

**ABSTRACT**

**Chronic diseases have a serious impact on individuals and on society in general. They affect the quality of life of individuals and can be a financial burden on those who are affected. There is a disease continuum of lifestyle, high risk diseases, and end organ damage. Lifestyle change is necessary if we are to reduce the prevalence of these chronic diseases. The Health Choices – Lifestyle Advice Resource for Healthcare Professionals provides a tool for lifestyle counselling.**

**Keywords:**

**Financial burden; disease continuum; high risk diseases; Lifestyle Advice Resource; Prevalence**

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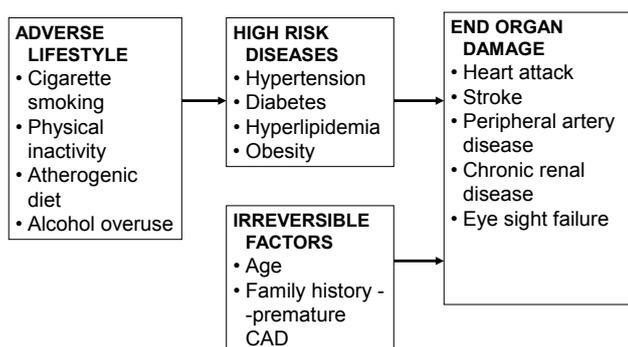
**BACKGROUND**

Chronic diseases have been defined as medical conditions lasting for longer than 3 months. The list of conditions span many organ systems. These are the major causes of disability and death globally. According to the World Health Organization (WHO), almost half of all chronic disease deaths occur in people under the age of 70.

Chronic diseases have a serious impact on individuals and on society in general. They affect the quality of life of individuals and can be a financial burden on those who are affected.

Most of the chronic diseases that are of large numbers are related to adverse lifestyle. There is a disease continuum of

**Figure 1. Inter-related links between lifestyle, high risk diseases, and end organ damage**



Source: Goh LG et al. MOH, CPG, 1/2011

lifestyle, high risk diseases, and end organ damage. See Figure 1.

The need for lifestyle change is therefore of great importance if we are to succeed in reducing the prevalence of these conditions and the resultant burden.

## EPIDEMIOLOGY OF CHRONIC DISEASES OF IMPORTANCE TO SINGAPOREANS

In Singapore, chronic diseases are a significant cause of illness and death. The common diseases that affect Singaporeans fall into several clusters:

- Diabetes Mellitus, Hypertension (High Blood Pressure), Lipid disorders (e.g. high blood cholesterol), and Obesity and the endstage organ complications – the cardiometabolic group of conditions.
- Chronic Obstructive Pulmonary Disease (COPD) which is caused by cigarette smoking, and Bronchial asthma which is aggravated by cigarette smoking.
- Cancers – many which are due to adverse lifestyles e.g. smoking and lung cancer.
- Others.

Table 1 shows the contribution to the principal causes of death from the non-communicable disease which are made up of the chronic diseases. In 2010, they accounted for 73.8% of the total deaths in Singapore.

In 2010, the prevalence of obesity and type 2 diabetes mellitus (T2DM) had risen to 10.8% and 11.6% respectively. In 2009, of the 17,101 deaths (100%), ischaemic heart disease, cerebrovascular disease, and diabetes mellitus contributed respectively 19.2%, 8%, and 1.7% -- making a total of 28.9% from cardiometabolic deaths.

## THE LIFESTYLE AND CHRONIC DISEASE LINK

Excessive food intake, unhealthy diet, and physical inactivity are contributory factors to the high risk diseases of hypertension, diabetes, hyperlipidemia, and overweight & obesity. Smoking has its adverse effects not only to the lungs but several other chronic diseases as well. See Table 2.

Adopting healthy lifestyle practices such as a healthy diet, regular physical activity, and quitting or avoiding tobacco use can prevent or control the onset of debilitating and expensive complications of chronic diseases.

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Year	2008	2009	2010	
Total number of deaths	17,222	17,101	17,610	
Percentage of total deaths				
1	Cancer [ICD9:140-208]	29.3	29.3	28.5
2	Ischaemic heart disease [ICD9:410-414]	20.1	19.2	18.7
3	Pneumonia [ICD9: 480-486]	13.9	15.3	15.7
4	Cerebrovascular disease (including stroke) [ICD9: 430-438]	8.3	8.0	8.4
5	Accidents, Poisonings & Violence [ICD9: E800-E999]	5.8	5.7	5.5
6	Other heart diseases [ICD9: 393-398, 402, 415-429]	4.0	4.4	4.8
7	Chronic obstructive lung disease [ICD9: 490-493, 496]	2.5	2.4	2.5
8	Urinary tract infection [ICD9: 599.0]	2.1	2.5	2.5
9	Nephritis, Nephrotic syndrome & Nephrosis [ICD9: 580-589]	2.1	2.3	2.2
10	Diabetes mellitus [ICD9: 250]	2.7	1.7	1.0
	Total deaths from non-communicable diseases (Total deaths less those due to 3, 5, 6, and 8)	74.2	72.1	73.8

Disease	Lifestyle Risk Factors			
	Excessive food intake	Unhealthy diet (Atherogenic)	Sedentary lifestyle	Smoking
Cancers	Y	Y		Y
Stroke	Y	Y	Y	Y
Ischaemic heart disease	Y	Y	Y	Y
Hypertension	Y	Y	Y	Y
Diabetes mellitus	Y	Y	Y	

Source: HPB (Slightly adapted)

#### Impaired fasting glucose and impaired glucose tolerance

Singapore has a high burden of Impaired Fasting Glucose (IFG) and Impaired Glucose Tolerance (IGT) with 12% of its population between the ages of 18 and 69 (NHS 2004) with at least one of these conditions. Poorly controlled IFG/IGT is associated with an increased risk of developing Diabetes Mellitus.

Studies show that with intensive lifestyle change, there is a chance of reversing the impaired glucose state in some 58% of such subjects. To deal with this, an HPB programme consisting of an individual health risk assessment, guidance in setting action plans with targets, referrals to healthy lifestyle programmes and counselling on their progress has been implemented.

The Nurse Educator will follow-up, over the phone, with each participant after a period of 6 months, 9 months and 12 months. Participants will be required to undergo an Oral Glucose Tolerance Test at the end of 1 year to determine whether their condition has improved.

#### HEALTH CHOICES – LIFESTYLE ADVICE TOOLS

To assist healthcare professionals in providing lifestyle advice, the Health Choices – Lifestyle Advice Resource for Healthcare Professionals. This contains a practice manual for healthcare professionals and flip-chart for patient consultation which contains assessment methodologies such as 3As (ask, advise, action) and 5As (ask, advise, assess, assist and arrange) behavioural change strategy for smoking and obesity, besides stress management and safer sexual behaviour; the motivational interview technique of counselling behaviour change; and the health literacy principles which hopefully will help the patient build the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions including lifestyle change.

#### REFERENCES

1. MOH. Screening for Cardiovascular Disease and Risk Factors. MOH Clinical Practice Guidelines 1/2011.
2. HPB. Health Choices – Lifestyle Advice Resource for Healthcare Professionals, 1 Sep 2012.

#### LEARNING POINTS

- **Chronic diseases have a serious impact on individuals and on society in general.**
- **They affect the quality of life of individuals and can be a financial burden on those who are affected.**
- **There is a disease continuum of lifestyle, high risk diseases, and end organ damage.**
- **Lifestyle change is necessary if we are to reduce the prevalence of these chronic diseases**
- **The Health Choices – Lifestyle Advice Resource for Healthcare Professionals provides a tool for lifestyle counselling.**