

# Edexcel IAL Biology A-level

## 1.10 - 1.20 - Health

### Flashcards

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# What is atherosclerosis?



## What is atherosclerosis?

A disease which is characterised by a buildup of plaque within arteries which narrows them and can lead to heart attacks and strokes



# What causes atherosclerosis?



## What causes atherosclerosis?

Endothelia become damaged which leads to an inflammatory response and possible blood clotting. Substances in the blood build up and harden into a plaque that narrows the artery and raises blood pressure



# Why does blood need to clot?



## Why does blood need to clot?

- Prevents blood loss
- Prevents entry of harmful bacteria
- Provides a framework for repair



# Explain the process of blood clotting





Explain the process of blood clotting.

1. Platelets release thromboplastin in response to damage
2. Causes prothrombin to change to its active form, thrombin
3. Turns soluble fibrinogen into insoluble fibrin, forming a mesh that traps blood cells



# What is cardiovascular disease?



# What is cardiovascular disease?

A group of non-communicable diseases which affect the heart and circulatory system



# How do blood clots increase the risk of cardiovascular disease?



## How do blood clots increase the risk of cardiovascular disease?

Blood clots can detach from the endothelium and enter the circulation. They can become lodged in blood vessels in organs such as the heart or lungs and create a blockage. This blockage restricts blood flow to organs and can cause tissue death which can result in a heart attack.



# How can CVD lead to a heart attack?



## How can CVD lead to a heart attack?

- Obstruction of a coronary artery (supplies heart muscle) due to an atheroma or blood clot
- Results in loss of blood supply to an area of heart muscle
- This causes death of the cells and leads to a heart attack



Give factors that increase the risk of  
cardiovascular disease





Give factors that increase the risk of cardiovascular disease

Genetics (predispositions), age (older people more at risk), gender (men more at risk), diet, high blood pressure, high cholesterol levels, smoking, physical inactivity and obesity



How do dietary antioxidants affect a person's risk of developing cardiovascular disease?



# How do dietary antioxidants affect a person's risk of developing cardiovascular disease?

Antioxidants in the diet are able to stabilise harmful **free radicals** (molecules with unpaired electrons). They prevent the free radicals from damaging molecules like proteins and DNA which can lead to diseases like CVD and cancer. A greater amount of dietary antioxidants decreases the risk of these diseases



What is the difference between correlation and causation?



# What is the difference between correlation and causation?

Correlation indicates that there is a relationship between the pattern of two variables

Causation indicates that the pattern of one variable is a direct consequence of another variable



# What is validity a measurement of?



What is validity a measurement of?

How well the data measures what it is supposed to measure



# What is reliability a measurement of?





# What is reliability a measurement of?

The ability to consistently produce a given result



	Reliable <input checked="" type="checkbox"/>
	Valid <input checked="" type="checkbox"/>
	Reliable <input checked="" type="checkbox"/>
	Valid <input type="checkbox"/>

Reliable data doesn't have to be valid/accurate



In studies to determine health risk factors, why is a large sample size important?



In studies to determine health risk factors, why is a large sample size important?

Having a large sample size ensures that measurements taken are more representative of the real world and the population which the sample is taken from. This increases the reliability of the measurements



How does public perception of risk differ from actual risk?



How does public perception of risk differ from actual risk?

- People overestimate risk if something is not under their control, is unfamiliar, or has particularly severe consequences
- People underestimate risk if something only has an effect in the long-term



What is meant by a low density lipoprotein (LDL)?



## What is meant by a low density lipoprotein (LDL)?

- Combination of triglycerides from saturated fats and protein
- Blocks receptor sites, reducing cholesterol absorption
- Known as 'bad' lipoproteins



# How do LDLs contribute to the risk of cardiovascular disease?





How do LDLs contribute to the risk of cardiovascular disease?

The high blood cholesterol level caused by LDLs leads to formation of atherosclerosis plaques



What is meant by a high density lipoprotein (HDL)?



## What is meant by a high density lipoprotein (HDL)?

- Smaller types of lipoprotein that contain a significantly larger ratio of protein to lipid
- High density lipoproteins are used in the excretion of excess cholesterol as a part of bile acids
- HDL cholesterol is known as ‘good cholesterol’



# What is the Body Mass Index (BMI)?



# What is the Body Mass Index (BMI)?

A value based on height and mass used to categorise an individual as underweight, normal weight, overweight or obese



# How is BMI calculated?



How is BMI calculated?

$$\text{BMI} = \frac{\text{mass (kg)}}{(\text{height (m)})^2}$$



Why isn't BMI always an accurate  
measure of obesity?





Why isn't BMI always an accurate measure of obesity?

Fat and muscle tissue cannot be distinguished so athletes may be incorrectly categorised as obese



How is an individual's waist-to-hip ratio calculated?



How is an individual's waist-to-hip ratio calculated?

$$\text{waist-to-hip ratio} = \frac{\text{waist circumference (cm)}}{\text{hip circumference (cm)}}$$



What changes to diet and lifestyle can be made to reduce the risk of CVD?



# What changes to diet and lifestyle can be made to reduce the risk of CVD?

- Regular exercise
- Reduce intake of saturated fat
- Maintenance of a healthy weight
- Diet low in salt
- Reduce stress
- Stop smoking and drinking alcohol



# How effective are changes to lifestyle and diet in treating CVD?



How effective are changes to lifestyle and diet in treating CVD?

Although not themselves effective in the treatment of CVD, they can enhance the efficiency of other methods of treatment



Which medicines are used to treat CVD?  
(4)





## Which medicines are used to treat CVD? (4)

- Statins
- Anticoagulants
- Antihypertensives
- Platelet inhibitors



# Outline the benefits vs the risks of using **statins** to treat CVD



## Outline the benefits vs the risks of using **statins** to treat CVD

- ✓ Statins lower the level of cholesterol in the blood
- ✗ However, they can cause liver damage, kidney failure or problems with memory



# Outline the benefits vs the risks of using **anticoagulants** to treat CVD



## Outline the benefits vs the risks of using **anticoagulants** to treat CVD

- ✓ Anticoagulants reduce blood clotting, lowering the risk of a heart attack or stroke
- ✗ However, they can cause excessive bleeding



# Outline the benefits vs the risks of using **antihypertensives** to treat CVD



## Outline the benefits vs the risks of using **antihypertensives** to treat CVD

- ✓ Antihypertensives lower blood pressure, reducing damage to artery walls and the build up of atheromas
- ✗ However, they can have unpleasant side-effects such as headaches, dizziness or fainting



# Outline the benefits vs the risks of using **platelet inhibitors** to treat CVD





## Outline the benefits vs the risks of using **platelet inhibitors** to treat CVD

- ✓ Platelet inhibitors prevent the formation of blood clots by inhibiting the platelet activating cascade. This prevents thrombosis which can cause a heart attack
- ✗ They can come with an increased risk of excessive bleeding and also may have some unpleasant side effects such as nausea

