linked to climate change as many of the causes of air pollution such as combustion of fossil fuels are also sources of high carbon dioxide emissions. Some air pollutants such as ozone and black carbon contribute both to ill health and climate change. Policies to reduce air pollution, therefore,
benefit both climate and health.

Road map to reduce air pollution

Interventions and policies for tackling air pollution issues exist and have been proven to be effective (1-4, 15, 16). In 2016, in the WHO resolution WHA68.8, Member States agreed on a road map for “an enhanced global response to the adverse health effects of air pollution” (9). This road map presents priority areas for responding to the adverse effects of air pollution so that decision-makers could choose and implement the most efficient and feasible policies. They include:

- Expanding the knowledge base about impacts of air pollution on health;
- Monitoring and reporting on the air pollution-related targets of the Sustainable Development Goals;
- Leveraging the health sector to raise awareness of health benefits from air pollution reduction measures;
- Enhancing the health sector’s capacity to work with other sectors to address air pollution through training, guidelines and national action plans.

The health sector in Sri Lanka has an important role to play in leading and coordinating these and other activities aimed at tackling the health impact of air pollution, climate change and other environmental issues.

Initiatives to reduce environment pollution in Sri Lanka

Sri Lanka Government has taken certain steps to tackle climate change and pollution of the environment including air pollution. A National Climate Change Adaptation Plan for 2016 – 2025 has been developed
in line with the guidelines set forth by the United Nations Framework Convention on Climate Change. If implemented as planned, it will be a major step forward in minimizing impacts of climate change on human life, ecosystems and the economy. This comprehensive plan also offers many opportunities to implement policy actions to tackle ambient air pollution (34).

A comprehensive analysis has been carried out to identify Energy Mix and Fuel Diversification Policies to mitigate air pollution and climate change. (30-32). Plans are underway to expand the contribution of renewable energy power generation, so that by 2025, there will be a share of more than 40% from renewable energy power plants. The rate of carbon dioxide emission is also expected to diminish in the future due to the introduction of more efficient coal plants. National budget 2018 proposed to convert all vehicles in the country to be hybrid or electric by 2040, and all Government vehicles to be converted to hybrid or electric vehicles by 2025. Tax on electric cars has been reduced. Incentives have been provided to encourage the use of off-grid solar power and in establishing electric car charging stations.

In addition, to reduce the health hazards posed by excessive use of agrochemicals, pesticides, and weedicides in agriculture, the Government launched the Toxin Free Nation Initiative, in 2015. This initiative has special relevance for regions of Sri Lanka ravaged by chronic kidney disease of uncertain origin. The aim of the initiative is to encourage organic farms and responsible agricultural practices. In addition, the Central Environment Authority is taking steps to mitigate the degradation of the environment through an array of approaches; establishment of new compost sites, bio gas plants, sanitary landfills, plastic recycling centres, plastic/polythene waste storage centres etc. (35). Sri Lanka became the 60th country to ratify the Minamata Convention on Mercury in 2017. Actions have been taken to phase out mercury containing instruments in the health sector, education sector and the jewelry industry. In 2017, Sri Lanka banned the use of polythene products including oxo-biodegradable plastic and polystyrene, in order to protect the marine environment. The Government of Sri Lanka is also in the process of ratifying the Kigali Amendment of
the Montreal Protocol, to phase down the production and consumption of hydrofluorocarbons which are potential global warming substances. These activities and initiatives need to be scaled up to mitigate environment pollution and its serious adverse impact on health.

Conclusions and future perspectives

A broad range of strategies need to be applied for minimizing exposures and mitigating adverse health effects of environment pollution including air pollution. Government should endeavor to adequately resource the Environmental Protection Agency whose mandate is to reduce environmental pollution. The Agency should lead the implementation of WHO recommendations to reduce environmental pollution including air pollution, engaging all other stakeholders.

Air pollution - both ambient and indoor - is a major contributor to the NCD burden in Sri Lanka. Generating baseline data related to indoor and outdoor air pollutants and human health is vital. Data provide the basis for advocacy, for formulating mitigation strategies and for enforcing existing laws. The lack of a proper air quality monitoring system to track human exposure is a major limitation. Therefore, establishing a reliable ambient air quality monitoring network, at least covering the main busy cities in the country, is a priority need.

Although several activities have been implemented to reduce outdoor air pollution, there are no specific interventions implemented at national level to reduce indoor air pollution. This gap needs to be rectified urgently particularly because those most affected by indoor air pollution are the poor and vulnerable segments of the population.
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9. World Health Assembly Resolution 69.18 road map for an enhanced global response to the adverse health effects of air pollution 2016.


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PART III
Other cost effective NCD interventions and key partnerships

Key messages

- In the national NCD program, implementation of all very cost effective NCD interventions (16 WHO best buys) need to be prioritized, adequately resourced and monitored.

- In addition to the best buys discussed in previous chapters, vaccination against human papillomavirus of girls aged 9 to 13 years and prevention of cervical cancer by screening women aged 30 to 49 years are best buy interventions.

- Not all individual interventions implemented through the health system are cost effective and affordable at the current level of health care spending in Sri Lanka.

- To reduce premature NCD mortality, cost effective interventions (WHO good buys) listed in this chapter, to address cardiovascular disease, cancer, diabetes, chronic respiratory disease and chronic kidney disease, need to be implemented through a primary health care approach.

- Elimination of trans fat from the food supply is a cost effective intervention to reduce cardiovascular morbidity and mortality.
Results oriented partnerships, which contribute to public health approaches to prevent and control NCDs, are vital for the success of the National NCD Program.

Implementation of other cost effective NCD interventions

Implementation of population based interventions and very cost effective individual interventions (best buys), to address major NCDs, were discussed in Chapters 2 to 13. In National NCD programs, implementation of all 16 best buys need to be prioritized, adequately resourced for country-wide implementation and closely monitored. In addition, there are other cost effective individual NCD interventions (good buys) (1-5), which also reduce NCD morbidity and mortality. Implementation of an affordable combination of best buys and good buys is a sustainable and pragmatic approach to reduce NCD morbidity and mortality. In Sri Lanka, these good buys are delivered mainly through a well organized health care system and address the following:

- Cancer
- Heart disease
- Stroke
- Diabetes
- Chronic respiratory disease,
- Kidney disease

Not all individual interventions implemented through the health system in Sri Lanka are cost effective and affordable at the current level of health care spending. This chapter focuses only on cost effective NCD interventions not discussed in the previous chapters, including elimination of trans fat.

As discussed in Chapters 2 and 3, health care in Sri Lanka is delivered through government and private providers under the stewardship of the Ministry of Health. The Ministry of Health formulates public health...
policy and regulates services of both public and private health sectors. In the public sector, there is a total of 1104 health facilities including primary medical care units and hospitals delivering curative care (6). Only outdoor NCD services are available in primary medical care units. Inpatient care is delivered in hospitals. Non-specialist care is delivered through Divisional Hospitals and Primary Medical Care units. Specialized care is provided through Base, District General, Provincial General and Teaching Hospitals and some selected specialized hospitals.

**National cancer control program**

National Cancer Control Programme (NCCP) was established in 1980 as a decentralized unit of the Ministry of Health. The National Policy and Strategic Framework on Cancer Prevention and Control in Sri Lanka was launched in 2015. The activities of the NCCP include surveillance, primary prevention, early detection, diagnosis, treatment, rehabilitation and palliative care of cancer.

**Surveillance**

Since 1985, national cancer incidence data are published based on the hospital based national cancer registry, maintained by the National Cancer Control Programme. Population based cancer registry for the Colombo District was established in 2012. For this registry, data are collected from the Apeksha Hospital, Maharagama and other government hospitals, oral-maxillo facial units, pathology laboratories and Death Registrars in the district. In 2018, a collaborative research agreement was signed between the Ministry of Health, Nutrition and Indigenous Medicine and the International Agency for Research on Cancer, for further development of population based cancer registries in Sri Lanka.
Prevention and early detection of cervical cancer and breast cancer

There are 2 very cost effective interventions (best buys) for prevention and control of cancer.

i) Vaccination against human papillomavirus (2 doses) of girls aged 9 to 13 years.

ii) Prevention of cervical cancer by screening women aged 30 to 49 years, through: visual inspection with acetic acid linked with timely treatment of pre-cancerous lesions; pap smear (cervical cytology) every 3–5 years, linked with timely treatment of pre-cancerous lesions; human papillomavirus test every 5 years, linked with timely treatment of precancerous lesions.

In Sri Lanka, public awareness and knowledge of the importance of prevention and early detection of cancer is enhanced through mass media campaigns and mobile exhibition units set up at the district level. self-examination mannequins have been made available in public health institutions. Guidelines on screening and early detection of prevalent cancers are available for healthcare staff. Cancer control activities are implemented by several stakeholders. The Family Health Bureau through the Well Woman Clinic programme, takes the lead role in screening of cervical cancer by Pap smear and clinical breast examination for early detection of breast cancer. The Epidemiology Unit implements the National Immunization Programme for prevention of liver cancer (Hepatitis B vaccination) and cervical cancer (Human Papilloma Virus vaccination). These are very cost effective NCD interventions (best buys). Hepatitis B and HPV vaccines were introduced into the national immunization schedule in 2003 and 2017 respectively. The number of Well Woman Clinics have increased from 611 in 2007 to 980 in 2015. The coverage of cervical cancer screening of the age 35 cohort has increased from 23% in 2010 to 45% in 2015. Since 2017, the cohort of 45 year old females is also included in cervical cancer screening.

With financial support from the Rotary Club Colombo, the National
Cancer Control Programme conducts a cancer screening and early detection centre at Narahenpita. Facilities for cervical examination, Pap smear, colposcopy, mammography and oral cavity examination are available at this centre. In 2017 HPV DNA testing of cervical smears was commenced on a pilot basis. If it is found to be cost effective and sustainable, HPV DNA testing of cervical smear will be integrated into the algorithm of cervical cancer screening. Hepatitis B vaccination is administered as a component of the pentavalent vaccine. In 2015, the coverage of pentavalent vaccine –third dose- ranged from 93.1% in Colombo to 98.9% in nine districts.

**Diagnosis, treatment and palliative care**

Cancer treatment units have been established in all provinces; the Apeksha Hospital in Colombo, Teaching Hospitals in Kandy, Karapitiya, Batticaloa and Anuradhapura, Provincial General Hospitals in Kurunegala, Badulla and Rathnapura and Base Hospital in Thellipilai. Over the past two years additional cancer treatment units have been established at Teaching Hospital, Colombo North and 10 District General Hospitals. Cancer treatment units provide chemotherapy facilities. Radiotherapy facilities are available in 6 centres at provincial level. Mammography facilities are available in 14 hospitals. All cancer patients are provided oncology medicines free of charge.

A National Steering Committee on Palliative Care Services has been established under the chairmanship of Director General of Health Services. The National Strategic Framework on Palliative Care Development in Sri Lanka will be launched in 2018.

**Cardiovascular disease; heart disease and stroke**

The following cost effective interventions are delivered at primary, secondary and tertiary levels of the health system to address heart disease and stroke:
• Early detection and treatment of people at medium to high cardiovascular risk including those with pre-existing cardiovascular disease and diabetes to prevent heart attacks and strokes (WHO best buy) (see Chapters 8, 9 and 10);

• Treatment of acute myocardial infarction with drugs and thrombolysis;

• Treatment of acute myocardial infarction in hospitals with follow up carried out through primary health care facilities;

• Cardiac rehabilitation- post myocardial infarction;

• Anticoagulation for medium-and high-risk non-valvular atrial fibrillation and for mitral stenosis with atrial fibrillation;

• Treatment of congestive cardiac failure with angiotensin converting-enzyme inhibitor, beta-blocker and diuretic;

• Primary and secondary prevention of rheumatic fever and rheumatic heart diseases;

• Treatment of acute ischemic stroke with intravenous thrombolytic therapy;

• Low-dose acetylsalicylic acid for ischemic stroke;

• Care of acute stroke and rehabilitation in stroke units.

Thrombolytic therapy for acute myocardial infarction is available in hospitals at the district level. A recent study at the district level, has reported that the proportion of patients that achieve guideline recommended Door to Needle Time of 30 minutes and an optimal ischemic time of 2 hours is low (30%) (7).

Only about 11 tertiary care hospitals in the island offer thrombolytic therapy for stroke. Analysis of data in the Sri Lanka Stroke (Clinical) Registry collected from 5 tertiary care hospitals over 6 months, show that 20% of stroke admissions are haemorrhagic. Only about 16% of stroke patients arrive in hospital within 3 hours of onset. Almost all (99.7%) stroke patients have a CT scan of brain at some stage. Only
3% of ischemic stroke patients receive thrombolytic therapy with a mean door to needle time ranging from 78 – 160 minutes (mean 105 minutes) (8). So far, stroke units have been established only in about 7 tertiary care hospitals. National Stroke Centre at Mulleriyawa is being developed into a comprehensive stroke care hospital which would model stroke care for the rest of the Island. Plans are also afoot to establish stroke units in all major cities.

For stroke rehabilitation to succeed, scaling up of the current level of allied health professionals is necessary. In 2015, there were only 1.7 physiotherapists, 0.5 occupational therapists and 0.1 speech therapists per 100,000 population (6). In addition, stronger ties need to be forged between health care institutions providing acute stroke care and the Ministry of Social Empowerment and Social Services which is responsible for community based rehabilitation.

**Diabetes**

Cost effective interventions delivered for the care of diabetes include the following:

- Early detection and effective control of cardiovascular risk and glycemia to prevent heart attacks, strokes and renal disease (WHO best buy) (see Chapters 9 and 10);
- Preventive foot care for people with diabetes;
- Diabetic retinopathy screening and laser photocoagulation for prevention of blindness;
- Preconception care among women of reproductive age who have diabetes including patient education and intensive glucose management.

Diabetic foot screening and risk stratification is carried out at all health care levels and preventive foot wear is provided at the tertiary care level. Early detection of diabetic retinopathy, is done at all health care levels by medical officers trained in ophthalmoscopy. Patients
are referred to secondary and tertiary care centres for confirmation of retinopathy. Photocoagulation is available only in a few tertiary care hospitals.

Preconception care includes detection and management of hyperglycaemia, and other metabolic and weight abnormalities prior to conception. Preconception care components for adolescent girls are included in the school health programs. Screening of women who are planning pregnancy and universal screening of pregnant mothers for diabetes is carried out at the primary care setting.

**Asthma and chronic obstructive pulmonary disease**

Cost effective individual interventions delivered for chronic respiratory disease at all levels of care include the following:

- Symptom relief for patients with asthma and COPD with inhaled salbutamol;

- Treatment of asthma using low dose inhaled beclomethasone and short acting beta agonists.

**Chronic kidney disease**

The commonest causes of chronic kidney disease worldwide as well as in Sri Lanka are diabetes and hypertension (9). A type of kidney disease which cannot be attributed to diabetes, hypertension or other known aetiologies, has emerged in Sri Lanka and in other developing countries such as El Salvador, Nicaragua, Costa Rica, Mexico, Egypt and India during the last two decades. It is referred to as Chronic Kidney Disease of Uncertain aetiology (CKDu). Wherever CKDu occurs, many key causative elements appear to be playing a part; deep-rooted poverty combined with exposure to environment and occupational toxins, lack of safe drinking water, poor nutrition and harsh living and working conditions. Chronic Kidney Disease of Uncertain aetiology is
often diagnosed late, when kidney damage already requires dialysis. Research results indicate that chronic exposure of people to pesticides and nephrotoxic heavy metals through the food chain play an important role in its aetiology (10, 11, 12). Ministry of Health in collaboration with several other Ministries are taking steps to improve the water supply to the areas affected, regulate the use of pesticide as well as fertilizer and improve surveillance, early detection, treatment and dialysis facilities of people with Chronic Kidney Disease of Uncertain aetiology. Prevention is the only affordable and sustainable solution for this disease.

Management of NCD emergencies

Large city hospitals have preliminary care units, with variable services and facilities to cater to medical emergencies. Almost all district level hospitals have emergency treatment units. Usually these are small rooms with one to two beds, resuscitation equipment and basic facilities; electrocardiograph, nebulizer and glucometer. Currently, there are no specialist grade emergency medicine physicians. The emergency telephone number for emergency medical services, reserved by the Telecommunications Regulatory Commission, is 1-1-0. Although it can be accessed through any land or mobile phone, it is not widely used, due to lack of public awareness and technical issues. For example, some emergency medical service systems can only respond to calls within a 5-km radius from their center. There are ambulances, for transferring patients between hospitals but there is no organized ambulance service with centralized communication which responds to emergency calls from the public. There are a few private ambulance services in the main cities that levy a fee for their service. Usually patients are transported to the hospital via taxies or private cars. Usually, volunteer community responders are responsible for prehospital care.

In Sri Lanka, the largest share of morbidity and premature mortality is due to cardiovascular disease. Thus, special attention need to be focused on prevention as well as emergency care of myocardial
infarction and stroke. Strategies to reduce door to needle time including establishment of Emergency Care Units, training of the health workforce and better public awareness are required to strengthen thrombolytic therapy for acute myocardial infarction and stroke.

Timely management of acute myocardial infarction, stroke, acute asthma and diabetic emergencies can contribute to reduction of premature NCD mortality. However, establishment of an island-wide emergency service requires resources which should not be appropriated from the already inadequate budget allocated to population-wide prevention and primary care. Additional resources need to be mobilized to strengthen emergency services in Sri Lanka.

**Eliminating trans fatty acids from the food supply**

WHO estimates that every year, trans fat intake leads to more than 500,000 deaths of people from cardiovascular disease. Consumption of trans fats raise harmful low-density lipoprotein cholesterol and decrease protective high-density lipoprotein cholesterol. Eliminating trans fats is key to safeguarding cardiovascular health and saving lives.

Industrially-produced trans fats are contained in hardened vegetable fats, such as margarine and ghee. They are often present in snack food, baked foods, and fried foods. Manufacturers prefer to use them as they have a longer shelf life than other fats. Various policy actions (including labelling, reformulation, and regulation) have been implemented by countries to restrict the trans fat content of food.

WHO recommends six strategic actions to reduce/eliminate industrially produces trans fats from the food supply.

i. Review dietary sources of industrially-produced trans fats and the landscape for required policy change;

ii. Promote the replacement of industrially-produced trans fats with healthier fats and oils;

iii. Legislate or enact regulatory actions to eliminate industrially-
produced trans fats;

iv. Assess and monitor trans fats content in the food supply and changes in trans-fat consumption in the population;

v. Create awareness of the negative health impact of trans fats among policy makers, producers, suppliers, and the public;

vi. Enforce compliance of policies and regulations.

The 2016, Household Income Expenditure Survey in Sri Lanka reported high monthly household consumption of food items rich in trans fats; margarine 38.75 g, biscuits 825.61g, cake 142.49g, snacks (pastries/patties/cutlet/wade) 8.23 pieces, per person. In Sri Lanka, local food laboratories have no facilities to analyze trans fats. The Ministry of Health has provided funds to the Medical Research Institute to establish this analytical service. Plans are underway to determine the baseline levels of trans fat in different food items, so that trans fat content in the food supply can be regulated using the new food labelling regulations.

**The role of the World Health Organization, World Bank and other Development partners**

There are 23 United Nations agencies, including WHO, that work closely with the Government of Sri Lanka, guided by the United Nations Sustainable Development Framework agreed upon jointly by the United Nations and the Government. Development partners such as the World Bank, Asian Development Bank (ADB) and Japan International Cooperation Agency (JICA) engage and coordinate with WHO to provide support for NCD prevention and control.
World Health Organization

The World Health Organization (WHO) has worked closely with the Government of Sri Lanka to develop, implement and evaluate the National NCD response. It has provided technical guidance, assistance for capacity strengthening and implementation of NCD programmes and support to health system reforms (14).

For example, in 2016, the WHO Country Office commissioned an assessment of the impact of advertising and marketing of foods and non-alcoholic beverages that are high in fat, sugar and salt to children. Based on the findings, a consultation was organized engaging all stakeholders which was instrumental in achieving a national consensus on a policy approach to regulating the marketing of such foods and beverages. The results of another WHO commissioned study were used to advocate for incremental taxation on sugar sweetened beverages, based on sugar content. WHO is also supporting the country in developing a nutrient profiling method to categorize foods and non-alcoholic beverages based on sugar, fat and salt content. Working with the National Authority on Tobacco and Alcohol and others, WHO also coordinated a study in 2017, to assess the cost implications of alcohol and tobacco use in Sri Lanka.

Since 2002, four Country Cooperation Strategies have provided the framework for partnership between WHO and the Ministry of Health/Government of Sri Lanka. The strategic priorities in the WHO Country Cooperation Strategy respond to the priorities identified within the national health policy and plans. The fourth Country Cooperation Strategy 2018–2023 (13), has four strategic priorities; tackling NCDs and their determinants, strengthening the health system through a supportive policy environment, promoting resilience in the face of health threats and adopting a knowledge-based approach to health policy development. These strategic priorities complement national policies and strategies and are aligned with the 2030 Sustainable Development Goals. WHO plays a unique role in setting norms and standards and is particularly valued for its strengths in giving policy advice, brokering and diplomacy.
The World Bank

The Second Health Sector Development Project (SHSDP) of the World Bank, supports the implementation of the government’s National Health Development Plan. It has an International Development Association contribution of US$ 200 million over 5 years which is financing many NCD activities. The project aims to upgrade the standards of performance of the public health system and enable it to better respond to the challenges of NCDs.

Under this project, at least 2 Healthy Life Style Centers have been established in 97% of Medical Officer of Health areas (see Chapter 10), for early detection of people at risk of developing heart attacks and strokes. Functioning Emergency Treatment Units have been established in 46% of centrally managed hospitals and 82% of the provincially managed hospitals. In addition, to strengthen national NCD capacity, health sectors officials including Medical Officers NCDs, working in Preventive Health services were provided local and overseas training exposures on different aspects of NCD prevention and management. Support was also provided for digitisation of health data, in order to improve monitoring of disease patterns and management of healthcare information. These included the implementation of unique patient identification numbers, a communication network between the Medical Supply Division and peripheral health institutions and a web-based Indoor Morbidity and Mortality Record system. Furthermore, quality management units have been established for improving quality of NCD related services in 95% of provincially managed base hospitals and all centrally managed hospitals. These units are engaged in improving quality of NCD services in hospitals i.e. reduced waiting time, prompt management of NCD emergencies such as myocardial Infarction and better patient satisfaction. Finally, several research projects related to NCD care have also been supported under this initiative. They include, projects on piloting of a stroke registry, prevention of blindness and visual Impairment due to diabetes retinopathy by early screening and monitoring the compliance of beverage and food manufacturers in following beverage and food labelling regulations.
The role of Professional Associations and Colleges

Sri Lanka has a number of Professional Associations and Colleges with a range of activities that enrich the national NCD response. They include the Sri Lanka Medical Association, Ceylon College of Physicians, Sri Lanka Heart Association, College of oncologists, College of Pulmonologists, College of Endocrinologists, College of Community Physicians, Diabetes Association of Sri Lanka, Sri Lanka Society of Nephrologists, Sri Lanka Society of Internal Medicine, Association of Sri Lanka Neurologists, Sri Lanka Medical Nutrition Association, among others. They contribute technical expertise for the development and implementation of national plans, policies and guidelines, training programs, public education, advocacy campaigns and research initiatives. For example, the Sri Lanka Medical Association played an important role in the National Initiative to Reinforce and Organize General diabetes care In Sri Lanka projects (NIROGI Lanka and NIROGI Diviya Projects), to evaluate models to improve the quality of diabetes care and primary prevention of diabetes and cardiovascular risk, appropriate to the national context. This project implemented in close collaboration with the Ministry of Health over a period of 8 years provided useful lessons for shaping the island-wide network of Healthy Lifestyle Centers for early detection of NCDs (see Chapter 10).

The work of Professional Associations and Colleges need to be further expanded and strengthened, particularly to support monitoring and evaluation of NCD programs and operational research. The National NCD response can be made more effective if operational research is embedded in NCD initiatives at the planning stage (15) and research results are taken on board when developing NCD policies.

Conclusions and future perspectives

Due to the growing burden of NCDs and inadequate resources to keep pace with demands, shortcomings have developed in all components of the health system; governance and accountability, financing, health information, service delivery, referral links, quality and access
to treatment. Facilities including laboratory tests for early detection of major NCDs in primary care have to be consolidated. Enhanced early detection and treatment of medium/high cardiovascular risk (to prevent heart attacks and strokes), diabetes (to prevent nephropathy, retinopathy and cardiovascular events), cancer of mouth, cervix, breast and colon is required to reduce the need for more costly high technology interventions such as bypass surgery, dialysis and radiotherapy. The performance of primary care need to be improved through policy support and strengthening of the service delivery system, human resources and infrastructure. Computerized health information and a system to track patients in the community can boost patient compliance, engagement and follow-up, which are challenging issues in NCD care. Implementation of the recently approved health care reform policy, to attain Universal Health Coverage (16) (see Chapter 3), is key to addressing these critical gaps in the health system, in order to accelerate progress in prevention and control of NCDs.

Given the constraints in economic growth, it is unrealistic to expect the Government to significantly increase health spending for NCDs in the foreseeable future. Nevertheless, due to population ageing as well as rising risk factors levels, the NCD burden will continue to grow relentlessly, unless two urgent actions are taken. First, is to invest a larger share of the current health budget to strengthen population-wide primary prevention (see Chapters 3 to 12). Second is to strengthen the delivery of individual best buys and good buys through a primary health care approach as outlined in Chapter 10 and in this Chapter. If implemented in combination, these two approaches can at least appreciably contain the NCD burden in the near and medium term.
References


Several recent global documents have addressed different aspects of prevention and control of NCDs (1-3). This document does not intend to address every aspect of prevention and control of NCDs. It is intended to look back and reflect on the challenges and achievements of tackling NCDs in a developing country -Sri Lanka- in order to learn, distill useful lessons and share with others. Chapters 1 and 2, present the context in which Sri Lanka is endeavoring to address NCDs. Chapters 3 to 13, document how Sri Lanka has launched and taken forward the national NCD response, giving priority to national NCD targets and the Sustainable Development Agenda. What has Sri Lanka learned? Are there lessons which countries of the same level of development can make use of, in their journey to combat NCDs? This final chapter focuses on lessons learned.

**Tackling NCDs in a complex health landscape**

During the last two decades, the architecture of global and national health landscapes has changed dramatically. In order to address NCDs, Sri Lanka has navigated this complex landscape, successfully. At the global level, there has been a rapid proliferation of global health partnerships focusing on single disease entities, changing the face of public health and international aid. During this period, major challenges such as a global financial crisis, outbreaks of communicable diseases and natural and humanitarian disasters have threatened...
the progress of global health and development. Sri Lanka also had to face a devastating tsunami in and its aftermath in 2004, and the wide ranging adverse consequences of a protracted armed conflict from 1983 to 2009. In addition, during this period, there has been a constant tension in allocating resources to address NCDs, because of competing health priorities such as communicable diseases, and maternal and child health. Despite all these challenges, in the year 2000, political leaders of Sri Lanka made a bold and wise decision to tackle NCDs head-on. Two decades on, while daunting challenges still remain, the progress made in tackling NCDs in the country has been commendable.

Progress in NCD prevention and control

WHO NCD progress monitor, assesses country progress made in NCD prevention and control, using 19 progress indicators (4). As shown in Figure 14.1, Sri Lanka has made significant progress in certain key aspects of NCD prevention and control.
Out of the ten priority NCD areas discussed in Chapters 3 to 13, significant progress has been made in tobacco control (Target 5-Chapter 7), early detection and treatment of people with high cardiovascular risk (Target 8-Chapter 10) and access to medicines (Target 9-Chapter 11). However, even in these areas, progress is uneven across the country and
more human and financial resources are needed to reach the stipulated targets by 2025 (5). In other areas—reducing harmful use of alcohol (Target 2—Chapter 4), reducing physical inactivity (Target 3—Chapter 5) and salt intake (Target 4—Chapter 6), halting obesity and diabetes (Target 7—Chapter 9), reducing the prevalence of hypertension—(Target 6—Chapter 8) and reducing indoor air pollution (Target 10—Chapter 12), work is in progress, but need to be accelerated. The litmus test for success of prevention and control of NCDs will be the attainment of the overarching NCD Target 1—(Chapter 3), reduction of premature mortality. The Sustainable Development Goal 3 target is to, reduce by one third premature mortality from NCDs by 2030. Attainment of this target is not only important for health but it is also critical for the overall social and economic development of Sri Lanka (6, 7).

**Lessons learned in prevention and control of NCDs**

**Lesson 1. The national NCD response can be fortified by leveraging global health strategies and treaties.**

Sri Lanka has been an early adopter of global public health strategies and treaties. It has effectively leveraged Global Health Strategies and Treaties to shape and fortify the national NCD response.

A public health approach to address NCDs was first proposed by the World Health Organization in the Global Strategy for Prevention and Control of Noncommunicable diseases. The strategy was adopted by WHO Member States, including Sri Lanka, at the World Health Assembly in 2000 (8). It identifies surveillance of risk factors, prevention and disease management as the key components of NCD prevention and control. The focus of the strategy is on the four major NCDs—cardiovascular disease, cancer, chronic respiratory disease and diabetes—which share behavioural and environmental risk factors (tobacco use, harmful use of alcohol, unhealthy diet, physical inactivity and air pollution). At the outset, Sri Lanka embraced the public health approach presented in WHO’s Global Strategy for Prevention and
Control of NCDs (8).

Since the adoption of the Global NCD Strategy in 2000, several World Health Assembly resolutions have been endorsed in support of the key components of the global strategy. They include the WHO Framework Convention on Tobacco Control (WHO FCTC) (resolution WHA56.1), the first global public health treaty (9). Sri Lanka was the first country in Asia to ratify the Framework Convention on Tobacco Control in 2003, and the fourth globally (see Chapter 7).

In September 2011, at a United Nations high-level meeting on NCDs, heads of state and government formally recognized NCDs as a major threat to economies and societies and placed them high on the development agenda. (7). In order to translate these commitments into action, in May 2013 the Sixty-sixth World Health Assembly adopted the Global action plan for the Prevention and Control of Noncommunicable diseases 2013–2020 (10). Sri Lanka has developed a National Multisectoral Action Plan for the prevention and control of NCDs 2016-2020, consistent with the Global NCD Action Plan. The national NCD targets of Sri Lanka are also consistent with the Global NCD targets. They help to focus available resources and action, on achieving a defined impact in key areas of NCD prevention and control (11). Sri Lanka is now in the process of integrating the national NCD response within the ambitious Sustainable Development Agenda 2030, adopted by countries at the United Nations in 2015 (10). Alignment of the national NCD response with global NCD strategies and treaties, over the last two decades, has contributed to the success of NCD activities in Sri Lanka.

**Lesson 2: Key ingredients which have been responsible for the success of other public health programs are equally important for effective NCD prevention and control.**

Advancing the NCD agenda in Sri Lanka from 2000 onwards, was carried out amidst challenges posed by other competing health priorities such
as maternal and child health and communicable diseases. Sri Lanka has been successful in reducing the maternal mortality ratio from almost 2000 deaths per 100,000 live births in the 1930s to 33 deaths per 100,000 live births in 2015. At present, there is comprehensive, island-wide access to maternal and child health care. The number of skilled practitioners attending to births have increased from 30% of births in 1940, to 99.9% of births in 2015. (12). Impressive progress has also been made in the control of communicable diseases such as polio, leprosy, tuberculosis, filariasis and malaria. Malaria for example, caused death and devastation in Sri Lanka for hundreds of years. After a prolonged public health campaign, the country has now reduced the number of indigenous malaria cases to zero (13).

These public health initiatives have identified certain key elements that form the backbone of public health programs and ensure their success. They include:

i. Improvements in living standards, education and gender equity;

ii. Sustainable funding;

iii. Equitable access to health services;

iv. Commitment to technical excellence;

v. Investment in capacity strengthening of the health workforce;

vi. Focus on high-risk population segments to improve cost effectiveness;

vii. Early detection, diagnosis and affordable treatment;

viii. Intensive surveillance, monitoring and evaluation;

ix. Community engagement and partnerships;

x. Learning from operational research.

The experience in tackling NCDs in Sri Lanka shows that the very same drivers and ingredients listed above, are also fundamental for winning the fight against NCDs.
Lesson 3: Prioritization is the pragmatic option for addressing NCDs in resource constrained settings

Sri Lanka, like many other developing countries have very limited resources for health. Health services are provided free at the point of delivery and no one is left behind. However, the rising demands of the NCD burden is gradually outstripping the resources available for health. Sri Lanka therefore prioritized action on four national NCD targets; target 1 (reducing premature mortality), target 5 (tobacco control), target 8 (prevention of heart attacks and strokes through a total risk approach and target 9 (access to medicines). Very cost effective interventions (WHO best buys), related to these areas have been implemented (see Chapters 3, 7, 10 and 11). Now that there is demonstrable progress related to these targets, NCD activities are being rapidly expanded to encompass other targets (see Chapters 4-6, 8, 9).

Lesson 4: An intervention which is very cost effective is affordable to the country and is therefore scalable and sustainable.

Although there are many interventions for management of NCDs, only two are very cost effective. One of them is prevention of heart attacks and strokes through a total cardiovascular risk approach.

Sri Lanka has a fast ageing population with rising prevalence rates of both hypertension and diabetes and heart attacks and strokes are the leading NCDs. Taking cognizance of the urgent need to prevent heart attacks and strokes, Sri Lanka embraced the very cost effective total risk approach, which uses both hypertension and diabetes together as entry points to detect those at high cardiovascular risk (WHO best buy) (14-16). As discussed in Chapters 8 and 10, vertical single risk factor programs, such as a program focusing only on hypertension cannot be equitably delivered or sustained in a developing country like Sri Lanka, because the country has a modest per capita health expenditure. The recently approved government policy to reform Health Care Delivery
to attain Universal Health Coverage, will enable the expansion of this program island-wide by including this very cost effective intervention in the essential health services package (17).

Lesson 5: Public–private undertakings to address NCDs are more likely to succeed when governments establish legislative frameworks to protect public health.

Engaging with the private sector is necessary for addressing NCDs because the private sector is an important driver of the NCD burden. In recognition of this fact, the 2011 United Nations High-Level Political Declaration on NCDs called on the private sector to take action in areas such as reformulating unhealthy food products, promoting healthy workplaces and improving affordability and access to medicines (7). In order to reduce the sugar content in sweetened beverages in Sri Lanka, the Ministry of Health engaged with the private sector and jointly developed a technical guideline. The expectation of the Ministry of Health was that beverage manufacturers would comply with the guideline voluntarily, as they were closely involved in the guideline development process. However, this did not materialize. In the face of resistance from manufacturers, in order to accomplish the task of reducing the sugar content of sweetened beverages, the Ministry of Health had to resort to legislation (see Chapter 9). Beverage manufacturers complied with the guideline only when a binding law was introduced.

Lesson 6: NCD prevention in children can be effectively operationalized through schools.

Sri Lanka has successfully used the machinery of a well-oiled School Health Service to operationalize NCD prevention in children. Sri Lanka has approximately 4.2 million school children enrolled in about 10,144 public schools (12). School Health Services including health promotion are delivered through this education infrastructure and the
primary health care network. The programme is a shared responsibility of the Ministry of Health and Ministry of Education and is a good example of collaboration between two Ministries to achieve a shared national goal – physical and mental health and wellbeing of children. The Family Health Bureau and the Health Promotion Bureau lead the School Health Programme in close collaboration with Provincial Health and Educational ministries. At the regional level, the Medical Officer of Maternal and Child Health is the chief coordinating officer of the programme.

**Lesson 7: Collaboration between the health sector and sectors outside health can be facilitated and accelerated by a lead agency.**

Multisectoral collaboration is essential for NCD prevention and control but is one of the most difficult endeavors. The progress made on tobacco control in Sri Lanka demonstrate that a lead agency working closely with the Ministry of Health, can galvanize multisectoral action by actively seeking opportunities to collaborate with and influence sectors outside health. In Sri Lanka, The National Authority on Tobacco and Alcohol (NATA) was established by the National Authority on Tobacco and Alcohol Act, No. 27 of 2006, for the purpose of enactment of the legal aspects for alcohol and tobacco prevention. The National Authority on Tobacco and Alcohol has been successful in working across sectors for implementing tobacco control measures. In recognition of the outstanding achievements in tobacco control, it was conferred with the prestigious WHO South-East Asia Region’s “World No Tobacco Day Award” on 31 May 2017 (see Chapter 7).

**Lesson 8: High level political commitment is essential for NCD prevention and control.**

High level political commitment is one of the essential ingredients of success in NCD prevention and control. Lack of cooperation of the
private sector, sometimes amounting to interference has often stalled the development and implementation of measures to address tobacco, alcohol and unhealthy diet in Sri Lanka. In the case of the tobacco industry, it continues to undermine national efforts to prevent tobacco use. In the recent past, the Ceylon Tobacco Company took legal action against the Government of Sri Lanka to thwart tobacco control measures, on several occasions. Although the Ceylon Tobacco Company is rich and powerful with a reported gross turnover higher than the Gross Domestic Product of Sri Lanka, it failed to stop the implementation of tobacco control measures (18). Steadfast commitment of Ministers of Health over the years and civil society support were instrumental in overpowering tobacco industry interference (see Chapter 7).

The strong commitment of the present Minister of Health, Dr Rajitha Senaratne, to tackling NCDs has been instrumental in accelerating progress of NCD prevention and control, in the recent past. As a result of his leadership, the prices of a range of essential NCD medicines have been reduced and they have become more affordable to people (see Chapter 11). This is an important development because in Sri Lanka, 50% of people purchase medicines out of pocket and price is a key determinant of access to medicines. In addition, Sri Lanka has also been able to withstand pressure from the food and beverage industry and introduce traffic light labelling on sweetened beverages and a sugar tax (see Chapter 9).

Key considerations in moving forward

Moving into the future, there are several system weaknesses which need to be urgently rectified to ensure smooth progress in NCD prevention and control in Sri Lanka. They include:

- Establishing clear mechanisms for policy coordination and system oversight;

- Reforming the governance framework to provide clarity at the policy level in the demarcation of authority, responsibilities and functions at Central, Provincial and District levels of
government;

- Expanding human capital across a wide array of disciplines - e.g. health economics, public health law, environmental health - for tackling the complexities of prevention and control of NCDs;

- Mainstreaming NCDs into policy planning in other sectors including through shared budgets and joint action plans;

- Improving the accuracy of the death registration system;

- Improving quality of data related to all 10 NCD targets in order to better monitor progress and evaluate change;

- Ensuring the uninterrupted availability of resources to scale-up existing NCD policies and best buy interventions to attain the 10 NCD targets.

Conclusions and future perspectives

Sri Lanka has laid a good foundation to tackle NCDs, in the form of a national NCD policy and plan, underpinned by 10 national NCD targets (8). The cost for implementation of the National Action Plan 2016-2020 has been estimated to be LKR 9.3 billion (19). This cost estimate is only for the Implementation of those activities which fall under the responsibility of Ministry of Health, Nutrition and Indigenous Medicine. Impressive public health gains in other areas of health such as communicable diseases and maternal and child health, provides a wide window of opportunity for Sri Lanka to further accelerate progress in prevention and control of NCDs. Nevertheless, it is important to recognize that this would not translate into an influx of significant amounts of human and financial resources for combatting NCDs. Resources will still be necessary to continue to prevent emergence and re-emergence of communicable diseases. Similarly, resources will not be unencumbered from maternal and child health services. These services, will have to continue to improve further to address new challenges in reproductive, maternal, newborn, child and adolescent
health. Thus, in this resource constrained environment, staying the course on very cost effective NCD interventions (WHO best buys) related to 10 NCD targets and good buys (see Chapter 13), would be critical for success. Initial response has focused on selected national NCD targets. Sri Lanka now needs to go beyond the initial response and scale-up all WHO best buys with the aim of attaining all 10 national NCD prevention and control targets. The medium-term focus should be to reduce premature mortality from NCDs to minimize the negative economic and development impact of NCDs. Accelerated reform of the health system, particularly primary care, as envisioned in the recently approved Government policy on health care delivery for Universal Health Coverage would be essential for moving the national NCD response forward.

Sustainable Development Agenda for 2030 provides a new and timely opportunity, to reinvigorate partnerships and fast-track the national NCD response on a multisectoral platform. The newly drafted National Performance Framework for the health sector, is expected to track the results of health sector investments while monitoring Sri Lanka’s achievements in Sustainable Development Goal 3 targets.

In the next two decades, population ageing will have a major impact on NCD prevention and control in Sri Lanka. If interventions to prevent and control NCDs are implemented effectively, the mortality associated with NCDs at any given age will decrease and contribute to improvement in life expectancy. However, with time this improvement will be outweighed by the increasing numbers of people in the high age bands with NCDs, creating a greater overall NCD burden in the population. Health systems therefore need to be aligned not only to address the needs of NCDS but also the needs of older populations.

Tackling NCDs in a developing country, under the pressures of demographic ageing, rapid urbanization, and the globalized marketing of unhealthy products is a daunting task. Sri Lanka has most of the key ingredients - steadfast political leadership, strong public health foundation, dedicated health workforce and a robust civil society-
required to accomplish this formidable task.

References


A country free of Intoxicants

Introduction

Drug addiction is a serious problem our country has been facing over the past several decades. The surveys undertaken have revealed that 1/3 of earnings of low income families in Sri Lanka are spent on alcohol and cigarettes while more than 22% of the government expenditure of health is incurred on treatment for patients who have been victims of alcohol and cigarette smoking.

When it was confirmed that use of drugs including consumption of alcohol and tobacco products has a direct impact on a country’s development resulting in the disruption of developmental activities, the developed countries have been adopting various measures to minimize the harm caused by the use of drugs and to prevent youth from being addicted to drugs. However, the failure on the part of the developing countries in their attempts made in this direction is attributable to the influence being exerted directly by Tobacco and Alcohol Industry. Those involved in this industry do everything possible to entice persons from every section of the community including businessmen, politicians, policy makers, artists and writers. In doing so they indulge a completely false propaganda in order to market their products and people are thus being bought over by them for the purpose.

The National Authority on Tobacco and Alcohol Act passed by Parliament in 2006 is indeed a great achievement of our country. The Gazette Notification for
inclusion of pictorial warnings in cigarettes packets could not be implemented for 02 years even after this gazette was published, in compliance with the aforesaid Act and also in terms of the International Convention signed by our country in 2006. However, a law was enacted by the government of His Excellency the President Maithripala Sirisena in 2015 making mandatory the inclusion of 80% of the pictorial warnings in the cigarette packets.

In order to liberate the people of Sri Lanka from the drug menace, more and more projects and activities need to be successfully launched. In this context it is very important that the law as well as the prevention process are strengthened.

It is also very necessary that the extend of the harm caused to persons who are victims of the drug menace is being understood by the vulnerable groups if prevention is to be a greater success. For this purpose, those actively involved in this field should be imparted an education with the right technical and scientific input that would help them explain to the relevant age groups what harm is caused to them by being addicted to drugs.

Having taken into consideration the views of many experts in the field, the National Policy on Drug Eradication and Action Plan were formulated and hereby presented with a view to impart the required knowhow to the relevant groups and inculcate in them the right attitude towards building up a society least affected by the drug menace.

01. Vision

To prepare the backdrop for development socio-economically and culturally by creating Sri Lanka free of Intoxicants as envisioned in His Excellency the President’s Policy Statement:

“Compassionate Governance – a-stable Country”

02. Mission

To play a proactive role in protecting the health of all Sri Lankans and improving their well-being, enhancing productivity and alleviation poverty by gradually eliminating consumption of alcohol including the use of tobacco and illicit drugs thereby minimizing the damage caused.

- Interpretation
In term: “Drugs” means and includes all products of alcohol and tobacco as well as narcotic drugs as are determined by the National Dangerous Drugs Central Board.

### 03. Aims and Objectives

- To bring down productions, transport and sale of illicit drugs by at least 80% by the year 2020 as compared to the year 2014.
- To bring down the per capita consumption of alcohol by at least 25% by 2020 as compared to the year 2014.
- To bring down the consumption of tobacco products by at least 50% by 2020 as compared the year 2014.
- Prevention of youth from taking drugs.
- To minimize injurious and harmful conduct on the part of those who are addicted to drugs.
- To bring down number of motor accidents caused due to use of drugs by at least 50% by 2020 as compared to the year 2014.
- To totally ban Tobacco and Alcohol-related direct or indirect advertisements and socially oriented programmes of such companies.
- To minimize harm caused to non-users of drugs at houses as well as in work places and public places and ensure the rights of those non-users of drugs to live in an environment free of such intoxicants.
- To create the social environment where no person is forced to start consuming alcohol increasing such consumption of alcohol.
- To minimize the involuntary inhaling or rather passive smoking by non-users of tobacco products and ensure their rights to live in an environment not polluted by tobacco smoke.
- To minimize number of cases of hospitalization following the direct or indirect use of drugs.
- To minimize ready availability of drugs including tobacco and
alcohol.

- To correctly and formally educate people with regard to the harm caused directly and indirectly by the use of drugs.

### 04. National Policy

04.01 No new licenses will be issued for tobacco and alcohol production.

04.02 No new license will be issued for liquor shops except for those star class hotels approved by the Tourist Board and patronized by foreign tourists (R.B 7,8 licenses).

04.03 In the event of existing liquor shops being relocated, the essential requirements including the conduct of a public opinion poll of the relevant area are to be laid down.

04.04 When taxes are imposed on tobacco and alcohol revision of prices of such products is to be made every six months, based on a price formula adopted relation to inflation.

04.05 No tobacco and alcohol product will be used at any government function and the sale and use of tobacco and alcohol products are prohibited in government –owned buildings and premises.

04.06 No custom duty concessions or other tax concessions will be granted in respect of tobacco and alcohol products.

04.07 Tobacco cultivation in paddy lands will by totally prohibited.

04.08 No irrigation facilities and other subsidies are to be provided by the Government for tobacco cultivation.

04.09 Screening or telecasting of films and teledramas that encourage the use of illicit drugs will be prohibited.

04.10 Implementation of the recommendations of World Health Organization in relation to drugs in Sri Lanka.

04.11 To restrict the opening hours of liquor shops to 08 hours per day effective from the year 2017.

04.12 To destroy all illicit tobacco products taken into custody under the proper supervision of “National Authority on Tobacco and Alcohol”
04.13 Suspension and deferment of promotions of government and semi-government officers who are convicted of drug offences.

04.14 State Officers are prohibited from holding government posts whilst they are employed in tobacco and alcohol companies.

04.15 Closure of liquor shops for at least 02 days on such occasions as “Sinhala New Year”, “Wesak”, “Thai Pongal”, “Ramazan”, “Christmas” and “Deepavali”

04.16 Those under the age of 21 years are to be prohibited from entering clubs and karoke clubs where tobacco and alcohol products are consumed.

05. Action Plan

The programme titled “A country free of intoxicants” is to be launched on three fronts focusing attention on elimination of the use and supply of drugs.

1. Policy formulation and enactment of laws and their implementation

2. Treatment and rehabilitation

3. Eradication

05.01 Presidential Task force on Drug Prevention

The Unit is primarily responsible for implementing decisions of the “Presidential Task Force on Prevention of Drugs” that functions under the purview of His Excellency the President and the programme “A country free of Intoxicants” in liaison with the Government and Non-Government Agencies.

05.01.01 Convening and facilitating the “Presidential Task Force on Drug Prevention” Operating under a Director General attached to the President’s office and bearing all the responsibilities on behalf of the President –Dr Samantha Kumara Kithalawaarachchi has been appointed as the DG for the task force by the His Excellency the President

05.01.02 Formulating joint programmes, implementation and supervision
the National Drug Prevention Programme: “A country free of Intoxicants” coordinating horizontally and vertically the programme at grass root and national levels.

05.01.03 Reporting to His Excellency the President the progress of drug eradication activities carried out by Government and non-Government Agencies.

05.01.04 Management of the financial provisions allocated for the drug eradication.

05.01.05 Training resource persons for Governmental and non-Governmental Agencies.

05.01.06 Preparing and distributing educational aids.

05.01.07 Initiating actions on complaints and proposals received by His Excellency the President.

05.01.08 Drawing up and publishing electronic and print media advertisement to discourage the use of drugs and consumption of alcohol.

05.01.09 Initiating action to enlist the participation of religious leaders, government officials, social activists in drug eradication activities in order to defeat the advertising strategies attractively planned with a view of enticing people towards the drug use.

05.02. Ministry of Health and Indigenous Medicine

05.02.01 To provide necessary facilities for the National Authority on Tobacco and Alcohol.

05.02.02 To encourage Public Health Inspectors and Inspectors of Food and Drugs to enforce regulations made under the Tobacco and Alcohol Act and provide training and evolve a methodology for evaluation.

05.02.03 To correctly educate the public and patients on the harm caused by the use of drugs, through the Health Education Unit in each hospital.

05.02.04 To take up this subject for discussion at the monthly assessments held at each Office of the Medical Officer of Health. (MOH)
05.02.05 To issue posters and handbills on effective drug eradication through the Health Education Bureau.

05.02.06 To initiate actions to transform the environment in and around the hospitals into a Tobacco and Alcohol-free environment.

05.02.07 To provide the health staff with technical knowhow needed in preventing former drug addicts from reverting to drug addiction.

05.02.08 To take actions to counter the propaganda which spreads that medicine used in local medicine contains drugs.

05.02.09 To provide the indigenous physicians and staff with technical knowhow needed for drug prevention and to put in place a rehabilitation and monitoring mechanism at community level.

05.02.10 To initiate action to build up a tobacco, alcohol and drug-free environment within the family itself as is devotedly being done by the Family Health Officers and their staff at every Family Health Office in promoting maternal and child health and to encourage such officers in their efforts and continue evaluating the progress achieved.

05.03. Ministry of Finance

05.03.01 To implement a tax policy which is intended to discourage the use of tobacco and consumption of alcohol products.

05.03.02 To allocate funds whenever possible, to those institutions that contribute to the eradication of drugs.

05.03.03 To draw up an appropriate programme in collaboration with officials of the National Authority on Tobacco in order to observe transparency in the destruction of tobacco and alcohol products taken into custody to the Department of Sri Lanka Customs.

05.03.04 To adopt a price formula in revision once every 06 months relative to inflation, taxes on tobacco & alcohol, based on recommendations of the National Authority on Tobacco and Alcohol.

05.03.05 To ban products such as illicit beedi and cigars or alternately initiate action to levy taxes on such products in compliance with formally prescribed standard.
05.03.06 To launch, under a special unit, investigations into cases of tax evasion, frauds and corruption related to Tobacco and Alcohol.

05.03.07 To establish a fund by levying a special welfare tax on Tobacco and Alcohol products in order to reimburse the expenditure incurred on drug eradication and to adopt remedial measures against the social harm caused and to allocate proceed of the fund exclusively for drug eradication activities.

### 05.04 Ministry of Public Administration

05.04.01 To effectively implement circulars issued on drug eradication.

05.04.02 To issue orders to the effect that all governmental and semi-governmental agencies including district secretariat and divisional secretariats are zones free of sales or use of Tobacco and Alcohol.

05.04.03 To provide government officials at district and divisional levels with the technical knowhow needed for drug eradication.

05.04.04 The District Secretary is primarily tasked with ensuring that the district under his charge is free of harm caused by the use of Tobacco and consumption of alcohol. The Divisional Secretary is thus expected to provide the leadership at district level to the governmental and non-governmental agencies.

05.04.05 The Divisional Secretary is tasked with ensuring that the division under his charge is free of harm caused by the use of Tobacco and consumption of alcohol. The Divisional Secretary is thus expected to provide the leadership at divisional level to the governmental and non-governmental agencies.

05.04.06 The District Secretary and the Divisional Secretary are expected to go into matters related to the availability of drugs within the district and use of drugs, at district and divisional levels and monitor the progress made in the implementation of drug eradication programmes thus currently guiding the relevant officials.
05.05 Ministry of Buddha Sasana

05.05.01 To provide religious leaders with correct technical training on drug eradication.

05.05.02 To arrange for places of religious worship to disseminate the correct message of drug eradication to the public.

05.05.03 To enlist the participation of Bhikkhus and youth in building up a force on drug eradication centered around Buddhist Temples.

05.05.04 To organize anti-drug public campaigns through religious leaders.

05.05.05 To include drug eradication activities as an item in the programmes meant for religious festivals.

05.05.06 To draw up a programme seeking support of religious centres in launching community-based rehabilitation activities.

05.05.07 To provide Dhamma School teachers with technical knowhow in relation to drug eradication.

05.06 Ministry of Defense

05.06.01 To totally ban the sale of tobacco products in restaurants within camps of the three security forces and to make such camps free of tobacco and alcohol.

05.06.02 To totally ban the provision of cigarettes free of charge to the members of the three security forces.

05.06.03 To desist from seeking sponsorship of Tobacco and Alcohol companies for any programmes whatsoever to be launched by the security forces.

05.06.04 To draw up and launch a programme to prevent members of the Tri Forces from being addicted to drugs.

05.06.05 To draw up and launch programmes aimed at rehabilitating those addicted to drugs amongst members of the Tri Forces.

05.06.06 To train Group Leaders in the three security forces in drug eradication activities.
05.06.07 To include drug eradication in the syllabus of the training courses for security forces.

05.06.08 To extend assistance of the intelligence units of the security in carrying out drug eradication activities.

05.06.09 To post drug eradication notices in the publications of the security forces.

05.07 Ministry of Agriculture

05.07.01 To educate farmers thereby discouraging them from taking to cultivation of tobacco.

05.07.02 To refrain from providing irrigation facilities or other measures of relief for tobacco cultivation.

05.07.03 To introduce alternative crops in place of tobacco cultivation for farmers.

05.07.04 To draw up and put in place a programme which is intended to deny any relief measures to those farmers convicted of drug-related offences.

05.07.05 To enact and implement laws needed to totally ban tobacco cultivation in paddy fields.

05.07.06 To refrain from seeking sponsorship of Tobacco and Alcohol companies on any occasion in respect of agricultural programmes and to discontinue forthwith any such programme currently underway.

05.08 Ministry of Education

05.08.01 To draw up and put in place a methodology whereby both teachers and students are imparted technical knowledge in relation to eradication of drug addiction amongst school children.

05.08.02 To launch the proposed drug eradication activities in schools.

05.08.03 To impart special training in drug eradication to a selected male/female teacher from each school and to assign such eradication
activities at zonal and district levels and draw up a programme to evaluate the progress made.

05.08.04 To take steps not to allow the use of drugs of promotion of the use of drugs in relation to any programme launched in school or premises.

05.08.05 To include acquisition of knowledge on drug eradication in school syllabuses in consultation with the experts in the field.

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**05.09 Ministry of Mass Media**

05.09.01 To initiate action to discontinue direct and indirect advertisements of cigarette and alcohol over the media.

05.09.02 To take action to instantly provide the public with information on drug eradication so that they could be correctly updated on the subject.

05.09.03 To get the state-run and privately-owned media agencies to contribute to drug eradication activities.

05.09.04 To persuade media institutions to line up in launching a practical and effective drug eradication programme.

05.09.05 To provide facilities for media institutions to give publicity to drug eradication messages/notices.

05.09.06 To arrange for Electronic Media institutions to allocate special air time for telecasting drug eradication features and programmes.

05.09.07 To arrange for newspapers to allocate special slots for drug eradication.

05.09.08 To arrange for the newspapers to include (free of charge) drug eradication messages as ad fillers in newspapers.

05.09.09 To take steps to expose to the society those convicted of drug offences.

05.09.10 To arrange for media personal to be brief on drug eradication.

05.09.11 To persuade media institutions to charge concessionary rates for production of programmes and printing drug eradication – related publications.
05.09.12 To display in cinema halls drug eradication – related advertisements/notices before commencement of the shows as well as during intermissions.

**05.10 Ministry of Justice**

05.10.01 To formulate special programmes jointly with the National Dangerous Drugs Control Board and the office of the commissioner general of rehabilitation for rehabilitation of prisoners serving terms in prison on being convicted of drug offences.

05.10.02 To put in place training programmes targeted on prison officers

05.10.03 To formulate follow up and feedback programmes for those integrated into the society after the being weaned of drugs.

05.10.04 To put in place such meditation programmes as those successfully launched in Indian prisons to bring about changes in the behavioral patterns of the inmates of prisons.

05.10.05 To focus special attention on sorting out social problems such as unemployment faced by those convicted of drug related offences once they are released from prisons.

05.10.06 To take steps to ensure that maximum punishments and penalties imposed on drug offenders are met.

05.10.07 To pay particulars attention to the previuos convictions in trials related to drug offences.

**05.11 Ministry of Environment**

05.11.01 To put in place a programme design to minimize the environmental harm caused by tobacco cultivation and the use of drugs.

05.11.02 To take action to minimize the environmental harm caused by cigarettes, filters and any other drug related matters being released to the environment.
**05.12 Excise Department**

The implementation of acts such as the Excise ordinance, tobacco tax act, National Authority on Tobacco and Alcohol act and Dangerous Drugs Control ordinance are primarily handled by the Excise Department.

05.12.01 The systematic implementation of rules and regulations related to the production and sale of tobacco and alcohol products.

05.12.02 The implementation of targeted raids/seizures to totally eradicate illicit tobacco, alcohol and drugs by the year 2020.

05.12.03 The formulation and adoption of a methodology in levying taxes on tobacco products such as beedi and cigars.

05.12.04 To institute legal action against violators of excise laws.

05.12.05 To take steps to eliminate large scale tax evasion and corrupt practices resorted to by tobacco and alcohol producing companies.

05.12.06 To take action to fully evaluate and subject to continue monitoring the institutional framework in place in order to achieve results favourable to the country.

05.12.07 Formulation and implementation of a methodology of evaluating the role of the divisional excise centres and these officials enforcing drug related rules and regulations.

05.12.08 To make proposals to the government on the adoption of a correct tax policy that discourage drug use and leads to collection of more revenue.

**05.13 Police Department**

05.13.01 To enforce control of drugs including illicit tobacco and alcohol with set targets.

05.13.02 To develop a methodology to evaluate the role of the Divisional Police Stations and officers enforcing drug-related rules and regulations.

05.13.03 To effectively enforce the existing legal provisions related to drugs including the National Authority on Tobacco and Alcohol
To enforce drugs-related laws through an independent police unit monitoring unit encompassing the whole island in addition to the Divisional Police Stations.

To provide complete protection and support for approved active eradication programmes.

To provide officers with regular training on correct technology being adopted.

To enhance the knowledge of the officers on drug-related laws.

05.14 National Dangerous Drugs Control Board

Being primarily responsible for control of dangerous drugs also referred to as narcotic drugs the National Dangerous Drugs Control Board thus assigned the following role.

Formulation of criteria to gauge the minimum condition found in all the active rehabilitation centres related to drugs and the implementation of and assessment process.

Introduction of an acceptable technically correct rehabilitation methodology capable of being implemented by the National Dangerous Drugs Control Board as well as by other institutions having regard to the views and suggestions of experts in rehabilitation sector and formulation of a programme for monitoring rehabilitation centres, based on such a methodology.

To accurately process information and data at national level and released such information to those who need them keeping records of the information so released.

To draw up a programme to prevent the countrywide circulation of dangerous drugs being used as narcotic drugs.

To recommend those institutions and resource persons who are qualified to carry out rehabilitation activities.
05.15 National Authority on Tobacco & Alcohol

Being the institutions primarily responsible for the control of tobacco and alcohol, the National Authority on Tobacco and Alcohol is tasked with,

05.15.01 The systematic exercise of powers vested in the said authority by the National Authority on Tobacco and Alcohol act.

05.15.02 Formulating a methodology of and assessment for implementation under the regulation of the above act.

05.15.03 The formulating criteria and guideline related to each sector for tobacco and alcohol elimination activities monitors governmental and non-governmental organizations engaged in such activities as per such criteria.

05.15.04 Formulating a programme on transparently destroying illicit tobacco products and alcohol taken into custody.

05.15.05 Recommending institutions and resource persons qualified to carry out tobacco and alcohol eradication activities.

05.15.06 Recommending institutions and resource persons qualified to update government officers on tobacco and alcohol related laws.

05.16 Divineguma Department

05.16.01 Providing training required to update technical knowledge of two social development officers appointed to each divisional secretary’s division who are assigned drug eradication related duties an allocating to continuous evaluation of progress of implementation of the programme at grass root level.

05.16.02 Initiating action to rehabilitate families disintegrated by drug eradication.

05.16.03 Launching programmes empowering children, youth and women’s organizations free individuals and families of the ills of the use of tobacco, drugs and consumption of alcohol which has been a contributory factor to poverty.

05.16.04 Launching the anti-tobacco flag day scheduled for May 31st, with the prime objective of freeing people from the use of tobacco
05.16.05 Formulating and implementing a programme which is intended to deny Samurdhi Assistance to those convicted of the drug related offences.

05.16.06 Formulating a programme stipulating the requirement that those families given to drug use should desist from indulging in such a harmful practice.

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<td>05.18.02 To educate the women’s organizations on targeting of women by tobacco and alcohol companies.</td>
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<td>05.18.03 To take up for discussion the topic of economic and health hazards of alcohol and tobacco use on such days specially meant for women as women’s day.</td>
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<td>05.18.04 To launch a programme to educate women on preventing children from being addicted to drugs.</td>
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05.19 National Youth Services Council

05.19.01 To train members of all youth councils in the field of drug eradication.

05.19.02 To get all youth councils to actively involved at divisional level in minimizing the harm caused by the use of drugs and evaluating the progress thus made.

05.20 Office of the Commissioner General of Rehabilitation

05.20.01 To put in place a formal programme for rehabilitation of drug addicts.

05.20.02 To put in place a formal programme to monitor the activities in relation those who were made to socialized once they were rehabilitated.

05.21 Department of Community – Based Corrections

05.21.01 To carry out community-based rehabilitations activities.

05.21.02 To extend necessary assistance in monitoring activities in respect of those persons who were made to socialized once they were rehabilitated.

05.21.03 To extend the maximum possible contribution to eradication of drugs including tobacco and alcohol.

05.22 General Activities to be undertaken by all state institutions

Matters to be complied with and attended to by all state institutions apart from the specific activities meant for each institution referred to above.

05.22.01 To desist from seeking either direct or indirect sponsorship from tobacco and alcohol companies in respect of any governmental activity whatsoever.

05.22.02 To desist from getting those involved in tobacco and alcohol industry to contribute an activity, thereby according them...
recognition.

05.22.03 To set up drug eradication committees in state institutions to attend to drug eradication work.

05.22.04 To fete those employees who have abstained from drug use.

05.22.05 To refrain from the use of tobacco and alcohol at state functions.

05.22.06 To place restrictions of promotions, increments of salary and other facilities granted to employees convicted of drug offences.

05.22.07 To implement and enforce within each institution such circulars, rules and regulations that have been issued by the Government in relation to the use of drugs tobacco and alcohol.
Annex 2 : Credits and Permissions

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Figure 2.3 Dimensions of the Universal Health Coverage (Source: Ten years in public health, 2007–2017: WHO 2017)

Figure 2.5 Multifaceted benefits of investing in NCD prevention and control. (Source: a strategic response to noncommunicable diseases. WHO. Geneva 2018)

Figure 3.1. Proportion of global NCD deaths under the age 70 years, by cause of death, comparable estimates, 2012 (Source; Global Status Report WHO 2014)

Figure 3.2 Distribution of mortality (Source: WHO country profiles 2011)

Figure 3.3. Probability of dying from the four main noncommunicable diseases between the ages of 30 and 70 years, comparable estimates, 2012 (Source: Global status report on noncommunicable diseases 2014. Geneva: WHO; 2014)

Figure 3.5. Civil registration coverage of cause of death, 2005–2011 (Source; Global status report on noncommunicable diseases 2014. Geneva: WHO; 2014)

Figure 4.1. Age standardized heavy episodic drinking (aged 15 years and over) in past 30 days (%), 2010 (Source: Global status report on noncommunicable diseases 2014. WHO Geneva 2014.)

Table 4.1 Total alcohol consumption per capita (in litres of pure alcohol) and prevalence of heavy episodic drinking (%) in the total population aged 15 years and over, and among drinkers aged 15 years and over, by WHO region and the world, 2010 (Source: Global status report on noncommunicable diseases 2014. WHO. Geneva 2014).

Figure 4.2 The total alcohol consumption per capita (≥ 15 years of age) in litres of pure alcohol, 2016- in countries in WHO South East Asia Region (Source: World Health Statistics 2018; Monitoring health for the SDGs. WHO. Geneva)
Table 4.2 Total alcohol per capita consumption, prevalence (%) of current drinkers, and prevalence of heavy episodic drinking among current drinkers, in the total population aged 15 years and over, by World Bank income group and the world, 2010 (Source: Global status report on noncommunicable diseases 2014. WHO. Geneva 2014).

Table 4.3 Policies and interventions to control harmful use of alcohol in Sri Lanka (Source: Global status report on alcohol and health 2014. Geneva: WHO; 2014)

Figure 5.1. Age standardized prevalence of insufficient physical activity in men aged 18 years and over, comparable estimates, 2010 (Source: Global status report on noncommunicable diseases 2014. Geneva: WHO 2014)

Figure 5.2. Age standardized prevalence of insufficient physical activity in women aged 18 years and over, comparable estimates, 2010 (Source: Global status report on noncommunicable diseases 2014. Geneva: WHO 2014)

Figure 5.3. Global prevalence of insufficient physical activity for adolescent boys aged 11−17 years, comparable estimates, 2010 (Source: Global status report on noncommunicable diseases 2014. Geneva: WHO 2014)

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**Credit Institute of Health Policy**

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**Credit Central Bank**

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Hon. Dr. Rajitha Senaratne is the current Minister of Health of the Democratic Socialist Republic of Sri Lanka and Cabinet Spokesman of the Government. He was elected as a Vice-Chair of the Executive Board of the World Health Organization for a term of one year, in May 2018. As a Member of Parliament for over 22 years, from 1994, he has held many portfolios; Minister of Lands (2001 – 2004), Minister of Construction and Engineering Services (2007 -2010) and Minister of Fisheries and Aquatic Resources Development (2010-2014). In 2015 he was re-elected to parliament from the Kalutara District, securing the highest number of preferential votes and was appointed to the Cabinet as the Minister of Health. He graduated from the University of Peradeniya, Sri Lanka as a Dental Surgeon in 1974. He was a student leader and the General Secretary of the Inter-University Students Federation from 1971 to 1973 and represented the then Prime Minister of Sri Lanka in the Sri Lanka Delegation to the Asian Youth Conference in 1973, in Japan. He was the Hon. Secretary of the Government Dental Surgeons Association for 14 years from 1975 to 1989 and was a popular trade union activist. In 1992, he was awarded the Fellowship of the International College of Continuous Dental Education. He is a NCD champion and has provided steadfast political leadership for NCD Prevention and Control in Sri Lanka. After assuming duties, he continued the work of his predecessor in the fight against tobacco and enforced 80% pictorial warning soon to be followed by an upward revision of tax on tobacco and plain packaging. Setting up of the National Medicine Regulatory Authority was another move he took towards reducing the price of drugs and wastage, in line with the drug policy espoused by Prof. Senaka Bibile. As a result, the price of 48 mostly used drugs have been slashed making medicines more affordable to people. He has been successful in raising funds for the rehabilitation of hospitals and primary health care units island wide and has also taken steps to regulate fees charged for health services in the private health sector.

Professor Shanthi Mendis served the World Health Organization (WHO) for 20 years as Senior Adviser, Noncommunicable Diseases (NCD) and in other senior capacities. She was Professor of Medicine, University of Peradeniya, Sri Lanka before joining WHO on a Rockefeller Global Health Leadership Fellowship. During her tenure in WHO, she led and coordinated the development of the global NCD action plan 2013, the global NCD report (2014) and the global programme on NCDs and cardiovascular diseases. She graduated in 1974 with First Class Honours from the University of Peradeniya, Sri Lanka and specialized in Internal Medicine, Cardiology and Public Health in the UK and USA. She practiced Clinical Medicine and Cardiology in the UK, USA and Sri Lanka and is a Fellow of the Royal College of Physicians of London and Edinburgh and a Fellow of the American College of Cardiology. In 2005, she was awarded National Honours for her contribution to research in Sri Lanka. In her medical career spanning 44 years she has gained wide experience in the fields of Global Health, Cardiology, Medical Education and Operational research. She has coauthored 5 books, many book chapters and has published over 150 papers in peer reviewed international journals. https://scholar.google.com/citations?view_op=list_works&hl=en&user=NIYS3EUAIAIA