Module 1.1

NCD burden and public health approaches
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INTRODUCTION

Noncommunicable diseases (NCDs) kill 41 million people each year, equivalent to 71% of all deaths globally. The burden of these diseases is rising disproportionately among lower-income countries and populations. The leading causes of NCD deaths in 2015 were cardiovascular diseases (CVDs, 17.7 million deaths, or 45% of all NCD deaths), cancers (8.8 million, or 22% of all NCD deaths) and respiratory diseases, including asthma and chronic obstructive pulmonary disease (COPD, 3.9 million). Diabetes caused another 1.6 million deaths. This module will brief the primary health care worker about the burden of NCDs, the risk factors and how population- and individual-level interventions can be applied to prevent it.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Explain the determinants and causal pathways of four major NCDs (CVDs, diabetes, COPD and cancers).
- Describe the global, regional and national burden of four major NCDs and their risk factors.
- Describe and apply population- and individual-level interventions for NCD prevention and control.

TOPICS COVERED

- Determinants of NCDs
- Information on the burden of NCDs at the global, regional and national levels and their risk factors
- Concepts of NCD prevention in relation to the natural history of the disease
- Best buys for addressing NCDs and their risk factors

COMPETENCY

- Be able to identify the risk factors and apply population- and individual-level interventions for NCD prevention and control.
TEACHING AND LEARNING ACTIVITIES

Total session time: 75 minutes

Activity 1. Determinants and risk factors of NCDs:
25 minutes

Step 1. Divide the participants into convenient groups.

Step 2. Present the following problem statements that describe the current epidemiological situation in a country:

- Hypertension is increasing.
- Obesity is increasing among children.
- Rates of tobacco use are still high (smoking and smokeless tobacco).

Step 3. Assign one of the problem statements to one group.

Step 4. Ask the group to identify possible causes, potential implications and potential solutions to address the assigned problem.

Step 5. Ask them to report their discussion in the below table provided in their workbook.

Causes, determinants, implications and public health solutions

<table>
<thead>
<tr>
<th>Problem statement</th>
<th>What are the causes of the problem?</th>
<th>What are the implications of the problem?</th>
<th>What are the solutions to address the problem?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension is increasing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity is increasing among children.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rates of tobacco use are still high.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Step 6. Ask each group to make a brief presentation.

Step 7. Summarize the socioeconomic determinants, behavioural and metabolic risk factors, and public health solutions that can be implemented at the population and individual levels using a powerpoint presentation.
Activity 2. Estimating the number of people with NCD risk factors in the adult population: 25 minutes

Step 1. Refer to the following table in the workbook that presents the current epidemiological situation in a country with a population of 1,000,000*.

<table>
<thead>
<tr>
<th>Disease/Risk factor</th>
<th>Prevalence (%) from surveys</th>
<th>Absolute numbers (head counts) with the disease/risk factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raised blood pressure</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Raised blood sugar</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Current tobacco users</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Current alcohol drinkers</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Overweight and obesity</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>

*if country-level data are available please use that for this activity.

Step 2. Answer the following questions:

1. Estimate the number of adults living with various NCDs or those exposed to a risk factor in the table above.
2. The survey also recorded that 30% of those with raised blood pressure were not getting treatment. Calculate the number of people with raised blood pressure who are not on treatment.
3. The mean daily salt intake was calculated to be 9 g day in the survey. What implications does this have on the health of the people?

Step 3. Ask three participants to volunteer and present answers to one of the above-mentioned questions.

Step 4. Using the following guiding questions, discuss some of the implications of the population living with diseases or risk factors.

- Which disease or condition appears to be a leading cause of the NCD burden in this country?
- What are some probable reasons for the underdetection of people with the most common NCDs?
- What proportion of people with known NCDs actually take treatment and what do you think are the major barriers to accessing care?
- What can be done at the individual level to prevent NCDs in this country?
- What can be done at the population level to prevent NCDs in this country?
Activity 3. Best buys’ and other recommended interventions:

25 minutes

Step 1. Summarize the discussion by presenting the powerpoint slides with the following contents:

- burden of NCDs (add a slide on the country burden of NCDs and its risk factors)
- best buys for NCD prevention and control at the population and individual levels
- global evidence for NCD prevention and control.

Step 2. Ask the participants to list best buys’ and other recommended interventions being implemented in their communities/countries. Invite few volunteers to share to the big group.

Pre- and post-tests

1. Which behavioural risk factor contributes to a person developing an NCD?
   a. opium addiction
   b. helmet use
   c. unhealthy diet
   d. physical activity.

2. Which disease causes the most deaths worldwide?
   a. CVDs
   b. HIV/AIDS
   c. malaria
   d. tuberculosis.

3. The following is a good way to prevent NCDs:
   a. eating more salt
   b. eating more sugar
   c. eating more vegetables and fruits
   d. eating high-calorie foods.

4. Which of the following is a populationwide approach for the prevention and control of NCDs?
   a. opportunistic screening
   b. counselling
   c. increasing the price of tobacco
   d. self-care.
BACKGROUND INFORMATION

Global and regional burden of NCDs

Worldwide, 39.5 million deaths were due to NCDs in 2015. The leading causes of NCD deaths are CVDs, cancer, chronic respiratory disease and diabetes. In 2015, over three quarters of NCD deaths – 30.7 million – occurred in low- and middle-income countries with about 48% of deaths occurring before the age of 70 years in these countries. The probability of dying from the four main NCDs between 30 and 70 years is highest in the WHO- South-East Asia Region (25%). As NCDs affect people in the productive age group, in addition to the health burden, it has serious social and economic consequences.

Determinants of health

The health of individuals and communities is influenced by many factors. These factors are called the “determinants of health”. According to WHO, the following are considered to be the determinants of health:

- social and economic environment,
- physical environment, and
- individual characteristics and behaviour.

These factors can further be separated into modifiable and non-modifiable factors.

Table 1 categorizes these factors and provides a brief description of each. Note that health-care providers such as health care workers often cannot target the non-modifiable factors such as age, sex, etc. and have a limited role in targeting some of the modifiable factors such as income, education and social status. However, by targeting other modifiable lifestyle factors such as diet, exercise and access to social support and health care, health care workers can improve a patient’s quality of life, leading to improvements in other aspects of their lives.

Table 1: Classification and description of the determinants of health

<table>
<thead>
<tr>
<th>Factor</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifestyle/behaviours</td>
<td>Modifiable</td>
<td>Diet, level of exercise, alcohol consumption and smoking status are all considered lifestyle factors that can be modified to achieve better health.</td>
</tr>
<tr>
<td>Social environment</td>
<td>Modifiable</td>
<td>Support from the community, family, friends and health-care providers can also have a considerable impact on the health status of a person.</td>
</tr>
<tr>
<td>Access to health care</td>
<td>Modifiable</td>
<td>Improving access to recommended care through effective public health programmes can improve the health of individuals and communities.</td>
</tr>
<tr>
<td>Factor</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Income/social status</td>
<td>Modifiable</td>
<td>Higher income and social status are linked to better health. Poverty is both a cause and a consequence of poor health. The greater the gap between the rich and the poor, the more the inequality, and therefore a greater difference in health. Health care workers should advocate for poverty alleviation programmes.</td>
</tr>
<tr>
<td>Education</td>
<td>Modifiable</td>
<td>Low education levels are linked to poor health, more stress and lower self-confidence. Health care workers should advocate for education programmes on healthy lifestyle.</td>
</tr>
<tr>
<td>Physical environment</td>
<td>Modifiable</td>
<td>Safe water and clean air, healthy workplaces, and safe houses, and communities all contribute to good health. Health care workers should advocate for these efforts.</td>
</tr>
<tr>
<td>Genetics</td>
<td>Non-modifiable</td>
<td>Contrary to what many people believe, for most chronic NCDs, the role of genes remains small and considerably smaller that the role of traditional modifiable risk factors.</td>
</tr>
<tr>
<td>Gender/age</td>
<td>Non-modifiable</td>
<td>This emphasizes that different prevention and control strategies can be appropriate at different ages and there is a need to adjust such strategies along the life-course (e.g. provide health education to deter children from starting smoking, screen for hypertension among middle-aged adults, etc.)</td>
</tr>
</tbody>
</table>

**Health promotion and disease prevention**

Prevention has been typically defined at three levels; primary, secondary and tertiary.

*Primary prevention* focuses on keeping the healthy in a healthy state. This is true prevention. This simply means that one looks at the actual causes of disease rather than looking down the line after a risk factor or disease has manifested itself within a population. For example, engaging people in regular exercise and a healthy diet, or abstaining from alcohol or tobacco use can keep them healthy.

*Secondary prevention* is employed when a problem has already occurred, e.g. taking action to reduce blood pressure among people with raised blood pressure through diet and physical activity. This is an effort to thwart the damages caused by the presence of a risk factor or a disease before it causes permanent changes that cannot be undone.

*Tertiary prevention*. In this case, a person has suffered from a disease that has caused some damage to his or her health. For example, a person has suffered from a heart attack or stroke and has been advised by doctors to change their lifestyle to prevent further consequences.

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There is a need to focus as much effort as possible on primary prevention. Unfortunately, in all countries, a lot of health care money is spent on the secondary and tertiary levels of prevention.

*Health education* and *health promotion* are important public health approaches to disease prevention. Health education is the delivery of any information that is conducive to health. *Health promotion* takes this step further and includes any social support, law or policy change that may improve health.

A health education campaign may be aimed at children to try and prevent them from smoking. Health promotion efforts include banning the sale of tobacco products to minors in an effort to facilitate this education process.

Two approaches are used when implementing prevention. Addressing prevention at the individual level considers individual-level factors, such as knowledge, attitude and beliefs. A health worker who tells an obese patient to become more physically active, or a smoker to cease tobacco use is an individual-level approach to health education.

Population-level approaches address broader social and environmental circumstances that influence individual behaviours. A country banning the sale of alcohol to underage individuals, or banning smoking in public places are examples of a population-level intervention.

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**Phases of prevention**

**Health education and promotion**

- **Susceptibility**
  - No signs
  - No symptoms

- **Presymptomatic**
  - Signs
  - No symptoms

- **Clinical manifestation**
  - Signs
  - Symptoms

- **Disability**
  - Signs
  - Symptoms

Source: Courtesy of Dr Cheryl Hawk

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**Best buys’ and other recommended interventions in NCD prevention and control**

There are many interventions for the prevention and control of NCDs. Even in the wealthiest countries, however, choices have to be made about which of these interventions should be prioritized for implementation because resources for health are finite and, in most countries, very limited. A number of criteria enter into such decisions, including the current and projected burden of disease, cost-effectiveness, fairness and feasibility of implementing the interventions, and political considerations. In preparation for the United Nations (UN) High-level Meeting, WHO has identified a set of evidence-based “best buy” interventions that are not only highly cost-effective but also feasible and appropriate to implement within the constraints of the local health systems in low- and middle-income countries.

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2 Tackling NCDs – Best buys. World Health Organization
Appendix 3 of the Global Action Plan for the Prevention and Control of NCDs 2013–2020 was updated and endorsed in May 2017 by the Seventieth World Health Assembly. The updated Appendix 3 comprises a total of 88 interventions containing the most cost-effective interventions, and other recommended interventions. Among them, the 16 interventions where considered to be the most cost-effective and feasible for implementation with an average cost-effectiveness ratio of \( \leq \$100/\text{DALY} \) averted in low- and lower middle-income countries. Interventions with an average cost-effectiveness ratio > \$100 are listed next and may be considered as per the country context.

Additional reading resources

5. Tackling NCDs – Best buys. World Health Organization
NCD burden and public health approaches

Activity 1: Step 7

Root causes

- Diabetes
- Cancer
- Cardiovascular disease
- Chronic respiratory diseases
- Increased weight, BP, sugar, cholesterol
  - Physical inactivity
  - Harmful use of alcohol
  - Tobacco use
  - Unhealthy diet

- NCDs
  - Metabolic risk factors
  - Behavioral risk factors

- Urbanization
- Social & political conditions
- Trade & marketing
- Globalization
- Underlying causes
NCD burden and public health approaches

### Intervention

- Diabetes
- Chronic Respiratory diseases
- Cardiovascular disease
- Increased weight, BP, sugar, cholesterol

**Individualized Health sector interventions**

- Unhealthy diet
- Tobacco use
- Physical inactivity
- Harmful use of alcohol
- Urbanisation
- Social & political conditions

**Population-wide interventions**

- Medication interventions

### Prevention is better than cure

- Prevention
- Treatment

### Population-wide versus individualized interventions

**Distribution of people according to risk factor level**

- People with average risk factor level: 70%
- People with low risk factor level: 5%
- People with clinically high risk factor level: 25%

Risk factor level (blood pressure)
Blood pressure and risk of heart attack

High-risk (individualized) interventions: large effect in few

High-risk (individualized) interventions resource intensive
High-risk (individualized) interventions

Population-wide interventions: salt reduction programme

Small effect in many – shift in population distribution to lower risk
Population-wide and individualized strategy

Population-wide strategy
- Primary prevention
- Targets entire population
- Interventions outside Ministry of Health
- Small effect in many
- Less expensive

Individualized strategy
- Secondary prevention
- Targets high-risk individuals
- Interventions largely in Ministry of Health
- Large effect in a few
- More expensive

Activity 3: Step 1

Probability of premature death due to NCDs

* NCD burden and public health approaches
NCD burden and public health approaches

Premature death due to one of four NCDs

Estimated deaths, by cause, South-East Asia Region, 2012

Categories of interventions

Best buys

- Average cost-effectiveness analysis of ≤ $100 per DALY averted in LMICs
- 16 interventions

Effective interventions

- Cost effectiveness analysis > $100 per DALY averted in LMICs

Other recommended interventions

- Shown to be effective but no cost-effectiveness analysis was conducted
Examples of categories of tobacco interventions

**Best buys**
- Increase excise taxes and prices on tobacco products
- Implement and enforce smokefree policies in all indoor workplaces, public places, public transport
- Reduce exposure to secondhand smoke in all indoor workplaces, public places, public transport
- Implement effective mass media campaigns that educate the public about the harms of tobacco use and secondhand smoke

**Effective interventions**
- Provide cost-covered, effective and population-wide tobacco cessation services for all those who want to quit

**Other recommended interventions**
- Implement measures to minimize illicit trade in tobacco products
- Ban cross-border advertising, including using modern means of communication
- Provide mobile phone-based tobacco cessation services for all those who want to quit

Examples of categories of alcohol interventions

**Best buys**
- Increase excise taxes on alcoholic beverages
- Eliminate enterprise sponsorship of sport, music, and cultural events
- Enact and enforce laws or regulations on alcohol advertising in public places, including multiple types of media
- Enact and enforce restrictions on the physical availability of alcohol (no reduced hours of sale)

**Effective interventions**
- Enact and enforce drink-driving laws and blood alcohol concentration limits via sobriety checkpoints
- Provide brief psycho-social intervention for persons with hazardous and harmful alcohol use

**Other recommended interventions**
- Cancel regular reviews of access to alcohol to prevent new venues from opening
- Establish enforcement protocols to prevent alcohol access and availability
- Enact and enforce restrictions on alcohol advertising
- Ban promotions of alcoholic beverages in connection with promotional-based activities targeting young adults
- Provide information, training, and awareness for alcohol stakeholders and concerned partners in public and private sectors
- Provide consumer information about alcohol and tobacco and health messages that are related to alcohol

Examples of categories of unhealthy diet interventions

**Best buys**
- Reduce salt intake through the implementation of food product reformulations targeting large sectors of the food system
- Reduce salt intake through the establishment of a supportive environment in hospitals, schools, workplaces and eating venues
- Enact and enforce policies to increase the implementation of front of pack labelling

**Effective interventions**
- Educate industries and whole food chains through the development of legislation to ban their use in the food chain
- Reduce sugar consumption through effective taxation on sugar-sweetened beverages

**Other recommended interventions**
- Promote health and culturally appropriate strategies for reducing obesity and related NCDs
- Reduce portion sizes and eliminate dietary practices, such as portion sizes at fast food outlets
- Ensure and promote healthy food and beverage  choices in schools and worksites
- Reduce salt in foods that are consumed outside the home (for example, restaurants, fast-food outlets, convenience stores) as part of legal, policy, or other interventions
- Promote policies that expand access to healthy foods, especially for low-income households
- Make healthy choices

NCD burden and public health approaches
### Examples of categories of physical activity interventions

<table>
<thead>
<tr>
<th>Best buys</th>
<th>Effective interventions</th>
<th>Other recommended interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement community-wide public education and awareness campaigns for physical activity which includes a mass media campaign, conducted with other community-based interventions (motivational and environmental programmes aimed at supporting behavioural change of physical activity levels)</td>
<td>Provide physical activity counselling and referral as part of routine primary healthcare services through the use of a brief intervention</td>
<td>Ensure that mixed-use urban design incorporates the components of residential density, commercial and mixed-use zoning to facilitate walking and cycling, and provide access to public transport facilities that encourage alternative modes of transport.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Encourage and support public sector initiatives to incorporate physical activity in the workplace, schools, and community settings.</td>
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<tr>
<td></td>
<td></td>
<td>Implement multi-component workplace physical activity programmes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preventive educational activities through organised social groups and clubs, programmes and events.</td>
</tr>
</tbody>
</table>

### Cardiovascular disease and diabetes management

<table>
<thead>
<tr>
<th>Best buys</th>
<th>Effective interventions</th>
<th>Other recommended interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug therapy (including glucocorticoid control for diabetes, hypertension, and control of dyslipidaemia) and lifestyle interventions targeted at individuals at high risk for cardiovascular disease.</td>
<td>Treatment of acute myocardial infarction should be performed promptly and include thrombolysis or coronary angiography as appropriate. Cardiac rehabilitation is an important component of care for patients recovering from cardiac events.</td>
<td>Treatment of chronic cardiovascular disease should include secondary prevention strategies, including smoking cessation and appropriate blood pressure and cholesterol control.</td>
</tr>
<tr>
<td></td>
<td>Prevention of stroke through lifestyle changes and timely treatment of hypertension and hyperlipidaemia.</td>
<td>Cardiovascular rehabilitation is an important component of care for patients recovering from cardiac events.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anticoagulation therapy for atrial fibrillation and other high-risk patients should include anticoagulation therapy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low-dose aspirin and/or antithrombotic therapy should be considered for primary prevention of cardiovascular events in individuals with hypertension, diabetes, or other risk factors.</td>
</tr>
</tbody>
</table>

### Diabetes management

<table>
<thead>
<tr>
<th>Effective interventions</th>
<th>Other recommended interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventive foot care for people with diabetes (including education, prevention, treatment, and education of healthcare professionals).</td>
<td>Lifestyle interventions for preventing type 2 diabetes.</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetic retinopathy screening for all diabetes patients and laser photocoagulation for prevention of blindness.</td>
<td>Screening of all people with diabetes for proteinuria and treatment with angiotensin-converting enzyme inhibitors for the prevention and delay of renal disease.</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Chronic respiratory disease management

**Effective interventions**
- Symptom relief for patients with asthma with inhaled corticosteroids
- Symptom relief for patients with chronic obstructive pulmonary disease with inhaled bronchodilators
- Treatment of asthma using low-dose inhaled beclomethasone and short acting beta agonist

**Other recommended interventions**
- Access to improved stoves and cleaner fuels to reduce indoor air pollution
- Cost-effective interventions to prevent occupational lung diseases, for example, from exposure to silica, asbestos
- Influenza vaccination for patients with chronic obstructive pulmonary disease

Cancer management

**Best buys**
- Vaccination against human papillomavirus (HPV) among 12-year-old girls
- Prevention of cervical cancer by screening women aged 35-64, either through cervical smears with cytology or visual inspection with acetic acid and linked with timely treatment of pre-cancerous lesions
- Pay smear (oral and cervical) every 3-5 years linked with timely treatment of pre-cancerous lesions
- Human papillomavirus test every 5 years linked with timely treatment of pre-cancerous lesions

**Effective interventions**
- Screening with mammography (once every 2 years) for women aged 50-69 linked with timely diagnosis and treatment of breast cancer
- Treatment of colorectal cancer stages I and II with curative intent, chemotherapies and targeted therapies
- Treatment of colorectal cancer stages III and IV with curative intent, chemotherapies, targeted therapies
- More effective chemotherapeutic agents linked with improved treatment of breast cancer stages I and II
- Vaccination against hepatitis B
- Oral cancer screening in high-risk groups (for example, tobacco users, heavy drinkers) linked with timely treatment

**Other recommended interventions**
- Prevention of liver cancer through hepatitis B vaccination
- Population-based colorectal cancer screening, including through a faecal occult blood test, as appropriate, at age 50, linked with timely treatment

Summary of best buys

<table>
<thead>
<tr>
<th>Risk factor/disease</th>
<th>“Best buy” interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population-wide interventions: Multi-sectoral</strong></td>
<td></td>
</tr>
<tr>
<td>Tobacco use (IMPOWER)</td>
<td></td>
</tr>
</tbody>
</table>
| - Monitor: Monitor tobacco use and prevention policies
| - Protect: Protect people from tobacco smoke
| - Offer: Offer help to quit tobacco use
| - Warn: Warn about the dangers of tobacco
| - Enforce: Enforce laws on tobacco advertising, promotion and sponsorship
| - Reduce: Reduce taxes on tobacco |
| Harmful use of alcohol |
| - Reduce binge drinking
| - Restrict access to prescribed alcohol
| - Enforce laws on alcohol advertising |
| Unhealthy diet and physical inactivity |
| - Promote breast feeding
| - Reduce salt intake in food
| - Reduce transfat with polynaturated fat
| - Promote public awareness about diet and physical activity
| - Regulate marketing to children |
| Individualized interventions: Health sector |
| Cardiovascular disease and diabetes |
| - Provide counseling and multi-drug therapy for people with medium high risk of developing heart attack and strokes
| - Treat heart attacks with aspirin |
| Cancer |
| - Hepatitis B immunization beginning at birth to prevent liver cancer
| - Screening and treatment of pre-cancerous lesions to prevent cervical cancer |
Global evidence of prevention and control

Population-based best buys

Tobacco control
- Raise taxes on tobacco
- Protect people from tobacco smoke
- Warn about the dangers of tobacco
- Enforce bans on tobacco advertising

Impact of tobacco control measures in Thailand (1991-2011)

NCD burden and public health approaches
Best buys for reducing harmful use of alcohol, Thailand

- Alcohol Act 2008
- Taxation
- Restriction on sales/place of drinking
- Partial ban on alcohol advertising
- Minimum age of purchase 20 years

Outcome:
1. Rising trend in consumption plateaued
2. Percentage of former drinkers increased from 4.7% in 2001 to 8.7% in 2011

Best buys for promoting healthy diet and physical activity

- Reduce dietary salt intake
- Replace saturated, trans fat with polyunsaturated fat
- Increase fruits and vegetables consumption
- Promote public awareness
- Regulate marketing to children
- Promote breast feeding.

Salt reduction in UK

- Strategies:
  - Research, evidence
  - Targets set
  - Dialogue with food industry
  - Voluntary food reformulation
  - Consumer awareness
  - Labelling
  - Independent monitoring

- Impact:
  - Table salt use decreased from 23% to 23%
  - Salt intake reduced from 5.7 g to 6.5 g
  - 500 deaths p.a.
  - £1.5 billion in savings p.a.
**Fat reduction, Finland**

Strategies:
- Mass awareness
- Engaging with food industry, agriculture sector
- Legislation
- Monitoring

**Age-adjusted CHD mortality among men 35–64 years, North Karelia and Finland, 1969 to 2011**

Impact: >80% reduction in CHD mortality

**Sugar**

Averting Obesity and Type 2 Diabetes in India through Sugar-Sweetened Beverage Taxation: An Economic-Epidemiologic Modeling Study

- 20% tax is projected to reduce overweight/obesity by 3% and diabetes incidence by 1.6 over 10 years
- i.e., 11.2 million cases of overweight/obesity and 400,000 cases of diabetes averted
- 5% tax levied on aerated drinks in 2014 in India.
Promoting physical activity

Physical activity, Brazil

Social marketing, sports groups, Tonga

Road closures for recreation, NYC

Move for health walk, Bhutan

Individual (high-risk) best buys

Original research

Package of essential noncommunicable disease (PEN) interventions in primary health-care settings of Bhutan: a performance assessment study

ABSTRACT

- Background: A World Health Organization (WHO) package of essential noncommunicable disease (PEN) disease interventions was piloted in two districts of Bhutan.
- Results: The package led to significant reductions in hypertension and high blood pressure.

Individual (high-risk) best buys – cervical cancer

- Most preventable cancer
- 35% of global burden in the SEAR countries
- HPV vaccination
  - Bhutan: >80%
- Cervical cancer screening
  - Bhutan: 64%
  - Thailand, Sri Lanka: 25-50%
  - Other countries: low coverage

NCD burden and public health approaches
Reduction in CHD mortality attributed to individualised vs. population-wide interventions in various countries

Consider case of Ms Maya

Why did Maya get diabetes?
Because she was overweight

But why was she overweight?
Because she frequently consumed “fizzy drinks” and “energy-dense junk food”

But why did she frequently consume fizzy drinks? 
Because it was inexpensive and considered “cool”

But why was it considered “cool”? 
Because it was marketed and endorsed by celebrities

But why ..... marketing?
profit, lack of regulation....

Summary

A combination of population-wide (primary prevention) and individualized (high-risk) approaches are required to reduce premature mortality due to NCDs.