

## Review Article

# Non-communicable diseases in the South-East Asia Region: Burden, strategies and opportunities

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### ABSTRACT

Non-communicable diseases (NCDs) are a global health and developmental emergency, as they cause premature deaths, exacerbate poverty and threaten national economies. In 2008, they were the top killers in the South-East Asia region, causing 7.9 million deaths; the number of deaths is expected to increase by 21% over the next decade. One-third of the 7.9 million deaths (34%) occurred in those <60 years of age (compared to 23% in the rest of the world). Of the total deaths in the South-East Asia region (14.5 million), cardiovascular diseases accounted for 25%, chronic respiratory diseases 9.6%, cancer 7.8% and diabetes 2.1%. NCDs are largely attributable to a few preventable risk factors, all of which are highly prevalent in the region—tobacco use, unhealthy diet, lack of physical activity and harmful use of alcohol. Key strategies for the prevention and control of NCDs include (i) reducing exposure to risk factors through health promotion and primary prevention, (ii) early diagnosis and management of people with NCDs, and (iii) surveillance to monitor trends in risk factors and diseases. Tackling NCDs calls for a paradigm shift: from addressing each NCD separately to collectively addressing a cluster of diseases in an integrated manner, and from using a biomedical approach to a public health approach guided by the principles of universal access and social justice. High levels of commitment and multisectoral actions are needed to reverse the growing burden of NCDs in the South-East Asia region.

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### INTRODUCTION

Worldwide, non-communicable diseases (NCDs) are the leading cause of death, killing more people than all other diseases and conditions put together. Of the 57 million global deaths in 2008, 36 million (63%) were due to NCDs.<sup>1</sup> Several of these deaths (9

million) are premature, and occur in those <60 years of age.<sup>1</sup> Death and disease from NCDs now outnumber those from communicable diseases in every region, except Africa. Contrary to the general belief that NCDs occur mainly in affluent countries, the burden of NCDs is very high in developing countries—nearly 80% of the global NCD deaths occur in low- and middle-income (LAMI) countries.<sup>1</sup> Besides an enormous health burden, NCDs have serious socioeconomic consequences and impede development efforts in LAMI countries.<sup>2,3</sup>

Unless addressed, the global NCD epidemic will continue to grow due to factors such as an ageing population, globalization, unplanned urbanization and lifestyle changes. By 2030, NCDs are estimated to contribute to 75% of global deaths.<sup>4</sup> The highest increase in NCD deaths (21%) over the next decade will be seen in the South-East Asia (SEA) region, which accounts for 22% of the global NCD burden<sup>2</sup> and is home to 45% of the world's poor.<sup>5</sup>

Despite available evidence of an increasing burden of NCDs, worldwide<sup>1,4</sup> little has been done by national and global policy-makers to address NCDs in a systematic and pragmatic way. The existing national programmes for NCDs rely on biomedical models that exclude prevention interventions and focus largely on providing hospital-centred medical services to those who have already developed NCDs and are often at an advanced stage of disease. In an era of skyrocketing healthcare expenses, NCDs are exacerbating poverty and widening inequities, particularly in the SEA region where most healthcare costs are met by out-of-pocket expenditure. Such models of NCD programmes that emphasize exclusively curative services fail to reach the masses and are unaffordable for both governments and families. There is a critical need to apply a broad health and development model to tackle NCDs; this includes a continuum of health promotion, disease prevention and treatment services, and is based on the principles of primary healthcare, equity and social justice.

We review the current burden of the main NCDs (cardiovascular diseases [CVDs], chronic respiratory diseases, cancers and diabetes) and their common risk factors in the WHO SEA region, and discuss evidence-based strategies and interventions for their prevention and control.

### HEALTH BURDEN OF NCDs

#### *Disease mortality and morbidity*

Of the 14.5 million deaths in 2008 in the SEA region, 7.9 million (55%) were due to NCDs.<sup>6</sup> CVDs accounted for 25% of deaths, chronic respiratory diseases 9.6%, cancer 7.8% and diabetes

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2.1%.<sup>6</sup> Of the 7.9 million NCD deaths in the SEA region, India bears 66% of the burden, followed by Indonesia (13%), Bangladesh (8%) and Thailand (5%). NCD deaths rates per 100 000 population increase with age. The proportion of NCD deaths below the age of 60 years is higher in the SEA region (34%) compared with the rest of the world (23%; Fig. 1).<sup>6</sup> Death rates are higher among men than women in all countries of the SEA region (except DPR Korea). The number of deaths from NCDs is projected to increase by nearly 60%, from 7.9 million to 12.5 million, by 2030.<sup>4</sup> At the same time, the percentage of total deaths due to communicable diseases would decrease by 16%.<sup>4</sup>

*Cardiovascular diseases*

Of the total number of deaths in 2008 due to NCDs, 3.6 million were due to CVD. The most common CVDs are ischaemic heart disease (51%) and cerebrovascular disease or stroke (33%).<sup>6</sup> CVDs affect people at a younger age in the SEA region than in western countries. For example, CVD mortality in India in the 30–59 years’ age group is twice that in the USA.<sup>7,8</sup> Nearly 52% of CVD deaths in India occur below the age of 70 years compared with 23% in established market economies.<sup>9</sup> In India, the number of cases of CVDs is likely to increase from 29 million in 2000 to 64 million in 2015.<sup>10</sup>

*Diabetes*

Although the contribution of diabetes to NCD mortality is small, its prevalence is high in all countries, varying from 3.2% in Myanmar to 10.9% across the SEA region.<sup>11</sup> The prevalence of diabetes is consistently higher in urban than in rural areas. For example, in Sri Lanka, the prevalence was 16.4% and 8.7% in urban and rural areas, respectively.<sup>12</sup>

Increasing trends in diabetes prevalence are reported from several countries. In Bangladesh, prevalence increased 3-fold, from 2.3% in 1999 to 6.8% in 2004.<sup>13</sup> The age-standardized prevalence of diabetes in a rural area in Sri Lanka increased from 2.5% in 1990 to 8.5% in 2000.<sup>14</sup> In India, the prevalence of diabetes in urban areas rose from 1.2% to 12.1% during 1971–2000;<sup>15,16</sup> in rural India, the prevalence trebled from 2.2% to 6.4% in just 14 years (1989 to 2003).<sup>17</sup> According to the national Thailand health survey, the mean fasting blood sugar among the population aged 35–59 years increased from 87 mg/dl in 1991 to 92 mg/dl in 1996 to 100 mg/dl in 2004.<sup>18,19</sup>

*Cancer*

Every year, 1.1 million people die of cancer in the SEA region;<sup>20</sup> of these, 50% are women. Among the 569 000 cancer deaths among men, the commonest site was the lung (17%), followed by the mouth and oropharynx (15%), and liver (7.5%). Among women, cervical and breast cancers accounted for 35% of all cancer deaths. Cancer affects people in their prime in this region. Fifty-two per cent of cancer deaths in women and 45% in men occurred in those <60 years of age. In a 5-city study in India, nearly 50% of cancer mortality was reported among those <55 years of age.<sup>21</sup> In 2008, the estimated number of new cancer cases in the SEA region was 1.65 million. There is some variation in incidence of the types of cancers among countries (Table I). Among women, the incidence of cervical cancer exceeded that of other cancers in Bangladesh, Bhutan, India and Nepal, whereas in Thailand, Sri Lanka, Myanmar and DPR Korea, breast cancer ranked first.<sup>20</sup> Among men, the incidence of lung cancer was higher than that of other cancers in all countries except Thailand, where the incidence of liver cancer was the highest.<sup>20</sup>

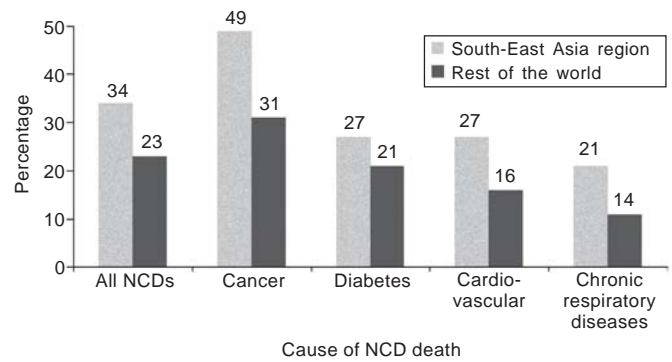


Fig 1. Percentage of deaths due to non-communicable diseases (NCDs) in persons <60 years, by type of NCD, South-East Asia region v Rest of the world, 2008. *Source:* Based on data available at WHO Global health observatory<sup>6</sup>

*Chronic respiratory diseases*

An estimated 1.4 million people died of chronic respiratory diseases in the SEA region in 2008; of these, 86% were due to chronic obstructive pulmonary disease (COPD) and 7.8% due to asthma.<sup>6</sup> Age-standardized death rates for COPD were more than double in India compared with other countries of the region.<sup>6</sup> For 2011, the projected prevalence rate of chronic asthma in India in the 15–59 years age group is 19 per 1000 population in urban and 26 per 1000 in rural areas, and the total number of chronic cases of asthma is nearly 32 million.<sup>22</sup>

*Risk factors for NCDs*

NCDs are caused, to a large extent, by 4 behavioural risk factors—tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol (Fig. 2). These risk factors are highly prevalent in the SEA region. This region is home to nearly 250 million smokers and an equal number of smokeless tobacco users. The prevalence of tobacco smoking is higher among men than women; in men it varies from 7% in Bhutan to 56% in DPR Korea (Table II). Increasing rates of smoking among the young population is worrisome. In Indonesia, prevalence of smoking among teenage boys increased from 14% to 37% and in teenage girls from 0.3% to 1.6% during 1995 to 2007.<sup>23</sup> In Sri Lanka, prevalence of smoking among young boys doubled from 6% to 12% in 1999–2007.<sup>24</sup> Approximately 80% of the population does not eat enough fruits and vegetables and a quarter of the population does not have sufficient physical activity.<sup>25</sup> Consumption of alcohol, particularly

Non-communicable diseases	Shared risk factors			
	Tobacco use	Unhealthy diets	Physical inactivity	Harmful use of alcohol
Cardiovascular diseases	✓	✓	✓	✓
Diabetes (Type II)	✓	✓	✓	✓
Cancer	✓	✓	✓	✓
Chronic respiratory disease	✓			

Fig 2. Common risk factors for major non-communicable diseases. *Source:* WHO. *Global status report on NCDs*<sup>1</sup>

TABLE I. Age-standardized incidence of common cancers in countries of the South-East Asia region, 2008

Country	Age-standardized incidence per 100 000 persons per year								
	Breast (women)	Cervix uteri (women)	Liver		Colorectal		Lung		Prostate (Men)
			Women	Men	Women	Men	Women	Men	
Bangladesh	27.2	29.8	3.5	4.1	4.0	4.5	8.7	30.4	1.9
Bhutan	8.0	20.4	4.0	8.1	4.4	7.9	10.8	8.7	1.7
DPR Korea	30.5	6.6	7.2	15.8	16.0	15.0	25.8	34.0	2.3
India	22.9	27.0	1.2	3.2	3.5	4.3	2.5	10.9	3.7
Indonesia	36.2	12.6	3.5	10.3	15.6	19.1	10.9	29.8	10.6
Maldives	na	na	na	na	na	na	na	na	na
Myanmar	32.5	26.4	6.3	16.5	12.0	12.3	13.9	22.9	5.8
Nepal	23.5	32.4	1.1	1.7	4.8	5.3	18.2	20.7	2.2
Sri Lanka	29.1	11.8	1.0	2.3	5.8	7.5	2.7	12.0	5.8
Thailand	30.7	24.5	19.9	40.6	13.4	13.2	12.1	26.8	6.5
Timor-Leste	na	na	na	na	na	na	na	na	na

Source: Globocan 2008<sup>20</sup> na not available

among men, is very high in countries such as Bhutan, Sri Lanka, DPR Korea, Myanmar and Nepal, and among women in Bhutan and Nepal.

Apart from behavioural risk factors, biological or metabolic risk factors are also highly prevalent in the region (Table III). Rates of overweight/obesity are high and rising. Among adults in Thailand, rates of overweight increased from 20% to 38% and rates of obesity doubled from 5% to 10% during 1991–2004.<sup>18</sup> Rates of obesity are increasing more in women than in men.<sup>26</sup> Childhood obesity is an emerging issue. In a school survey of 2156 children aged 10–15 years in Khon Kaen, Thailand, 28% were overweight.<sup>27</sup> Rates of overweight/obesity were higher among Indian children from a higher socioeconomic status.<sup>28</sup> Hypertension is responsible for 1.5 million deaths in the SEA region.<sup>29</sup> In 7 of 11 countries in the SEA region, >30% of the adult population is hypertensive.<sup>1</sup> Rates of hypertension are similar among men and women.<sup>1</sup>

The poor are at an increased risk for exposure to risk factors such as smoking and an unhealthy diet; they also have poorer access to healthcare services. Poverty and illiteracy are closely linked to the risk factors for NCDs. There is evidence of an inverse relationship between hypertension and smoking and socioeconomic status.<sup>30</sup> The association between smoking and poverty

indicates that the poorest are more likely to smoke daily and more often per day.<sup>31</sup>

In addition to behavioural and physiological risk factors, many NCDs are caused by exposure to infectious agents. Infectious agents cause 13%–20% of the cancers globally;<sup>32</sup> for example, human papillomavirus (HPV), which is the commonest cause of cancer among women, causes cancer of the cervix; hepatitis B virus (HBV) and hepatitis C virus (HCV) which cause hepatocellular carcinoma; and *Helicobacter pylori* which causes cancer of the stomach. Other examples of NCDs linked to infectious agents include rheumatic heart disease, type I diabetes, acute glomerulonephritis and preventable blindness due to trachoma.<sup>33</sup> Moreover, hyperlipidaemia, cardiomyopathy and diabetes can be a consequence of treating people living with HIV/AIDS (PLHA) with antiretrovirals; consequently, PLHA in high income countries are now dying of preventable CVDs.<sup>34</sup> Conversely, NCDs and their risk factors also increase the risk of certain infectious diseases. For example, diabetes is associated with a 3-fold increased incidence of tuberculosis.<sup>35</sup>

A wide range of environmental causes (encompassing environmental contaminants or pollutants, occupationally related exposures and radiation) also contribute to the cancer burden. These are often modifiable at a low cost.<sup>1</sup>

TABLE II. Prevalence of behavioural risk factors for non-communicable diseases, South-East Asia region, 2008

Country	Prevalence of current daily tobacco smoking (%)		Current consumption of alcohol (%)		Eating insufficient amount of fruits and vegetables (%)		Insufficient physical activity (%)	
	Men	Women	Men	Women	Men	Women	Men	Women
Bangladesh	42.4	2.8	1.5	0.1	93.5	92.5	2.7	6.6
Bhutan	6.9	3.9	34.9	25.5	65.0	68.7	40.9	63.6
DPR Korea	55.9	–	43.2	2.7	–	–	–	–
India	27.2	2.3	20.8	1.2	na	na	12.7	18.4
Indonesia	53.5	3.9	5.8	0.4	93.5	93.7	31.5	28.1
Maldives	38.1	9.4	–	–	96.6	92.9	36.6	41.3
Myanmar	33.9	11.3	31.2	1.5	89.8	90.6	10.4	14.9
Nepal	29.9	25.4	39.3	16.5	60.5	63.5	13.9	17.0
Sri Lanka	21.3	0.3	26.0	1.2	81.4	83.3	18.5	33.3
Thailand	35.6	1.5	13.2	1.6	83.1	81.5	17.1	21.4
Estimated annual attributable number of deaths	1 million		600 000		500 000		800 000	

Sources: WHO Working paper<sup>25</sup> WHO. *Global status report on NCDs*<sup>1</sup>

**ECONOMIC BURDEN OF NCDs**

Three types of costs are attributed to NCDs: direct costs such as the cost of treatment; indirect costs such as loss of workforce productivity and earnings; and costs resulting from the psychosocial suffering of the family due to illness among loved ones.

*At the microeconomic (household) level*

Loss of household income among the poor occurs from unhealthy behaviours (such as tobacco and alcohol use), loss of productivity (due to disease, disability and premature death) and high out-of-pocket healthcare expenditure (on treatment). All these exacerbate poverty. The earnings spent on tobacco and alcohol lead to decreased financial resources for essential items such as food, education and daily consumables, thereby affecting women and children in particular. In Nepal, the poor spend 10% of their income on cigarettes.<sup>36</sup> Furthermore, nearly two-thirds of the expenditure on health is met by private resources, almost entirely out-of-pocket.<sup>5</sup> In India, the share of out-of-pocket expenditure due to NCDs increased from 31.6% in 1995 to 47.3% in 2004, indicating the growing financial impact of NCDs at the household level.<sup>37</sup> In 2004, 40% of household expenditure for treating NCDs in India was financed by household borrowing and sale of assets.<sup>38</sup> As public healthcare facilities and services are inadequately resourced and there is little social security coverage, treatment of NCDs results in catastrophic health expenditures and impoverishment.<sup>38</sup> In India, treatment of diabetes can cost a low-income household one-third of their income.<sup>39</sup>

*At the macroeconomic level*

The macroeconomic impact of NCDs is as profound, resulting in lost productivity and gross domestic product (GDP). For every 10% increase in mortality from NCDs, a country's yearly economic growth could decrease by an estimated 0.5%.<sup>40</sup> Estimated losses in India's national income from CVDs and diabetes alone were US\$ 9 billion in 2005.<sup>41</sup> The average cost of illness per diabetic patient in Thailand was US\$ 881 in 2008, which was 21% of the per capita GDP.<sup>42</sup> In India, the per cent GDP loss due to NCDs is likely to increase from 0.35% in 2005 to 1.5% by 2015.<sup>43</sup>

**PREVENTION AND CONTROL OF NCDs: KEY STRATEGIES AND INTERVENTIONS**

The vision and framework for reversing the NCD epidemic is articulated in WHO's *Global strategy for prevention and control of noncommunicable diseases*,<sup>44</sup> *2008–2013 Action plan for the global strategy*<sup>45</sup> and the *Regional framework for NCD prevention and control*.<sup>46</sup> The key strategies recommended by WHO and endorsed by member countries are as follows:

*Reducing the risk factors for NCDs through health promotion and primary prevention*

Nearly 80% of CVDs and diabetes, and more than 30% of cancers can be prevented,<sup>1</sup> largely by addressing the 4 common risk factors for NCDs (tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol; Fig. 3). Moreover, the cost of implementing population-based primary prevention interventions is relatively small.<sup>47</sup> Several population-based prevention policies such as health information and communication to improve population awareness and behaviour about healthy eating and physical activity; fiscal measures that increase the price of unhealthy food content or reduce the cost of healthy foods rich in fibre; and regulatory measures that improve nutritional information or restrict the marketing of unhealthy foods to children can be cost-effective.<sup>48</sup> A set of 'best buys' (high-impact and cost-effective interventions) to reduce the major risk factors for NCDs are listed in Box 1. Creating health awareness about unhealthy diets and physical inactivity through the mass media and interpersonal approaches is an important and cost-effective strategy for population-level prevention of NCDs.<sup>1</sup> Involvement of the community and creation of an enabling environment are crucial for bringing about a sustained behaviour change, especially among the youth. Unfortunately, health promotion activities are currently weak in countries in the SEA region. In addition to health promotion, legislation plays a vital role in primary prevention. The WHO Framework Convention on Tobacco Control (FCTC) is the first legally binding international treaty to reduce harm due to tobacco.<sup>49</sup> In the SEA region, all countries except Indonesia have ratified the FCTC and are implementing the various elements of the MPOWER package (Table IV).<sup>50</sup> Thailand is an example of a successful

TABLE III. Prevalence of metabolic risk factors for NCDs, South-East Asia Region, 2008

Country	Prevalence							
	Overweight (%)		Raised blood pressure (%)		Raised fasting blood sugar levels (%)		Raised cholesterol level (%)	
	Men	Women	Men	Women	Men	Women	Men	Women
Bangladesh	7.6	7.8	20.5	20.1	9.2	9.9	–	–
Bhutan	24.5	24.4	40.4	37.4	12.0	12.6	32.2	30.6
DPR Korea	4.1	4.7	20.4	17.1	–	–	–	–
India	10.0	12.5	36.0	34.2	11.1	10.8	26.3	29.5
Indonesia	16.1	25.3	42.7	39.2	6.6	7.1	33.1	38.2
Maldives	29.4	52.5	29.7	32.9	7.8	7.5	53.7	54.9
Myanmar	13.8	23.6	44.3	39.8	6.1	7.1	21.9 (U)	29.2 (U)
							12.1 (R)	24.7 (R)
Nepal	9.8	8.9	36.0	26.2	9.8	9.3	–	–
Sri Lanka	16.5	26.5	41.9	37.0	9.3	8.6	–	–
Thailand	25.8	36.4	37.0	31.6	7.3	7.1	54.6	56.1
Estimated annual attributable number of deaths	300 000		1.5 million		1 million		700 000	

Sources: WHO Working paper<sup>25</sup> WHO. *Global status report on NCDs*<sup>1</sup> U urban R rural

**Box 1. High-impact, cost-effective interventions for prevention and management of NCDs**

Tobacco use	Raise taxes Protect people from tobacco smoke Warn about the dangers of tobacco Enforce bans on tobacco advertising
Harmful use of alcohol	Raise taxes on alcohol Restrict access to retail alcohol Enforce bans on alcohol advertising
Unhealthy diet and physical inactivity	Reduce salt intake in food Replace trans fats with polyunsaturated fat Promote public awareness about diet and physical activity (via mass media)
Cardiovascular diseases and diabetes	Provide counselling and multidrug therapy (including blood sugar control for diabetes mellitus) for people with medium to high risk of developing heart attack and stroke Treat myocardial infarction with aspirin
Cancer	Hepatitis B vaccination starting at birth to prevent liver cancer Screening and treatment of precancerous lesions to prevent cervical cancer

Source: WHO. *Global status report on NCDs*<sup>1</sup>

prevalence of smoking among adults; increasing taxation on tobacco and alcohol has also helped to generate revenue that can be used for health promotion.<sup>51</sup> Similar taxation is needed to reduce the demand for other unhealthy products such as sugary drinks; conversely, subsidies should be provided on fruits and vegetables. Development and compliance with policies to promote healthy lifestyles and reduce risk factors requires commitment and action from multiple sectors, including the food industry, departments of agriculture, youth affairs, urban planning, etc. Other risk factors for NCDs should also be addressed in primary prevention, e.g. increasing the coverage of HBV vaccines.

*Early detection and management of NCDs*

In conjunction with primary prevention interventions, early detection and management of NCDs through strengthened health systems can considerably reduce the disease burden. Improved access to highly cost-effective interventions (Box 1), which include proactive early detection and providing essential standards of care for those with the major NCDs at the primary healthcare level, will have the greatest potential for reversing progression of disease, preventing complications, reducing hospitalizations, and healthcare and out-of-pocket expenditures.<sup>52</sup> Increasing access to high-quality, low-cost medicines for people at high risk for heart disease or stroke, and for those who already have diabetes, cancer and chronic respiratory diseases, as well as provision of pain relief for end-of-life care are important considerations. Antihypertensive drugs, lipid-lowering drugs, antithrombotic drugs, diuretics, palliative care medicines and antidiabetic drugs are part of the WHO Essential List of Medicines.<sup>53</sup> In the SEA region, pilot projects for integrating NCDs within the primary healthcare system are under way in Bhutan and Sri Lanka, and are planned in a few other countries.

tobacco control programme, where consistent increase in taxes over the past several years has led to a steady decrease in

TABLE IV. Status of implementation of Framework Convention on Tobacco Control (FCTC), South-East Asia region, 2011

FCTC implementation	Bangladesh	Bhutan	DPR Korea	India	Indonesia	Maldives	Myanmar	Nepal	Sri Lanka	Thailand	Timor-Leste
<i>FCTC ratified?</i>	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓
<i>Monitor tobacco use and prevention policies</i>											
Global Adult Tobacco Survey done	✓	✗	✗	✓	✓	✗	✗	✗	✗	✓	✗
Global Youth Tobacco Survey done	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
<i>Protect people from tobacco smoke</i>											
Smoke-free healthcare facilities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Smoke-free government facilities	✗	✓	✓	✓	✗	✓	✗	✓	✓	✓	✗
Smoke-free public transport	✗	✓	✓	✓	✗	✓	✗	✓	✓	✓	✗
Smoke-free educational institutes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
National law requiring fine for smoking	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	✗
Fines levied on the establishment	✗	✓	✗	✓	✗	✓	✗	✗	✓	✓	✗
<i>Offer help to quit tobacco use</i>											
Tobacco quit lines available	✗	✗	✗	✓	✗	✗	✗	✗	✗	✓	✗
<i>Warn about dangers of tobacco use</i>											
Graphic health warnings	✗	✗	✗	✓	✗	✗	✗	✗	✗	✓	✗
Textual health warning	✓	✓	na	✓	✓	✗	✗	✗	✗	✓	✗
<i>Enforce bans on tobacco advertising, promotion and sponsorship</i>											
Ban on national TV and radio	✓	✓	✗	✓	✗	✓	✓	✓	✓	✓	✗
Ban at point of sale	✓	✓	✗	✓	✗	✓	✓	✓	✓	✓	✗
Ban on billboards and outdoor advertising	✓	✓	✗	✓	✗	✓	✓	✓	✓	✓	✗
<i>Raise taxes on tobacco</i>											
Taxation rate on cigarettes	68%	na	na	46%	54%	32%	50%	29%	73%	69%	Nil

Source: WHO SEARO 2011<sup>50</sup> na not available

### *Surveillance and research to quantify and track NCDs and their determinants*

The major components of NCD surveillance include surveillance for risk factors (or measurement of exposure), disease morbidity or mortality (or measurement of outcomes), and of health system capacity and response. Tobacco is the most common risk factor studied. The Global Youth Tobacco Survey has been carried out in 10 countries and the Global Adult Tobacco Survey in 4 countries of the region. Behavioural risk factor surveillance, based on the WHO STEPs approach,<sup>54</sup> has been implemented in all countries of the region except Timor-Leste; however, repeat STEPs surveys have been done only in a few countries. Nationally representative data on metabolic risk factors such as blood sugar and cholesterol are generally not available. In disease surveillance, mortality data (cause-specific mortality statistics) are generated by death registration and/or other methods, and are generally incomplete and of low quality. Data on NCD morbidity are collected from hospital-based registries in most countries; population-based studies are available only in India and Thailand. Cancer registries are generally good in selected cities. Monitoring systems to track NCD-related policies and programmes are currently lacking in countries of the SEA region.

### *Delivering NCD interventions using the primary healthcare approach*

While strategies and interventions are well known, delivering them at the ground level is crucial to increase coverage and make an impact. Based on the primary healthcare philosophy,<sup>55</sup> key principles for implementing NCD strategies and interventions should include: (i) universal access, equity and social protection; (ii) comprehensive and integrated services for scaling up; (iii) use of technology that is affordable, appropriate and accessible to poor and vulnerable populations; (iv) an intersectoral approach including community participation and engagement; and (v) using existing infrastructure for NCD prevention and control rather than building new structures.

Many communicable diseases, such as tuberculosis and HIV have a chronic course similar to NCDs. Several approaches to leveraging synergies to improve efficiency and health outcomes of communicable and non-communicable diseases can be identified. For example, primary care provides a common platform where both type of diseases can be effectively addressed through preventive and curative interventions. Successful public health programmes offer useful lessons on implementing and scaling-up NCD interventions. For example, similar to the directly observed treatment, short-course (DOTS) strategy for control of tuberculosis, the following strategic framework is required for scaling-up NCD interventions:

1. *Political commitment and leadership at all levels:* Clear and sustained political commitment by national governments as well as at the local level is crucial if NCD strategies are to be effectively implemented at all levels.
2. *Primary prevention through health promotion and communication:* A comprehensive programme of interventions aimed at reaching designated audiences with messages, using a combination of communication technologies could be applied here.
3. *Ensuring availability of essential and affordable medicines and technologies:* An uninterrupted and sustained supply of quality-assured essential drugs for NCDs is fundamental to NCD control. For this purpose, an effective drug procurement

supply and management system is essential. A selected set of diagnostic devices to detect risk factors should be available at the primary healthcare level.

4. *Partnerships and multiple sector engagement:* Effective prevention and control of NCDs demands a multisectoral response to address the underlying social determinants that increase the risk of developing NCDs.
5. *Training of healthcare workers:* Training of primary health workers in prevention and control of NCDs should be integrated with the activities of the primary healthcare system and should have a nationwide coverage.
6. *Supervision and monitoring:* Supervision and follow up should be an integral part of the programme after the initial training of health workers. The existing health information system could be used to monitor progress; track the availability and distribution of human resources, equipment and supplies; and monitor the cost and impact of implementing NCD interventions within primary healthcare.

### OPPORTUNITIES

There are many opportunities for prevention and control of NCDs within the government sector, private sector and civil societies in the SEA region. Basic systems and human resources for the control of communicable diseases are in place in many countries, and can be used for prevention and control of NCDs. Member countries are highly committed to the goals of universal coverage of primary healthcare services. This region has demonstrated an enormous capacity to produce generic drugs through a vibrant pharmaceutical sector. There are immense opportunities to mobilize resources from within the region from the private sector and philanthropists. Many countries have active civil society organizations and their contributions to NCD prevention and control can be enhanced.

In September 2011, the High-level Meeting (HLM) of the UN General Assembly, attended by the Heads of State and Government of 192 member countries, was held in New York to generate global commitment and accelerate responses to NCDs. The UN HLM is a turning point in advocating for high-level commitment and mobilizing a broad 'whole of the society' approach to the prevention and control of NCDs. This was only the second time that the UN General Assembly discussed a global public health issue, the first being HIV/AIDS in 2001. There is high expectation that the 2011 HLM will do for NCDs what the UN General Assembly Special Session in 2001 did for HIV/AIDS in mobilizing national and international commitments for action, forging broad partnerships, and setting measurable targets and mechanisms to monitor progress towards prevention and control of NCDs. As a regional input to the UN HLM, member countries in the SEA region have developed 10 key messages.<sup>56</sup> These messages include calling upon global leaders to declare NCDs as a global health and development emergency requiring an urgent response; declare 2011–20 as the decade of combating NCDs; and catalyse a multisectoral response to the NCD epidemic (Box 2).

### CONCLUSION

NCDs pose an unacceptable health and economic burden for countries in the SEA region. NCDs and their risk factors are escalating unchecked in most member countries. Unless actions are taken early, the growing burden of NCDs will overstretch the fragile health infrastructure and reverse development efforts. A paradigm shift is needed: from addressing each NCD separately to collectively addressing a cluster of diseases in an integrated

**Box 2. Ten key messages for UN HLM from the Region**

1. Declare non-communicable diseases (NCDs) as a global health and development emergency and declare 2011–20 as the Decade of Combating NCDs.
2. Include NCDs in the current UN Millennium Development Goals and any subsequent global commitments.
3. Use a public health approach based on the principles of primary healthcare for combating NCDs; for this, strengthening health systems, particularly delivery of health services is critical.
4. Mobilize, facilitate and monitor multisectoral involvement among government agencies, non-governmental organizations (NGOs) and the private sector<sup>1</sup> in the planning and implementation of NCD programmes with health as the nodal agency.
5. Develop and implement a multisectoral national NCD policy and integrate it into the existing national health and development programmes/5-year plans.
6. Establish high-level national NCD committees with multisectoral involvement in order to plan, co-ordinate, implement and monitor national NCD control programmes, headed by the highest office, such as the office of the Prime Minister/President.
7. Provide specific allocation for NCDs within the health budget and prioritize allocation for primary prevention of NCDs; ensure adequate support for research on NCD prevention and control.
8. Generate revenue for NCDs from taxes levied on tobacco, alcohol and sugary beverages; provide appropriate incentives to producers of healthy food choices such as fruits and vegetables; and consider concession for industries that reimburse workforce costs of NCD prevention interventions.
9. Generate resources for NCDs through domestic and international sources and ensure that NCDs are an essential part of official development assistance budgets.
10. Set measurable indicators and targets and monitor progress in the prevention and control of NCDs at regular intervals.

Source: WHO SEARO 2011<sup>56</sup>

manner; from using a biomedical approach to a public health approach to NCDs (based on the principles of primary healthcare and universal access); and from a clinical approach to a more comprehensive approach with emphasis on primary prevention and health promotion, early detection and treatment and surveillance. The rising burden of NCDs in the SEA region can be reversed through modest investments by using a set of cost-effective approaches. High levels of commitment, good planning and coordination, community mobilization and multisectoral actions are needed to achieve this.

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