

Unit 5 Cardiovascular system

Task 1 Speaking

What do you do for the health of your heart?

Task 2 Quiz

What do you think the following numbers refer to? Discuss in pairs.

1. 300 grams
2. 5 liters
3. 60 seconds
4. 78%
5. 1967

Task 3 Cardiovascular system

Complete the gaps with suitable words.

The _____ (1) important muscle in the body is the heart. Without the heart and its cardiovascular (circulatory) system, human life _____ (2) not be possible. The heart is roughly the _____ (3) of a fist. It contracts at an average rate of 72 times per minute or nearly 38,000,000 times _____ (4) year. These rhythmic contractions are called the pulse _____ (5) and can _____ (6) felt in the radial artery of the wrist.

The human heart consists of four chambers, two _____ (7) (or auricles) and two ventricles. Each is made up of several _____ (8) of cardiac muscle arranged in circles and spirals. During the contraction phase, called the systole, oxygenated blood is pumped out of the left part of the heart into the _____ (9) and from there through the arteries to all organs of the body. Carbon _____ (10), a waste product of this process, is collected in the blood.

The rest of the system consists of _____ (11) (small arteries), venules (small _____ (12)), and capillaries, the smallest of blood _____ (13). In total, there are more than 70,000 miles of them in the human body.

The blood is made up of two parts - plasma and blood _____ (14). The plasma is a clear, yellowish liquid _____ (15) transports the 25 trillion erythrocytes and the many fewer white cells. The white cells are important in fighting _____ (16). Platelets/thrombocytes in the blood permit clotting to take place at the site of a wound, thus preventing excessive _____ (17).

Task 4 Listening

Listen and answer the following questions:

Where did he have the pain?

What symptoms did he have?

When did they call the ambulance?

Has he had any major surgery?

What are the pros and cons of the treatment the doctor suggests?

Now complete the gaps according to what you have heard in the listening.

D: He's actually OK. He is a bit more stable.

W: That's a _____.

W: We _____ (sit) at home and he _____ (start) getting this pain in the centre of his chest. He _____ (have) it several times before and he _____ (use) the spray thing he has got.

W: And so he _____ (give) himself a few puffs but the pain wouldn't go and I _____ (can) see that he _____ (get) breathless and agitated...

D: What we're going to do, with your _____, is to give your husband something to help get rid of any _____ ...

D: By the looks of it, it's all gone very well and he'll be _____ in no time. ...

Task 5 Make questions using the unfinished prompts. Write the questions down.

Present Illness

1) What/can for you?

2) What/seem/the problem?

3) How/it/start?

4) How long/troubling you?

5) Where/hurt?

6) What/the pain/like?

7) How long/feeling/like this?

8) What/cause/the pain?

9) anything/the pain/make worse?

10) anything/the pain/make better?

11) You/experience/it/before?

Family History

12) Your parents/alive?

13) it/run/your family/in?

Task 6 ECG

Patient care

Giving an ECG

Here are some things a nurse might say to a patient when doing an ECG. Match the beginnings and endings of the sentences, and put them in a logical order.

- | | |
|--|---|
| 1 We're nearly | a lying comfortably? ___ |
| 2 I'm just going to clean your chest so that | b try not to move. ___ |
| 3 The machine's just | c the electrodes make good contact. ___ |
| 4 We're going to do an ECG so that we can | d done recording now. ___ |
| 5 Are you | e look for any abnormal heart rhythms. <u>1</u> |
| 6 It's all done, so I'll | f take the electrodes off now. ___ |
| 7 Now just relax and | g printing out the recording. ___ |

Task 7 An explanation of angina

Complete the gaps with suitable modal verbs (can, may, must, have to, should, be able to...)

Having examined you, I'm confident that you're suffering from angina. The heart is a pump. The more you do physically, the harder it _____ work. But as we get older, the blood vessels which supply oxygen to the heart begin to harden and get furred up, so they become narrower. They _____ supply all the oxygen the heart needs. The result is the pain you feel as angina.

Because you are experiencing pain at rest as well as on exertion, I'm going to have you admitted to the coronary care unit right away so that your treatment _____ start at once. You'll be given drugs to ease the pain and I expect you'll have an angiogram. They _____ advise surgery or angioplasty – that's a way of opening up the blood vessels to the heart so they _____ provide more oxygen.

You _____ try to give up smoking. You _____ smoke at all in hospital so it's a good time to stop.

I expect the treatment will improve your pain at least and _____ get rid of it completely. We _____ never be absolutely certain about the future but you _____ remain optimistic.

Do you have any questions?

(Adapted from Glendinning, Howard – Professional English in Use – Medicine, Cambridge University Press, 2007).

Task 8 Reading

Diseases: what can go wrong with the cardiovascular system?

The following are just a few of the many diseases and disorders that can **impair** the cardiovascular system or its parts.

Atherosclerosis is a general term for **hardening** of the arteries. Atherosclerosis is a condition in which **fatty material** and other substances accumulate on and in the walls of large arteries, impairing the flow of blood. Cholesterol, a fatlike substance produced by the liver, is an essential part of cell membranes and body chemicals. Normally, the body produces all the cholesterol it needs. Eating foods high in saturated fats (found mostly in animal products such as **egg yolks**, fatty meats, and whole milk dairy products) can cause an increase in blood cholesterol levels. The **excess** cholesterol not taken up by the cells accumulates on the walls of arteries. There it combines with fatty materials, cellular waste products, calcium, and fibrin to form a waxy build-up known as **plaque**, which can either partially or totally **obstruct** blood flow.

Coronary artery disease (also called Ischaemic heart disease) arises when atherosclerosis occurs in the coronary (heart) arteries. When the blood flow in these arteries is restricted, the heart muscles do not receive the proper amount of blood and oxygen. Symptoms of stable ischaemic heart disease include **angina** (characteristic chest pain **on exertion** and decreased exercise tolerance). Unstable IHD presents itself as chest pain or other symptoms **at rest**. Its risk increases with age, smoking, hypercholesterolemia (high cholesterol levels), diabetes, hypertension (high blood pressure) and **is more common in men** and those who have close relatives with ischaemic heart disease. Depending on the symptoms and risk, treatment may be with medication or coronary artery **bypass surgery**.

If the blood flow is blocked, cardiac muscle cells begin to die and a **heart attack** may result. If blood flow is blocked in any cerebral (brain) arteries, brain cells quickly begin to die and a **stroke** may result. Depending on what area of the brain has been affected, a stroke may cause memory loss, speech **impairment**, paralysis, coma, or death.

Heart attack or myocardial infarction (MI) or acute myocardial infarction (AMI) is the interruption of **blood supply** to part of the heart, causing some heart cells to die. This is most commonly due to **occlusion** (blockage) of a coronary artery following the **rupture** of atherosclerotic plaque in the wall of an artery. The resulting **ischemia** (restriction in blood supply) and oxygen **shortage**, if left untreated for a sufficient period of time, can cause damage or death (infarction) of heart muscle tissue (myocardium). Classical symptoms of acute myocardial infarction include sudden chest pain (typically radiating to the left arm or left side of the neck), **shortness of breath**, **nausea**, vomiting, palpitations, **sweating**, and **anxiety**. Approximately one quarter of all myocardial infarctions are silent, without chest pain or other symptoms. A heart attack is a medical emergency.

Heart failure is a condition that can **result from** any structural or functional cardiac disorder that impairs the ability of the heart to fill with or pump a **sufficient** amount of blood throughout the body therefore leading to the heart and body's **failure**.

Hypertension is high blood pressure. It is normal for blood pressure to be **elevated** for brief periods because of exercise, emotional stress, or a fever. Consistent arterial blood pressure measuring 140/90 or higher, however, is hypertension. The condition, the most common one affecting the cardiovascular system, is a serious one. Although it shows no symptoms, hypertension should be treated. If left unchecked, it can lead to atherosclerosis, heart attack, stroke, or kidney damage. Hypertension most

often **strikes** African Americans, middle-aged and elderly people, obese people, heavy alcohol drinkers, and people suffering from diabetes or kidney disease.

Inflammatory heart disease involves inflammation of the heart muscle and/or the tissue surrounding it.

- **Endocarditis** – inflammation of the inner **layer** of the heart, the endocardium. The most common structures involved are the heart **valves**.
- **Inflammatory cardiomegaly**, pathological **enlargement** of the heart due to different reasons
- **Myocarditis** – inflammation of the myocardium, the muscular part of the heart.

Obstructions:

- **Thrombosis** is the formation of a **blood clot** (thrombus) inside a blood vessel, obstructing the flow of blood through the circulatory system. When a thrombus occupies more than 75% of surface area of the lumen of an artery, blood flow to the tissue supplied is reduced enough to cause symptoms. More than 90% of obstruction can result in a complete lack of oxygen, and infarction, a type of cell death.
- **Embolism** occurs when an object (embolus) migrates from one part of the body (through circulation) and causes a blockage (occlusion) of a blood vessel in another part of the body. This is in contrast with a thrombus, which forms at the blockage point within a blood vessel and is not carried from somewhere else.

Valvular heart disease is disease process that affects one or more valves of the heart. The valves in the right side of the heart are the tricuspid valve and the pulmonic valve. The valves in the left side of the heart are the mitral valve and the aortic valve.

Aortic valve stenosis (AS) is a valvular heart disease caused by the incomplete opening of the aortic valve. The aortic valve controls the direction of blood flow from the left ventricle to the aorta. When in good working order, the aortic valve does not **impede** the flow of blood between these two spaces. Under some circumstances, the aortic valve becomes narrower than normal, impeding the flow of blood.

Varicose veins usually occur in the legs, but also can form in other parts of the body. If the valves in the veins become weak, blood can back up and pool in the veins, which causes them to swell. Pregnant and older obese women are most **at risk**. Exercising, losing weight, elevating the legs when resting, and not crossing them when sitting can help keep varicose veins from getting worse. Wearing loose clothing and avoiding long periods of standing can also help.