

Diabetes Mellitus

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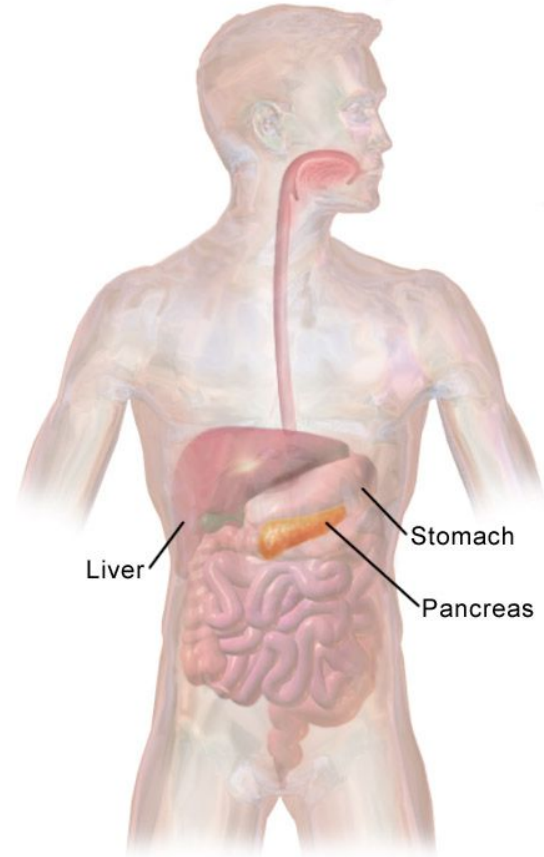
Dr Tosan Otubu
Health Unboxed

Outline

1. What is Diabetes?
 - a. Types of diabetes (T1/T2/GDM)
2. How common is diabetes in Gambia?
 - a. Risk factors
3. Symptoms of Diabetes
4. Assessment/Diagnostic criteria
5. Treatment
 - a. Lifestyle/Prevention
 - b. Drug treatments principals
6. Complications
 - a. Acute
 - i. Hypoglycaemia
 - ii. DKA
 - b. Chronic

What is Diabetes Mellitus

- Diabetes is a condition where your blood sugar level is too high.
 - Blood sugar is also sometimes called 'blood glucose'
- It can happen when your body doesn't produce enough/any insulin or when the insulin your body produces is not working correctly.
 - Insulin is a hormone released from the pancreas, which helps to control the blood sugar level
 - Without this, the blood sugar level increases



Location of the Pancreas

Insulin

1

Eating & Digestion

After eating, food is broken down in intestines into sugars (glucose). This enters the bloodstream.

2

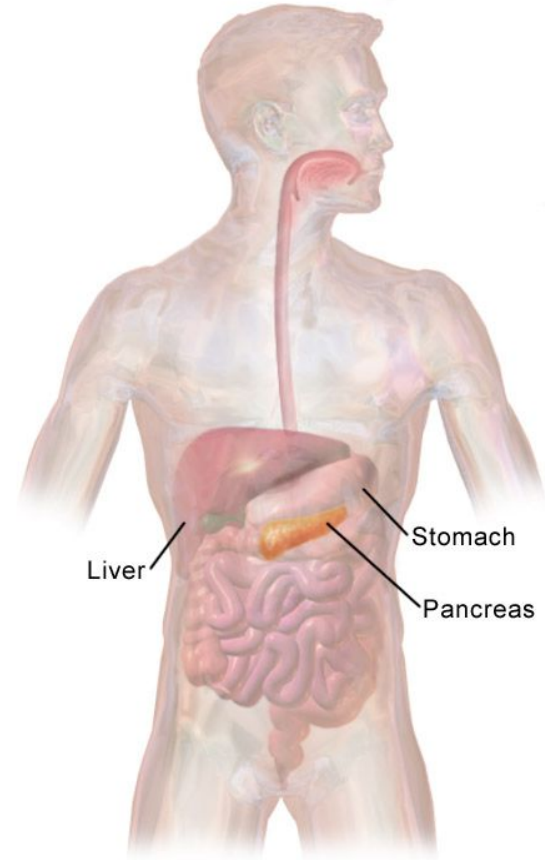
Insulin production

As the blood glucose levels rise, the pancreas makes insulin. Insulin's job is to push glucose into the cells to be used for energy or storage - to be used at a later date

3

Glucose range

Blood glucose levels needs to be kept within a normal range (depending on if you are fasting/after eating). Other hormones work with insulin to make sure of this as too low blood sugar levels can cause problems



Location of the Pancreas

Types of Diabetes

There are many different types of diabetes

Type 1

- Your body's immune system attacks itself & damages the cells in the pancreas that make insulin.
 - You are unable to make insulin
- Usually first presents with symptoms in childhood/younger adults.

Type 2

- Your body does not make enough insulin or the body does not respond correctly to the insulin being made.
- Can happen at any age, more associated with lifestyle, obesity etc.

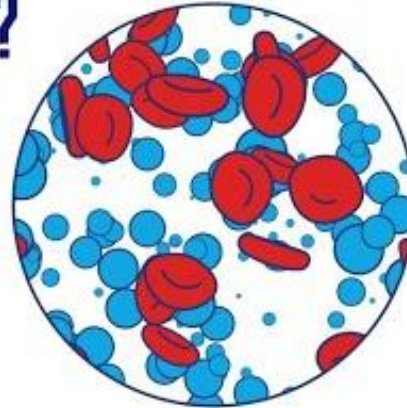
Gestational

- Occurs during pregnancy. The body is unable to produce enough insulin to keep up with the level of blood sugar

Explanation Video

Until 1:18

WHAT IS DIABETES?



How Common Is Diabetes?

Globally

537 million adults (20-79 years) are living with diabetes

1 in 10

6.7 million deaths in 2021 - 1 every 5 seconds.

Twice more likely in men

Africa

24 million adults are living with diabetes

1 in 22

Half (54%) of those living with diabetes are undiagnosed

Diabetes is responsible for 416,000 deaths in 2021.

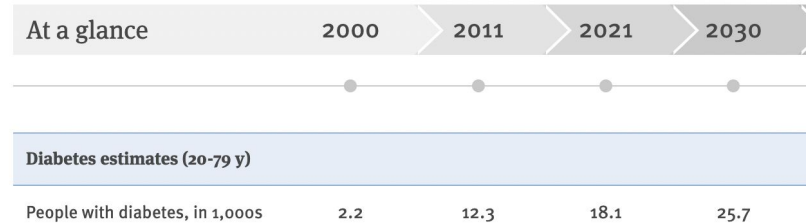
Gambia

Total adult population :1,126,000

18,100 adults are living with diabetes but

1 in 62

57% are undiagnosed



Risk Factors

- Increasing age
 - a. over 40 years
- Genetics
 - a. a close relative with the condition, such as a parent, brother or sister
- Overweight
 - a. BMI>25
 - b. Women- waist> 80cm, Men - waist> 94cm
- Ethnicity
 - a. South Asian, Chinese, Black-Caribbean or Black African origin
- Lack of physical activity
- Poor Diet
 - a. Low-fibre, high-glycaemic index diet

Questions

Symptoms



**Excessive
thirst**



**Excessive
hunger**



**Unexplained
weight loss**



**Blurred
vision**



**Slow healing of
cuts and sores**



Fatigue



**Vaginal yeast
infections**



**Frequent
urination,
including
frequent
full diapers
in infants and
bedwetting
in children**

Diagnosis and Initial Assessment

Diagnostic Blood Tests

1. HbA1c ≥ 48
 - a. Estimated blood sugar for last 2-3 months
 - b. Normal range- 20-41
2. Fasting Glucose ≥ 7.0 mmol/l
 - a. Normal range 4-6
3. Random glucose ≥ 11.1 mmol/l
 - a. Normal range 7.8-11
4. Oral Glucose Tolerance Test (75g) /Two hour plasma glucose concentration ≥ 11.1 mmol/l

Check For Organ Damage

1. Eye check
2. Blood Pressure
3. Cholesterol levels
4. Kidney Function -Blood + Urine test
5. Foot Check- blood flow, sensation, wounds

Questions

Treatment

- Diabetes can't be cured but it can be treated successfully & your blood sugar level can be controlled to be within a normal range
- Aims of treatment
 - Control blood sugar levels
 - Reduce risk factors that may increase the risk of complications
 - Detect complications early
- Types of treatment
 - Lifestyle measures
 - Medication

Treatment - Lifestyle

1. Healthy diet
 - a. Low in fat, salt & sugar. High in fibre, fruit & vegetables.
 - b. Limit starchy carbs (e.g. rice, potato, bread)
 - i. On average roughly recommended 230-300g of carbs/day
 - c. Eat more fish
2. Drink lots of water
3. Stop smoking
4. Regular exercise - simple things such as walking
5. Lose weight
6. Be mindful of alcohol

Portion sizes 1



Portion sizes 2



Treatment - Medication

- Many different types of medication used to treat diabetes.
 - Tablets
 - Insulin injections

Tablets

- Usually first line in type 2 diabetes
- Work to reduce blood sugar levels by:
 - Increasing the amount of glucose taken in by the cells
 - Increasing the amount of glucose removed in urine
 - Reducing the amount of glucose released from storage
 - Stimulating insulin production

Insulin injections

- Provide the body with insulin to control blood sugar levels
- Different regimes for insulin.
- Usually first line in type 1 diabetes or used in type 2 diabetes if several oral tablets have failed.

Oral Medication

Metformin

- Usually first line
- Works by reducing the amount of glucose released from stores into the bloodstream & by increasing the cells ability to take up glucose
- Commonly causes diarrhoea as a side effect, which usually settles.
 - Important to start with a low dose and build up slowly.

Glibenclamide

- Works by increasing the amount of insulin made in the pancreas.
- Important side effects:
 - Low blood sugar
 - Weight gain
- Not routinely used in the UK

Questions

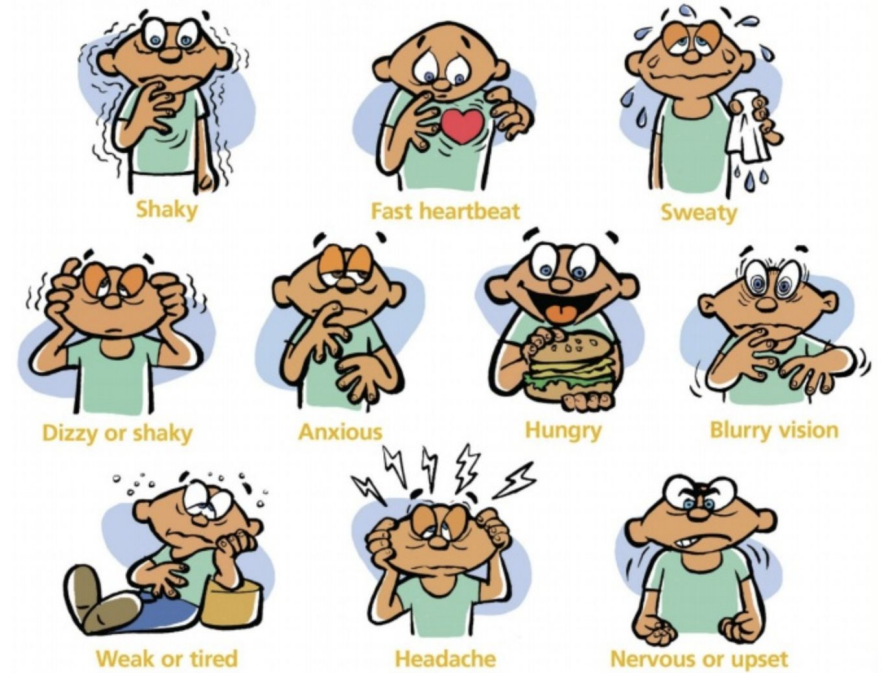
Complications- Emergency

Low Blood Sugar- Hypoglycaemia

Why does this happen?

Taking more medication than is required to stabilise blood sugar usually as a result of:

- Missing or delaying a meal or snack
- Not enough carbohydrate at the last meal
- Doing a lot of exercise without having extra carbohydrate or without reducing your medication
- Taking more medication than you needed
- Drinking alcohol on an empty stomach.



Complications- Emergency

Low Blood Sugar- What can I do?

Eat/drinking 15 to 20g of a fast-acting carbohydrate e.g.

- 5 glucose or dextrose tablets
- 3 sugary sweets
- a small glass of a sugary drink e.g. coca cola
- a small carton of pure fruit juice e.g. apple juice
- 2 tubes of a glucose gel such as GlucoGel®.

eat 15 to 20g of a slower-acting carbohydrate e.g.

- cheese or peanut butter sandwich
- 5-6 high fibre biscuits

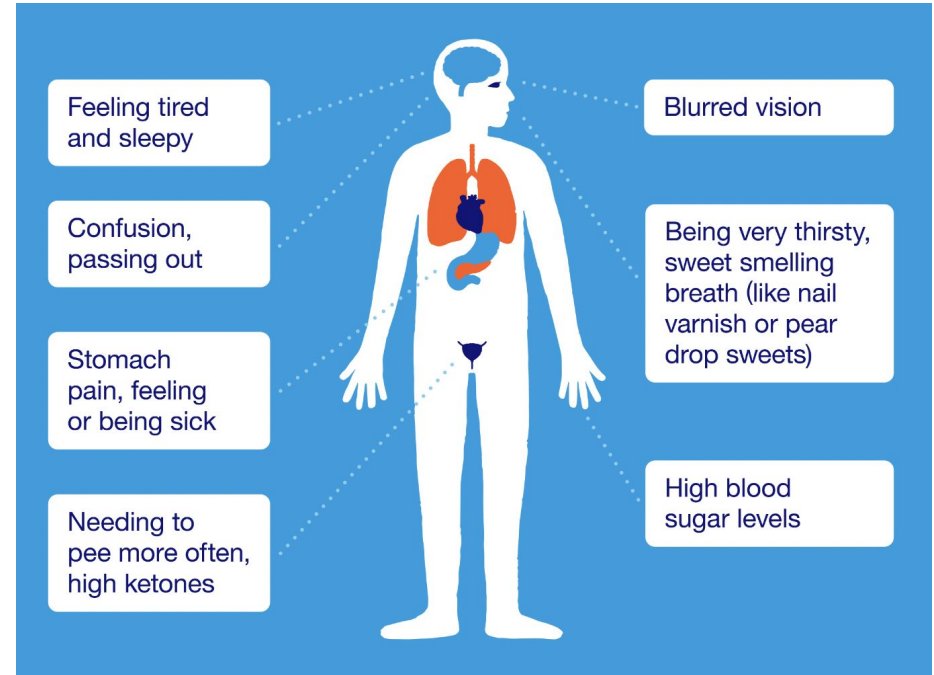
If frequent then discuss medication doses and timing with your healthcare team

Complications- Emergency

High Blood Sugar- Hyperglycaemia

DKA is caused by severe lack of insulin in the body which means the body cannot use sugar for energy, and starts to use fat instead. When this happens, chemicals called ketones are released, build up in the blood making it acidic.

HHS is caused by very high blood glucose levels (over 40). It can develop over a course of weeks through a combination of illness (e.g.infection) and dehydration.

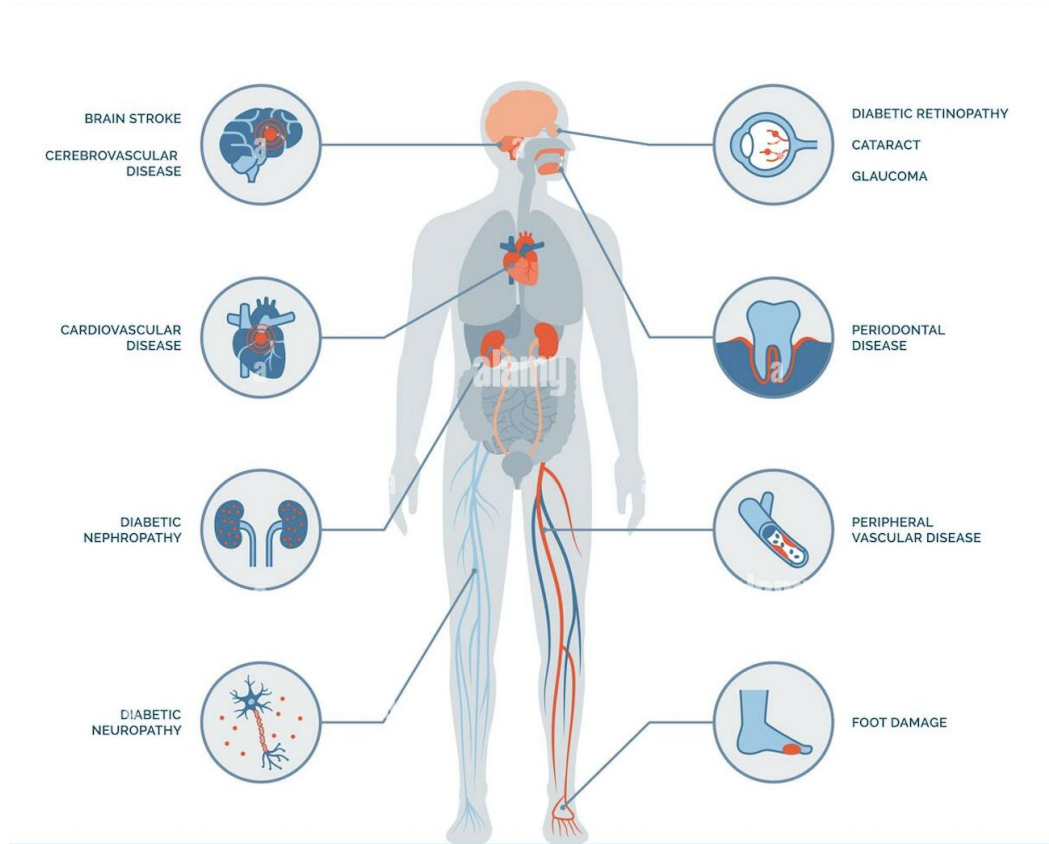


Complications- Emergency

High Blood Sugar- DKA/HHS What you can do?

- Always take your diabetes medication, even if you feel unwell and can't eat
- If you monitor your blood glucose, you may need to test more frequently
- Contact your healthcare team if your blood glucose levels remain high ($>15\text{mmol/l}$)
- Drink plenty of unsweetened fluids - WATER
- If you can't eat, replace meals with snacks and drinks, containing carbohydrate

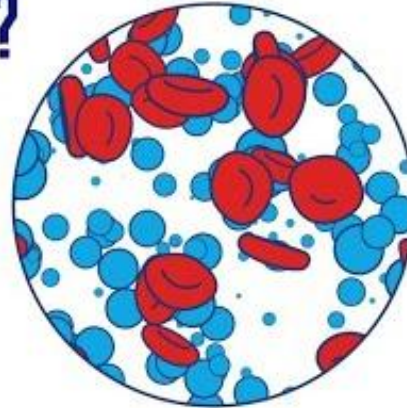
Complications- Long Term



Explanation Video

From 1:18

WHAT IS DIABETES?



DOAF Questionnaire answers

1. What is the cause of diabetes ?

- a. The cause depends on the type of diabetes. Type 1 is caused by an immune reaction. Type 2 is caused by lifestyle factors. Other types are caused by pregnancy, genetics etc.

2. At what age does one have diabetes?

- a. Any age

3. Doesn't it kill and what gender suffer from diabetes more?

- a. People can die from the complications caused by diabetes. Affects men more

4. Is there any local cure for diabetes?

- a. There is no cure for diabetes

5. What is the name of the medication given to a patient with diabetes?

- a. There are many medications used. Survey response named metformin, glibenclamide & insulin

6. Is diabetes caused by genetics?

- a. Some types

7. Is the treatment for diabetes expensive or cheap in The Gambia?

- a. Some answered cheap, others answered expensive

Questions

References

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