

# Non-Communicable Diseases Watch

September 2023



## Cardiovascular Diseases

### Key Messages

- ※ Cardiovascular diseases are a group of disorders of the heart and blood vessels that include heart disease and stroke, etc.. Globally, cardiovascular diseases are the number one killer.
- ※ In Hong Kong, cardiovascular diseases are a major cause of mortality and morbidity. In 2022, there were 10 665 registered deaths attributed to cardiovascular diseases. Based on the Framingham Risk Model adapted for local use, the Population Health Survey 2020-22 appraised that 18.4% of land-based non-institutional persons aged 40–74 were classified as high-risk with cardiovascular risk 20% or more over the next 10 years. While 37.6% of persons aged 40–74 with high cardiovascular risk received both drug therapy and counselling to prevent heart attack and strokes, 28.1% of persons with high cardiovascular risk did not receive any drug therapy or counselling.
- ※ To guard against cardiovascular diseases, members of the public are urged to lead a healthy lifestyle that includes eating a balanced diet and limiting the consumption of fat, salt and sugar; engaging in at least 150 minutes of moderate-intensity aerobic physical activity (such as brisk walking) or an equivalent amount of physical activity throughout the week; reducing the time spent being sedentary; saying no to tobacco; and refraining from alcohol drinking. Apart from healthy living, the general public should seek medical advice when necessary for health assessments, prompt disease detection and timely management.
- ※ The Department of Health will continue organising health promotional campaigns using a variety of strategies to increase people's health literacy and enhance public awareness about the importance of healthy living in preventing cardiovascular diseases, as well as working in close partnership with other government bureaux/departments and community partners to foster a health-enhancing environment.

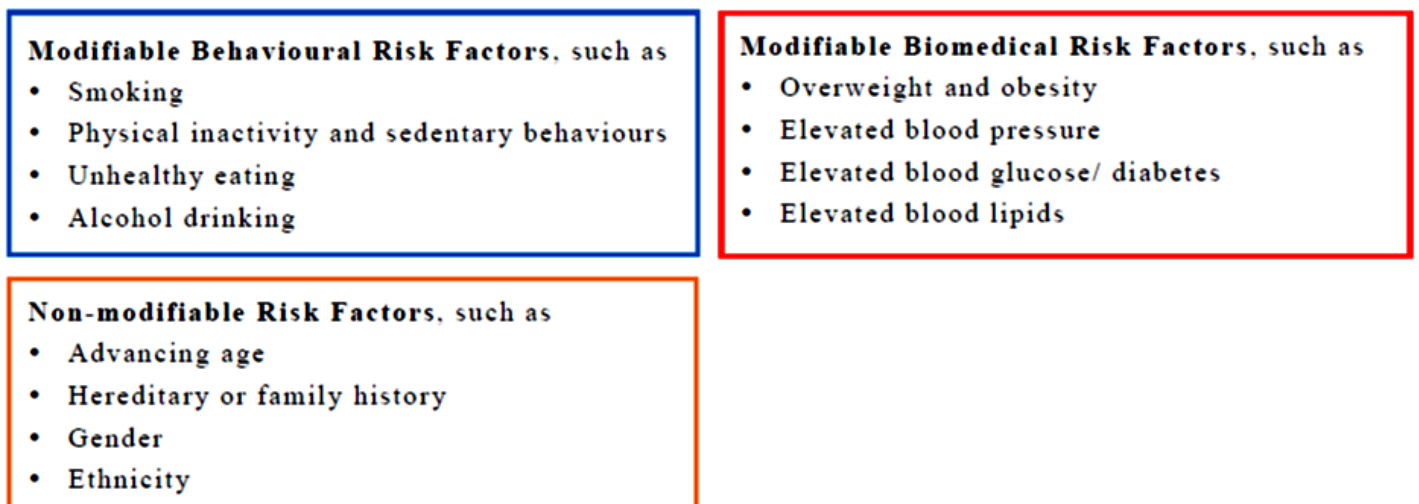
# Cardiovascular Diseases

Cardiovascular diseases are a group of disorders of the heart and blood vessels. They include coronary heart disease, cerebrovascular disease/stroke, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism, etc.<sup>1</sup>. Globally, cardiovascular diseases are the number one killer. In 2021, 20.5 million people died because of cardiovascular diseases<sup>2</sup>. In Hong Kong, the age-standardised death rate of cardiovascular diseases has significantly declined from 93.4 per 100 000 standard population in 2001 to 53.4 per 100 000 standard population in 2022<sup>3, 4</sup>. However, cardiovascular diseases remain a major public health concern with 10 665 registered deaths in 2022<sup>4</sup>. This article briefly reviews the major risk factors for cardiovascular diseases, presents the recommended screening for specific cardiovascular risk factors, appraises cardiovascular disease risk among local population, as well as highlights some key actions that members of the public can take to lower the risk of cardiovascular diseases.

## Major Risk Factors for Cardiovascular Diseases

A number of modifiable and non-modifiable factors can increase the risk of developing cardiovascular diseases (Figure 1)<sup>1</sup>. These risk factors can act independently to cause cardiovascular diseases, or in combination to produce additive or synergistic effects on the risk for cardiovascular events. The more risk factors are present in individuals, the higher the risk of cardiovascular diseases<sup>5</sup>. For example, the adverse effects of smoking, physical inactivity including sedentary behaviours, unhealthy eating (such as excessive consumption of fat, salt and sugar; insufficient consumption of fruit and vegetables) and/or alcohol drinking may show up in individuals as overweight and obesity, elevated blood pressure, elevated blood glucose and elevated blood lipids, thereby contributing to the development of cardiovascular diseases<sup>1</sup>.

**Figure 1: Major risk factors for cardiovascular diseases**



International studies showed that over 90% of myocardial infarction (or heart attack) and stroke worldwide are collectively attributed to 9 and 10 potentially modifiable behavioural and biomedical risk factors respectively<sup>6, 7</sup>. Regardless of genetic predisposition to cardiovascular diseases, a population-based prospective cohort study of more than 500 000 adults aged 40–69 living in the United Kingdom observed that an unfavourable lifestyle was associated with higher risk of about 2.5 times to die from cardiovascular diseases compared to a favourable lifestyle<sup>8</sup>. Thus, leading a healthy lifestyle remains the foundation of cardiovascular diseases prevention.

## Recommended Screening for Specific Cardiovascular Risk Factors

Apart from healthy living, another key to lower the risk of cardiovascular diseases is screening for “Triple H” (i.e. high blood pressure, high blood glucose and high blood lipids) with early intervention if indicated, especially in the elderly<sup>9</sup>. In Hong Kong, the Expert Panel on Reference Frameworks draws up the following recommendations about screening for hypertension, type 2 diabetes and hyperlipidaemia for general adult population:

- ◆ Adults aged 18 or above are recommended to have blood pressure checked at least once every 2 years<sup>10</sup>, and annual screening of hypertension is recommended for older adults<sup>11</sup>;

- ◆ Adults aged 45 or above are recommended to screen for type 2 diabetes at a minimum of 3-year intervals, and more frequent testing (e.g. every 12 months) is recommended when risk factors (such as overweight, obesity, family history of diabetes, etc.) are present<sup>11, 12</sup>;
- ◆ Adults aged 50–75 are recommended to check for hyperlipidaemia every 3 years; more frequent testing (e.g. every 12 months) is recommended when risk factors of cardiovascular diseases (such as smoking, obesity, hypertension, diabetes, etc.) are present<sup>11</sup>.

Members of the public can consult doctors about the said screenings.

The Department of Health (DH) of the Hong Kong Special Administrative Region (SAR) conducted the Population Health Survey (PHS) 2020-22 to collect pertinent information on the patterns of health status and health-related issues among the local general population, including questions asking land-based non-institutional respondents about how long ago they had their last blood pressure, blood glucose and blood cholesterol checked<sup>13</sup>. Results showed that 52.3% of persons aged 18 or above had the blood pressure checked within 2 years; 59.1% of persons aged 45 or above had their blood glucose checked within 3 years; and 60.1% of persons aged 50–75 had their cholesterol checked within 3 years<sup>13</sup>.

## Cardiovascular Risk Assessment among Local Population

Global cardiovascular risk assessment involves appraising individuals' overall risk of developing cardiovascular diseases within a specified amount of time (such as in 10 years) rather than just assessing risk factors (such as high blood pressure, high blood glucose or high blood lipids) in isolation<sup>14, 15</sup>. The Framingham Risk Model is one of the most widely used multivariable risk assessment tools for predicting asymptomatic individuals' chance of experiencing a cardiovascular event (including coronary heart disease, stroke, peripheral artery disease and heart failure) over a 10-year period<sup>15</sup>. The risk estimate is based on major risk factors including age, gender, smoking status, blood cholesterol level, diabetes status and blood pressure (with adjustment in treated and untreated by antihypertensive) and calculated using a specific equation. The risk of cardiovascular event over the next 10 years is classified into low-risk (cardiovascular risk less than 10%), medium-risk (cardiovascular risk greater than or equal to 10% and less than 20%) and high-risk (cardiovascular risk 20% or more) group<sup>16</sup>.

The PHS 2020-22 adopted the Framingham Risk Model to predict cardiovascular risk among local land-based non-institutional adult population over the next 10 years. Among persons aged 40–74, results showed that 18.4% of them were classified as high-risk. The proportion of persons classified as high-risk was much higher in males (34.0%) than females (4.9%) and increased with age from 1.1% among persons aged 40–44 to 44.5% among persons aged 65–74 (Table 1)<sup>13</sup>. Among persons aged 40–74 with high cardiovascular risk, 37.6% received both drug therapy (such as drugs for raised blood pressure, raised blood glucose or cholesterol level) and counselling (lifestyle advice including glycaemic control) to prevent heart attack and strokes, 26.5% received drug therapy only and 7.8% received counselling only. More importantly, 28.1% of persons aged 40–74 with high cardiovascular risk did not receive any drug therapy or counselling<sup>13</sup>.

**Table 1: Proportion of person aged 40–74 with high cardiovascular risk (20% or more over the next 10 years) by gender and age group**

Age group	Male	Female	Total
40–44	2.5%	0%	1.1%
45–54	10.5%	0.5%	4.9%
55–64	36.5%	4.4%	19.6%
65–74	75.8%	14.9%	44.5%
40–74	34.0%	4.9%	18.4%

Base: All respondents aged 40–74 who had participated in the health examination.

Source: Population Health Survey 2020-22.

## Prevention of Cardiovascular Diseases

For prevention of cardiovascular diseases, members of the public are urged to lead a healthy lifestyle (Box 1). Meta-analyses of randomised controlled trials and observational studies reported that leading a healthy lifestyle could lower the risk of cardiovascular diseases by 66%<sup>17, 18</sup>. Besides, adults should check for “triple H” as recommended by doctor as well as keep the levels in the optimal ranges.

The DH will continue organising health promotional campaigns using a variety of strategies to increase people’s health literacy and enhance public awareness about the importance of healthy living in preventing cardiovascular diseases, as well as working in close partnership with other government bureaux/departments and community partners to foster a health-enhancing environment. For more information about healthy living or Government’s key initiatives to reduce the burden of cardiovascular diseases, please visit the Change for Health website of the DH at <http://www.change4health.gov.hk>.

### Box 1: Leading a healthy lifestyle to reduce the risk of cardiovascular diseases

**Eat a balanced diet** — Members of the public are urged to eat according to the ‘Healthy Eating Food Pyramid’<sup>19</sup>. Apart from limiting the consumption of fat, salt and sugar, adults should eat at least 5 servings of fruit and vegetables per day and choose more whole grains that would help lowering the risk of cardiovascular diseases.

**Be physically active and limit the time spent being sedentary** — Members of the public are urged to make physical activity a “must do” habit. For optimal health, the World Health Organization recommends persons aged 18 or above to do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week<sup>20</sup>. Compared with inactive participants, a study showed that “weekend warriors” (with at least 150 minutes of moderate-intensity physical activity or equivalent amount within 1 to 2 days) would have 21–38% reduced risk of cardiovascular diseases (including atrial fibrillation, myocardial infarction, heart failure and stroke)<sup>21</sup>. Members of the public should also reduce chair-time and replace sitting time with physical activity of any intensity including light-intensity physical activity (such as stretching and light walking) .

**Do not smoke** — Smoking cigarettes can permanently damage the heart and blood vessels, leading to cardiovascular diseases. Smoking cessation, but not reduction, reduces cardiovascular risk<sup>22</sup>. Smokers can visit <https://www.livetobaccofree.hk> or call Quitline 1833 183 for free quit tools and services.

**Refrain from alcohol drinking** — Alcohol is not good for the heart<sup>23</sup>. Noting that alcohol is a causal factor in more than 200 diseases including cardiovascular diseases and injury conditions<sup>24</sup>, individuals without a habit of drinking alcohol should not start drinking while current drinkers should appraise their drinking habits, realise the harms associated with drinking and appreciate the benefits of stopping alcohol consumption.

### References

1. Cardiovascular diseases (CVDs) (11 June 2021). Geneva: World Health Organization. Accessed 12 June 2023: [https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)).
2. World Heart Report 2023: Confronting the World's Number One Killer. Geneva: World Heart Federation, 2023.
3. Mortality Statistics 2001-2021. Hong Kong SAR: Department of Health and Census and Statistics Department.
4. Mortality Statistics 2022 (provisional). Hong Kong SAR: Department of Health and Census and Statistics Department.
5. Yusuf HR, Giles WH, Croft JB, et al. Impact of multiple risk factor profiles on determining cardiovascular disease risk. *Preventive Medicine* 1998;27(1):1-9.
6. Yusuf S, Hawken S, Ounpuu S, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet* 2004;364(9438):937-952.
7. O'Donnell MJ, Chin SL, Rangarajan S, et al. Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study. *Lancet* 2016;388(10046):761-775.
8. Livingstone KM, Abbott G, Ward J, et al. Unhealthy lifestyle, genetics and risk of cardiovascular disease and mortality in 76,958 individuals from the UK Biobank Cohort Study. *Nutrients* 2021;13(12).
9. Wu S, Xu W, Guan C, et al. Global burden of cardiovascular disease attributable to metabolic risk factors, 1990-2019: an analysis of observational data from a 2019 Global Burden of Disease study. *British Medical Journal Open* 2023;13(5):e069397.
10. Hong Kong Reference Framework for Hypertension Care for Adults in Primary Care Settings (Revised Edition 2021). Hong Kong SAR: Primary Healthcare Office, Health Bureau.
11. Hong Kong Reference Framework for Preventive Care for Older Adults in Primary Care Settings (Revised Edition 2021). Hong Kong SAR: Primary Healthcare Office, Health Bureau.
12. Hong Kong Reference Framework for Diabetics Care for Adults in Primary Care Settings (Revised Edition 2021). Hong Kong SAR: Primary Healthcare Office, Health Bureau.
13. Population Health Survey 2020-22. Hong Kong SAR: Department of Health.
14. Screening for Heart Disease (15 November 2022). Singapore: Health Promotion Board. Accessed 12 June 2023: [https://www.healthhub.sg/live-healthy/16/screening\\_heart\\_disease](https://www.healthhub.sg/live-healthy/16/screening_heart_disease).
15. Matheny M, McPheeters ML, Glasser A, et al. U.S. Preventive Services Task Force Evidence Syntheses, formerly Systematic Evidence Reviews. Systematic Review of Cardiovascular Disease Risk Assessment Tools. Rockville (MD): Agency for Healthcare Research and Quality (U.S.), May 2011.
16. D'Agostino RB, Sr., Vasan RS, Pencina MJ, et al. General cardiovascular risk profile for use in primary care: the Framingham Heart Study. *Circulation* 2008;117(6):743-753.
17. Barbaresko J, Rienks J, Nöthlings U. Lifestyle indices and cardiovascular disease risk: A Meta-analysis. *American Journal of Preventive Medicine* 2018;55(4):555-564.
18. Zyriax BC, Windler E. Lifestyle changes to prevent cardio- and cerebrovascular disease at midlife: A systematic review. *Maturitas* 2023;167:60-65.
19. Healthy Eating Food Pyramid in Hong Kong. Hong Kong SAR: Department of Health.
20. WHO Guidelines on Physical Activity and Sedentary Behaviour. Geneva: World Health Organization, 2020.
21. Khurshid S, Al-Alusi MA, Churchill TW, et al. Accelerometer-derived "Weekend Warrior" physical activity and incident cardiovascular disease. *Journal of American Medical Association* 2023;330(3):247-252.
22. Jeong SM, Jeon KH, Shin DW, et al. Smoking cessation, but not reduction, reduces cardiovascular disease incidence. *European Heart Journal* 2021;42(40):4141-4153.
23. Arora M, ElSayed A, Beger B, et al. The impact of alcohol consumption on cardiovascular health: myths and measures. *Global Heart* 2022;17(1):45.
24. Alcohol (9 May 2022). Geneva: World Health Organization. Accessed 4 August 2023: <https://www.who.int/news-room/fact-sheets/detail/alcohol>.

# World Heart Day

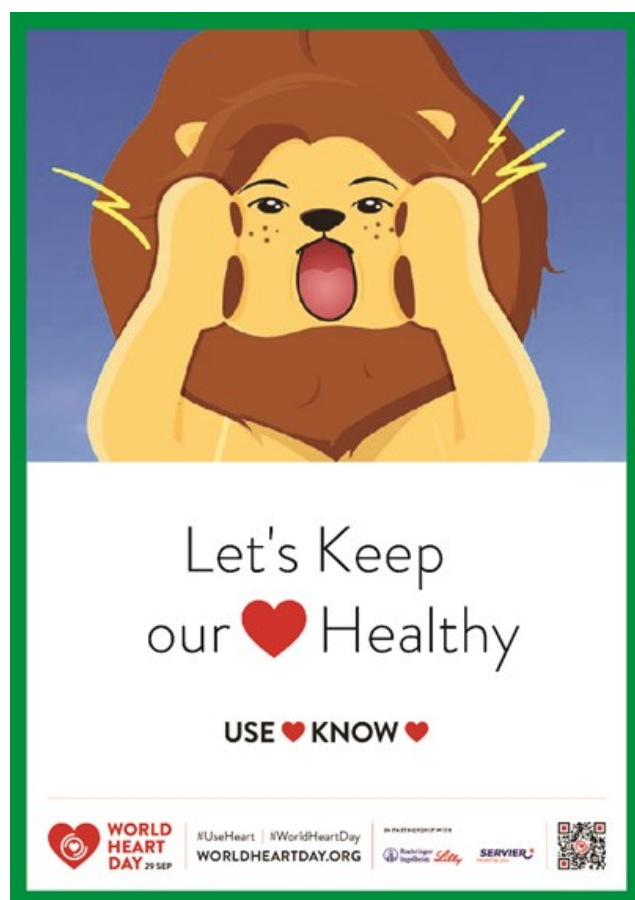
USE ♥ KNOW ♥

29 September

Created by the World Heart Federation, World Heart Day informs people around the globe that cardiovascular diseases, including heart disease and stroke, are the world's leading cause of death. By controlling risk factors and practice heart-healthy behaviours such as eating well, getting more active and saying no to tobacco, 80% of premature cardiovascular disease deaths could be prevented.

This year's campaign focuses on the essential step of knowing our hearts first. Because when we know more, we can take better care.

For more information about the World Heart Day, please visit <https://world-heart-federation.org/world-heart-day/>.



*Non-Communicable Diseases (NCD) WATCH is dedicated to promote public's awareness of and disseminate health information about non-communicable diseases and related issues, and the importance of their prevention and control. It is also an indication of our commitments in responsive risk communication and to address the growing non-communicable disease threats to the health of our community. The Editorial Board welcomes your views and comments. Please send all comments and/or questions to [so\\_dp3@dh.gov.hk](mailto:so_dp3@dh.gov.hk).*

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