Non-Communicable Diseases Watch

Health Tips

For optimal cardio-vascular health, follow the 'Simple 8' measures: do not smoke; eat a heart-healthy diet; get active and avoid prolonged sitting; maintain an optimal body weight and waist-line; monitor blood pressure, blood cholesterol and blood sugar; and manage stress.

Heart Attack at a Glance

A heart attack (or acute myocardial infarction) occurs when the flow of oxygen-carrying blood to a section of heart muscle suddenly becomes blocked. This is a life-threatening condition because if blood flow is not restored promptly, heart muscle cells begin to die due to a lack of oxygen. A heart attack often occurs in people with coronary heart disease, in which one or more coronary arteries supplying the heart muscle narrow gradually over many years due to a build-up of fatty plaque on the inner walls (atherosclerosis). When an area of plaque acutely breaks open inside an artery, this causes a blood clot to form on the plaque's surface. If the clot becomes large enough, it can completely block blood flow and cause a heart attack. Rarely, a heart attack may be caused by spasm in the coronary arteries.

Risk Factors for Heart Attack

Research has identified a number of important non-modifiable and modifiable factors that increase the risk of a heart attack. They are also the risk factors for coronary heart disease (Box 1).

Box 1: Important risk factors for heart attack

Non-modifiable risk factors	*Modifiable risk factors*
∗ Family history of coronary heart disease or heart attack	∗ Cigarette smoking (and exposure to second-hand smoke)
∗ Age	∗ Abnormal blood lipid profiles (high levels of low-density lipoprotein cholesterol or low levels of high-density lipoprotein cholesterol)
∗ Gender (men are at greater risk than women at the same age when younger, but women are equally at risk after menopause)	∗ Hypertension
	∗ Diabetes
	∗ Obesity
	∗ Poor dietary habits
	∗ Lack of physical activity
	∗ Stress

According to the INTERHEART study, an international standardized case-control study involving more than 29 000 people in 52 countries, **cigarette smoking** and **abnormal blood lipids** were the two strongest risk factors associated with heart attack. Together they were responsible for about two-thirds of the global heart attack risk.[1] Compared with never smoking, current smoking was associated with an overall 3 times as much risk of a non-fatal heart attack. The risk increased with the number of cigarettes smoked, from 63% increase in people who smoked 1-9 cigarettes per day, to about 2.6 times as much risk in people who smoked 10-19 cigarettes per day and nearly 4.6 times as much risk in people who smoked 20 or more cigarettes per day.[2] The risk of heart attack also increased progressively with elevations in low-density lipoprotein cholesterol (LDL-C) and decreases in high-density lipoprotein cholesterol (HDL-C). The study observed that the risk of a heart attack in people with top quintiles of apolipoprotein B (ApoB) to apolipoprotein A1 (ApoA1) ratio was 3.25 times that of the lowest quintile (note: ApoB is a primary protein component of LDL-C while ApoA1 is a major protein component of HDL-C).[1] Among Asians, there was a 38% increased risk for heart attack for every one standard deviation elevation in the ApoB/ApoA1 ratio.[3]

Besides, heart attack risk increased with **growing waist-to-hip ratio**, a marker of abdominal obesity. Compared with people in the lowest quintile of waist-to-hip ratio, those in the second, third, fourth and fifth quintiles would have a 15%, 39%, 90% and 150% increase in the risk of heart attack respectively.[4] People with a history of **diabetes** as well as those with **hypertension** were both about twice as likely as their non-diseased counterparts to suffer a heart attack.[1] Regarding **psychosocial stress**, individuals suffering permanent stress and several periods of general stress (work, home, or both) were found to have 117% and 45% increased risk of heart attack respectively. The corresponding risk would also increase 55% for feeling depressed, 48% for experiencing stressful life events in the past year and 33% when facing severe financial stress, when compared with their age- and sex-matched controls.[5] Furthermore, people with a **parental history of heart attack** in either parent would have 81% increased risk of heart attack when compared with those with no parental history. The corresponding risk was almost 6.6 times as likely for persons with both parents having a premature myocardial infarction (i.e. heart attack before age 50).[6]

Of note, **the more risk factors, the higher the heart attack risks**. For example, the risk of heart attack in people with metabolic syndrome (a condition with a cluster of metabolic abnormalities including abdominal obesity, elevated blood sugar, abnormal blood lipid concentrations or elevated blood pressure) was about 2.5 times as likely as those without.[7] The triad of current smoking, hypertension and diabetes would increase the risk of heart attack to 13 times as likely as those without these risk factors. The corresponding risk increased to 42 times as likely if adding raised ApoB/ApoA1 ratio. Further addition of abdominal obesity (i.e. clustering of 5 risk factors) would lead to a heart attack risk 69 times as likely.[1]

On the other hand, the INTERHEART study observed that **a lower risk of heart attack was associated with eating a diet high in fruit and vegetables**, **regular physical activity** and **light alcohol consumption**. Compared with the lowest quartile for fruit and vegetable intake, people in the second, third and fourth quartiles would have a 22%, 34% and 30% reduced heart attack risk respectively.[8] For people who regularly participated in moderate or strenuous exercise for 4 hours or more a week, they would have a 14% reduction in risk for heart attack when compared with their inactive counterparts.[1] Although consumption of small amounts of alcohol three or more times per week was found to be modestly protective for heart attack (9% reduction in heart attack risk)[1], ethanol in alcohol beverages is also classified as "carcinogenic to humans" by the Interna-tional Agency for Research on Cancer (IARC). Alco-hol use has been linked to the occurrence of cancers of the oral cavity, pharynx, larynx, oesophagus, liver, colon and rectum, and female breast.[9] In addition, heavy drinking enhances the risk of stroke, dementia, cirrhosis of liver as well as injury. Thus, reducing heart attack risk should never be a reason to drink, as such potential effect can easily be out-weighed by the harmful consequences of alcohol consumption.

Global and Local Situation

Heart attack is a major killer in most parts of the world. Every year, as many as 7.2 million people die of a heart attack globally.[10] In the United Kingdom, about 124 000 heart attacks occurred annually.[11] Heart attack is a leading cause of morbidity and mortality of both men and women in the United States as well. In 2009, an estimated 785 000 Americans experienced a first heart attack; nearly 470 000 had a recurrent attack.[12] Despite improved treatment of heart attacks, nearly 1 in 4 men and 1 in 3 women still would die within a year of a recognized first heart attack.[10]

In Hong Kong, the true incidence of both fatal and non-fatal heart attack is not known. Mortality statistics from the past 10 years showed an annual average of 1 872 registered deaths attributed to heart attack. In 2010, there were 2 006 registered deaths due to heart attack. As shown in Table 1, the mortality rate (per 100 000 population) increased with age, from 0.2 in people aged 24 and below, to 2.4 in people aged 25-44 and 14.4 in people aged 45-64, then peaked at 179.4 in people aged 65 and above. While 26.6% of the registered deaths due to heart attack in men happened among people aged 64 and below, the corresponding proportion in women was 6.4%.[13]

Table 1: Number (Rate*) of registered deaths due to heart attack by sex and age group, 2010[#]

Age group	Male	Female	Total
24 and below	3 (0.3)	0 (0.0)	3 (0.2)
25-44	44 (4.6)	10 (0.8)	54 (2.4)
45-64	269 (25.6)	42 (3.8)	311 (14.4)
65 and above	871 (206.1)	765 (156.3)	1 636 (179.4)
Total [†]	1 188 (35.9)	818 (21.8)	2 006 (28.4)

Notes: * Rate per 100 000 population in the respective group. [#] The figures are provisional.   [†] Total included cases of unknown age.
Sources: Department of Health and Census and Statistics Department.

Preventing and Surviving a Heart Attack

A heart attack is often thought of as a sudden and unexpected incident that takes a person by complete surprise. In fact, a heart attack can be prevented by reducing or managing known risk factors. Moreover, heart attack often results from coronary heart disease, which builds up over time and can have early warning symptoms. To survive a heart attack, the key is to learn and take heed of early symptoms and act fast to get medical help to reduce damage to the heart muscle.

Prevent and reduce heart attack risks

Most risk factors for heart attack are linked to choices people make in the way they live, and thus can be potentially changed through leading a healthy lifestyle. As the INTERHEART study showed, no smoking, daily consumption of fruit and vegetables and regular physical activity could reduce heart attack risk by more than three-quarters compared with a smoker with a poor lifestyle.[1] However, some people (such as those having high blood pressure, high blood cholesterol or diabetes) may need appropriate medical treatment in addition to lifestyle changes.

For optimal cardiovascular health, follow the 'Simple 8' measures below:

- **Do not smoke** and avoid second-hand smoke.

- **Eat a heart-healthy diet** that is high in fruit and vegetables, with appropriate amounts of whole-grains and fish (for omega-3 fatty acids). Limit salt, sugar, fats and cholesterol intake.

- **Get active and avoid prolonged sitting**. For most adults, this means at least 150 minutes of moderate-intensity physical activity or 75 minutes of vigorous intensity physical activity, or equivalent amounts throughout the week.

- **Maintain an optimal body weight and waist line**. Keep body mass index between 18.5 and 22.9 with a waist circumference not greater than 90 cm for men and 80 cm for women. For people who are obese, even a modest weight loss (such as 10% of current weight) can help boost levels of HDL cholesterol, reduce LDL cholesterol levels and blood pressure.

- **Monitor blood pressure** and keep it down if indicated. Keep the systolic pressure and diastolic pressure below 120/80.

- **Monitor blood cholesterol** and tackle cholesterol if indicated. Aim for a total cholesterol level of less than 5.2 mmol/L (= 200 mg/dL).

- **Monitor blood sugar** and manage diabetes if indicated. Fasting blood glucose should be less than 6.1 mmol/L (= 110 mg/dL).[14]

- **Manage stress** with healthy coping strategies, such as practising yoga, Tai Chi or deep breathing.
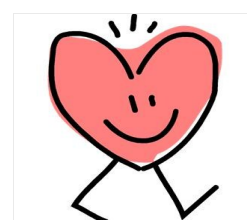
Learn heart attack symptoms

A heart attack is a medical emergency. Unfortunately, nearly two-thirds of the people who have a heart attack die before they can reach medical care.[15] Patient delay – rather than transport or hospital delay – is the biggest cause of not getting rapid care for heart attacks. Such delay is very often due to patients (family, friends or co-workers) not recognising the heart attack symptoms, fear of a 'false alarm' or not realising the importance of receiving medical treatment right away. In fact, time is muscle: the earlier a person takes heed of the heart at-tack symptoms and gets appropriate medical treat-ment, the more heart muscle can be sal-vaged.

Chest pain or discomfort (usually described by the patient as a feeling of pressure on the chest), caused by a lack of oxygen in the heart muscle, is the most notable warning symptom of a heart at-tack. The pain or discomfort may spread to the jaw, neck, shoulders, arms, back and stomach. It usually lasts for more than a few minutes and is not relieved by rest or by taking heart medications that dilate coronary blood vessels (such as nitroglycerin). In addition, symptoms of a heart attack may include difficulty in breathing or shortness of breath, break-ing into a cold sweat, feeling light-headed or nauseated.

Of note, not all heart attacks present with a sudden and crushing pain as often seen on television dramas or in the movies where victims clutch their chests in pain and fall over. In fact, certain early warning symptoms may herald heart attacks days or weeks before, while some people (such as elders and diabet-ics) may have little or no chest pain at all during a heart attack. Although not all chest pain or discomfort turns out to be a symptom of heart problem, do check it out with a doctor when in doubt.

Angina pectoris is a Latin term that means "strangling in the chest". Patients often say that angina is like a squeezing, suffocating, or burning feeling in their chest. It is often triggered by physical exertion but may also be brought on by strong emotions, stress, extreme heat or cold.

Yet, an episode of angina is not a heart attack. Unlike a heart attack, angina usually lasts for less than a few minutes and goes away with rest or is relieved by nitroglycerin. The heart muscle is not permanently damaged.

Anyhow, angina may signify underlying coronary heart disease and warrants further diagnostic investigations. In fact, all chest pain should be checked by a doctor.

Act fast to reduce damage to the heart

If you think you may be having a heart attack, immediately stop what you are doing, sit or lie down and take some rest. If you are with someone, tell him or her immediately what you are feeling. If you have medications for chest pain, such as nitroglycerin, use it immediately as previously instructed.

If you think someone else may be having a heart attack, be calm and take actions that make the victim feel less excited. Have the victim sit or lie down. Ask the person if he or she takes any medications for chest pain. If so, get it and follow the written instructions for its use.

In any case, do not drive. Act fast and call emergency medical help or 999 for an ambulance right away so that paramedical staff can begin life-saving treatment on the way to the emergency room. State your location clearly. Leave your telephone number or remain on the telephone line before medical help arrives.

Remember, many heart attack deaths are avoidable. Acting in time to heart attack symptoms can salvage heart muscle, whereas delay often costs lives.

References

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One World, One Home, One Heart.

WORLD HEART DAY

29 September 2011

World Heart Day is an annual event initiated by the World Heart Federation
to inform people around the globe that heart disease and stroke are the world's leading causes of death.
It was first celebrated on 24 September 2000.

This year, the World Heart Day 2011 will take place on Thursday, 29 September 2011
around the theme "One World, One Home, One Heart".

One World

One Home

One Heart

Global leaders have recognized the urgency to prioritize the prevention and control of cardiovascular disease (CVD) together with the other non-communicable diseases (NCDs) by holding the first ever United Nations High-Level Meeting on NCDs in September.

After two years of focusing on heart health in the workplace, this year we call on individuals to reduce their own and their family's risk of heart disease and stroke. We ask people to take charge of their home's heart health by taking steps such as choosing healthy food options, increasing physical activity, and saying no to tobacco.

As always, emphasis will be on improving heart health across all nations.

To know more about the World Heart Day 2011 and past events,
please visit its thematic website at http://www.world-heart-federation.org/ .

News Bites

A local prospective cohort study demonstrated efficacy of dual pneumococcal and influenza vaccination in the prevention of acute myocardial infarction and other cardiovascular diseases among elderly persons with chronic diseases.

The study involved over 36 600 elders aged 65 and above with chronic illnesses who attended the outpatient clinics in the Hong Kong West Cluster between 3 December 2007 and 30 June 2008. During this period, participants were invited to receive a 23-valent pneumococcal polysaccharide vaccine (PPV) and a trivalent influenza vaccine (TIV). All were observed until 31 March 2009. Results showed that PPT-TIV vaccinated group had a 48% reduction in acute myocardial infarction, 35% reduction in ischaemic heart disease, 33% reduction in ischaemic stroke and 19% reduction in heart failure, compared with unvaccinated subjects. Apart from cardiovascular protection, dual vaccination also offered significant protection against lower respiratory tract infection in elderly persons.

[Source: Prevention of acute myocardial infarction and stroke among elderly persons by dual pneumococcal and influenza vaccination: a prospective cohort study. CID 2010; 51: 1007-16.]

The Scientific Committee on Vaccine Preventable Diseases of the Centre for Health Protection (CHP) recommends that elderly persons aged 65 and above should receive seasonal influenza vaccination every year to prevent influenza and its complications. For optimal health, they are also recommended to receive a pneumococcal vaccine. For more information on free vaccinations or vaccination subsidy schemes for elders aged 65 and above, please visit the CHP website at http://www.chp.gov.hk or call the Vaccination Office enquiry telephone line on 2125 2125.

Elders aged 70 or above may also wish to use health care vouchers to partially cover the cost of vaccination at private healthcare service providers participating in the Health Care Voucher Scheme (HCVS) in their local communities. Further information on the HCVS is available at the thematic website www.hcv.gov.hk, or call the Department of Health at 2838 2311.

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.