Knowledge is power:
The role of health checks in reducing heart disease

Regular health checks are important in establishing a baseline for an individual's general health and identifying potential risk factors for life-threatening diseases, such as those related to the heart, as early as possible.[1] Hong Kong Living turned to cardiologist, Dr Adrian Cheong, for advice on regular health checks and why they could save your life.

What are health checks?

A typical health check can range from a basic screening, including history taking, physical examination and recording of height and weight, to more in-depth screening of heart health involving tests such as an electrocardiogram (ECG), stress test and cardiovascular-focused blood tests to check parameters like cholesterol level.

Why should we have health checks?

Whatever level of health check that an individual does, the key advantage is having a health baseline that can be compared with previous and future records to track any health deteriorations.

How often should we have health checks?

With an average age of 85 years, Hong Kong has the highest life expectancy in the world. However, human bodies were not designed for such a long lifespan and begin to deteriorate from the late 30s to early 40s. The optimal frequency for health checks is determined at the individual level and could be indicated earlier if, for example, there is a family history of high cholesterol or premature heart disease; but after 40 years of age, an annual health check is ideal.

An annual health check from age 40 years presents an opportunity for personalisation since there is now a continuous record of the patient's general health. Personalised medicine allows for the check-up frequency and the check-up items to be tailored to the patient's individual needs, taking into account, for example, family history or other risk factors.

What are doctors looking for in a health check?

Doctors are mainly looking for risk factors. Risk factors are certain parameters that typically accelerate heart artery disease or deterioration of the heart. Classic risk factors for heart disease are smoking, family history or genetics, high blood pressure, diabetes and high cholesterol. Although genetics cannot be changed or treated, it can help forewarn of likely health problems and may prompt a focus on the risk factors that you can modify. For example, you can stop smoking and you can be treated for high blood pressure, diabetes or high cholesterol. If these basic parameters can be identified, they can be treated to reduce the chance of developing heart disease in the next 10–30 years.

What exactly happens during a heart attack?

The term 'heart attack' is a generic one to describe a variety of heart-related conditions. A heart attack can be a sudden, abnormal rhythm that prevents the heart from pumping efficiently and, as a result, the brain and other organs do not receive enough blood supply. A heart attack, called a myocardial infarction, can also result from a blockage of an artery that supplies the heart.

What are the typical symptoms of a heart attack?

The classic symptoms of heart attack are chest pain, usually at the centre or left-hand side of the chest, and sometimes up to the jaw and teeth and down the left arm. In addition, the patient might feel very unwell, they might be sweating, their blood pressure might be low, and they might look a bit pasty. But some people experience less common types of symptoms, like shortness of breath, upper back pain, fatigue, or indigestion-type symptoms.

What are the warning signs?

The warning signs of an artery being severely blocked are, for example, pain in the centre or left side of the chest and extending down the arm and into the neck during exertion, eg, climbing a hill, lifting boxes or walking up the stairs, which improves with rest. Sometimes, the patient notices reduced exercise tolerance; they can no longer walk all the way up the hill without stopping. Dizziness during exertion can be a sign that the heart cannot increase its pumping efficiency when needed. Patients often attribute these changes to ageing, but there can be a more sinister reason.

How does high cholesterol affect a person's risk for heart disease?

Low-density lipoprotein cholesterol (LDL-C) or 'bad' cholesterol is the major factor that accelerates the formation of plaque in the heart arteries.[2] It is very simple: the higher the LDL-C, the more likely you are to have heart artery disease because it is the LDL-C that accumulates in the plaque itself.[2]

What is the common treatment route for someone with elevated LDL-C levels?

Patients with high LDL-C would be encouraged to make lifestyle modifications, including change of diet and increased exercise, particularly if they have a poor diet and a sedentary lifestyle.[2] Sometimes lifestyle modification is not enough to lower cholesterol and patients will need the assistance of medication.[2] However, people with genetic risk factors, for example, an inherited form of high cholesterol, will need treatment right away.[2]

If the treatment for high LDL-C is successful, is the risk for heart attack eliminated?

The risk is reduced, not eliminated. Research over the last 30–40 years has shown that the lower your cholesterol goes, the lower your risk for a cardiovascular event or stroke.[2]

If a patient has high cholesterol and is experiencing chest pain, what is the typical treatment plan?

In this situation, the patient should have additional evaluations. Chest pain has many causes. Whenever the heart is involved, with the potential for a fatal outcome, it is a cause for concern. But given the many structures in the chest, a doctor needs to carefully evaluate and identify the cause of the pain in order to treat it appropriately.

How would a doctor determine whether a coronary intervention is warranted?

A doctor might order further evaluation before a percutaneous coronary intervention (PCI) in two situations. The first would be in the chronic situation where the heart artery is gradually narrowing, indicated by the patient having significant, limiting symptoms. On the other hand, a patient might have very severe heart artery disease, but the symptoms are very difficult to define. In these cases, additional evaluation would be done using ultrasound or optical coherence tomography (OCT) via a catheter in the heart arteries to visualise and confirm any narrowing of the arteries. A stress test might also be ordered to evaluate the functional effect of that narrowing on the heart. Following these investigations, a decision would be made on whether a coronary intervention is needed to reopen the narrowed or blocked heart arteries.

Case sharing

Year 1

- 37-year-old man
- Health check mandated by employer
- Found high LDL-C
- Prescribed lifestyle modification
- Exercised for 6 months following health check, but did not continue

Years 2–3

- Health check mandated by employer
- Found high LDL-C
- Prescribed lifestyle modification
- Exercised initially, but did not continue

Year 4

- Health check mandated by employer
- Found high LDL-C
- Doctor suggested medication to control LDL-C
- Patient unwilling to start medication for fear of lifetime dependence

Outcome

The patient did not start medication but decided to return to exercising. On one occasion, while running, he suddenly had a very severe chest pain, described as feeling like someone was sitting on his chest. The patient stopped to rest, and, after approximately 10 minutes, the pain subsided and he felt better. Unwilling to accept that it could be heart-related, he attributed the incident to indigestion and took medication to address that but kept experiencing the same issues. Eventually, the patient was found to have severe blockages in all three major blood vessels of the heart. The blockages were treated by angioplasty to reopen the arteries and the patient is much better today.

Key takeaways

- High LDL-C level discovered across a series of health checks shows that this patient probably started accumulating these artery blockages well before his first symptoms.
- The outcome may have been prevented if he was willing to follow medical advice by taking medication earlier.
- Sometimes lifestyle modification alone is not adequate and medication must be used as well to reduce the risk level.
- In this case, the patient must now take numerous medication to help prevent further cardiac incidents.
- It is far better to start treatment earlier.

Health checks and the value of continuous care

Health checks are designed to look for signs of disease or factors that might increase the risk for disease. It is important to have your health checks at the same clinic or with the same doctor each year so that you have a continuous record and the results of each check-up can be compared with previous years' results. It is also key in establishing a personalised baseline so that your doctor is aware of what may be normal or abnormal for you and can make the right care decisions for you.

References: **1**. Cheong AT, et al. *PLoS ONE* 2018;13(8):e0201931. **2**. Michos ED, et al. *N Engl J Med* 2019;381:1557–67.

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