**Q1.**

Coronary heart disease (CHD) is a non-communicable disease.

CHD is caused when fatty material builds up in the coronary arteries.

(a)  Explain what a non-communicable disease is.

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**(2)**

The diagram below shows a coronary artery of someone with CHD.



(b)  Explain how CHD can cause a heart attack.

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**(3)**

(c)  Explain how lifestyle and medical risk factors increase the chance of developing CHD.

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**(6)**

**(Total 11 marks)**

Mark schemes

**Q1.**

(a)  is not caused by a pathogen / infective organism

*allow not caused by a microorganism / microbe*

*ignore not caused by infection*

*ignore named pathogen unless bacteria, virus and fungus all mentioned*

**1**

(so) is not passed / spread (from person to person)

*allow cannot be spread / caught*

*allow is not infectious / contagious*

**1**

(b)  reduced / restricted / stopped blood flow

*it does not matter where blood flow is restricted to − heart / body*

**1**

(so) less oxygen reaches heart (muscle / cells)

*must reference heart / it*

*allow no oxygen reaches the heart (muscle / cells)*

**1**

(so heart muscle / cells) cannot respire (enough)

**or**

(so heart muscle / cells) do not release (enough) energy

*do* ***not*** *accept do not make / produce / create energy*

*ignore references to breathing / suffocation*

*ignore blood clots / blockages*

**1**

*allow ‘it’ for heart*

(c)  **Level 3:** Relevant points (factors / effects) are identified, given in detail and logically linked to form a clear account.

**5−6**

**Level 2:** Relevant points (factors / effects) are identified and there are attempts at logical linking. The resulting account is not fully clear.

**3−4**

**Level 1:** Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.

**1−2**

**No relevant content**

**0**

**Indicative content**

**medical risk factors:**

•   high blood pressure

•   high cholesterol

•   diabetes

•   genetic factors

•   medications

**lifestyle risk factors:**

•   smoking

•   obesity

•   lack of exercise

•   high fat / energy diet

•   eating insufficient fruit / vegetables

•   alcohol

•   high salt intake

•   exposure to air pollution

•   certain drugs / correct named drug

**examples of links:**

•   smoking − high bp / cholesterol / fatty deposition

•   obesity − lack of exercise / high bp / cholesterol / fatty deposition / diabetes

•   exercise − obesity / bp /diabetes

•   diet − obesity / cholesterol / diabetes

•   alcohol − bp / cholesterol

•   high salt intake − high blood pressure

•   genetic factors − bp / cholesterol / diabetes / obesity

•   medication − can affect blood / blood vessels / metabolism

the main discriminator is the quality of linking

both lifestyle and medical factors are required for **level 3**

**[11]**

Examiner reports

**Q1.**

**Foundation**

(a)  Few students scored the first marking point for saying that a non-communicable disease is not caused by a pathogen. Some students gave examples of non-communicable diseases, such as CHD, diabetes and cancer. Others gave a cause, such as genetics, lifestyle or diet. These were ignored.

61% of students achieved one mark, usually for saying a non-communicable disease cannot be caught or is not passed from person to person. 1% of students achieved full marks.

(b)  56% students gained the first marking point for stating that blood flow is reduced in people with CHD. 7% of students scored more than one mark.

For the second marking point it had to be clear that reduced blood flow would result in less oxygen reaching the cells of the heart, as the question asked how CHD can cause a heart attack. Many students talked about less oxygen reaching other parts of the body.

The last marking point needed a link to less respiration or insufficient energy release. Students often incorrectly referred to less energy being made, created or produced.

(c)  This was a ‘level marked’, ‘extended response’ question. The command word was ‘Explain’, so the main discriminator between the three different levels was the quality of linking ideas. Students were asked to explain how lifestyle and medical risk factors increase the chance of developing CHD. Therefore examples of both types of factor had to be included, with several examples of logical linking of ideas, in order to enter level 3. 46% of students achieved three or more marks.

Many students phrased their response in terms of how to reduce the chance of developing CHD, which could achieve full credit, if explanations were included. References to doing exercise and not eating too many fatty foods were often seen, but if these were not linked to explanations the answer was limited to level 1. References to bad or unhealthy diets were too vague without going on to mention high levels of fat, sugar or salt.

An answer such as a fatty diet and not enough exercise can lead to obesity, which increases the chance of CHD, achieved three marks as there is an attempt to link ideas. To be awarded four marks better links had to be made, or more factors referred to. Smoking and alcohol consumption were sometimes mentioned. With reference to smoking, a number of students were under the impression that smoking leads to the build-up of tar in the coronary arteries.

Many responses were limited to level 2 because there was no reference to any medical risk factors. Where medical factors were included it was often in relation to diabetes or genetic factors. A family history of heart problems was sufficient for this idea. High blood cholesterol was sometimes given as a medical risk factor.

**Higher**

(a)  Few students scored the first marking point for saying that a non-communicable disease is not caused by a pathogen. Some students gave examples of non-communicable diseases, such as CHD, diabetes and cancer. Others gave a cause, such as genetics, lifestyle or diet. These were ignored.

89% of students achieved one mark, usually for saying a non-communicable disease cannot be caught or is not infectious. 5% of students achieved full marks.

(b)  The majority of students gained the first marking point for stating that blood flow is reduced in people with CHD.

For the second marking point it had to be clear that this would result in less oxygen reaching the cells of the heart, as the question asked how CHD can cause a heart attack. Many students wrote about less oxygen reaching other parts of the body.

The last marking point needed a link to less respiration or insufficient energy release. Students often incorrectly referred to less energy being made, created or produced.

There were very few three-mark answers seen (2%). Of these, some gave a complete story linking reduced respiration to there being insufficient energy released for the heart muscle to contract.

(c)  This was a ‘level marked’, ‘extended response question’. The command word was ‘Explain’, so the main discriminator between the three different levels was the quality of linking ideas. Students were asked to explain how lifestyle and medical risk factors increase the chance of developing CHD. Therefore examples of both types of factor had to be included, with several examples of logical linking of ideas, in order to enter level 3. 77% of students achieved a minimum of three marks. 41% of students gave a level 3 response.

Many students phrased their response in terms of how to reduce the chance of developing CHD, which could achieve full credit if explanations were included. References to doing exercise and not eating too many fatty foods were often seen, but if these were not linked to explanations the answer was limited to level 1. References to bad or unhealthy diets were too vague without going on to mention high levels of fat, sugar or salt.

An answer such as a fatty diet and not enough exercise can lead to obesity, which increases the chance of CHD, gained 3 marks as there is an attempt to link ideas. To be awarded 4 marks better links had to be made, or more factors referred to. Smoking and alcohol consumption were sometimes mentioned. With reference to smoking, a number of students were under the impression that smoking leads to the build-up of tar in the coronary arteries.

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