Biology A · Unit 6 · Level 2 (modified)

Blood Sugar & Diabetes



TODAY'S PLAN

- 🌡️ Homeostasis
- 🔑 Insulin and glucagon
- 🩸 Type 1 and type 2
- 🧬 Risk factors
- 🥗 Solutions

Review · 5 minutes

Quick Review



🔥 Cellular respiration uses **glucose** + oxygen.

🍞 Carbohydrates are digested into glucose.

❓ What happens if glucose stays in the blood?

Words to Know

Words to Know



Homeostasis

The body keeping inside conditions balanced, like a thermostat keeps a room just right.



Blood sugar

Glucose in the blood. It goes up after eating.



Insulin

A hormone from the pancreas. Like a key, it unlocks cells so glucose can go in.



Pancreas

An organ near the stomach that makes insulin and glucagon.

Words to Know

More Words to Know



🔓 **Glucagon**: A hormone from the pancreas that lets stored sugar out into the blood when blood sugar is low.

🩸 **Diabetes**: A disease where blood sugar stays too high for too long.

1️⃣ **Type 1 diabetes**: The pancreas makes little or no insulin. Not caused by food choices.

2️⃣ **Type 2 diabetes**: Cells stop answering insulin well, or not enough insulin. 90–95% of cases. Risk can be lowered.

Learn

Homeostasis



🌡️ **Homeostasis** = keeping inside conditions balanced.

🏠 Like a thermostat: too hot → cool down; too cold → heat up.

🔁 A **feedback** loop keeps blood glucose in a healthy range.

Compare

Insulin and Glucagon



Insulin



Blood sugar HIGH
Unlocks cells: glucose goes in
Blood sugar goes down

Glucagon



Blood sugar LOW
Stored sugar released
Blood sugar goes up

🃏 Check 1 of 3



After a big meal, the pancreas releases…

Hold up 1, 2, or 3:

1️⃣ Glucagon

2️⃣ Insulin

3️⃣ Bile



Insulin

High blood sugar → insulin.

Learn

Fast vs Slow Foods



🥤 Sugary drinks and white bread make blood sugar **spike** fast.

🥗 Beans, veggies, whole grains raise it **slowly**.

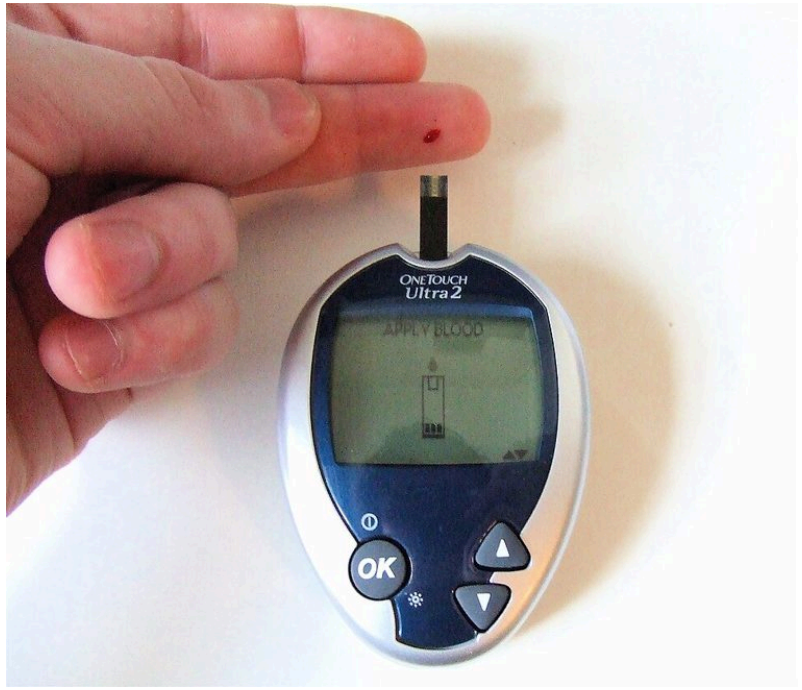
🍎 Sugar in whole fruit comes with fiber, so it is slower.

Learn

What Is Diabetes?

🩸 Blood glucose is too **high** for too **long**.

📈 Diabetic blood sugar 3 hours after eating: **200+**; non-diabetic: about 120-140 (ClEvR #2).



Compare

Type 1 vs Type 2



Type 1

1️⃣

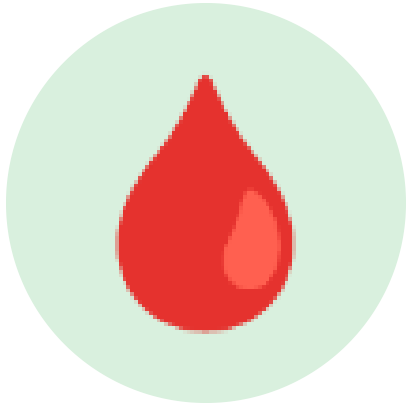
Pancreas makes little or no insulin
Often starts young
Not caused by food choices

Type 2

2️⃣

Cells stop answering insulin
90-95% of adult cases
Risk lowered by habits

🃏 Check 2 of 3



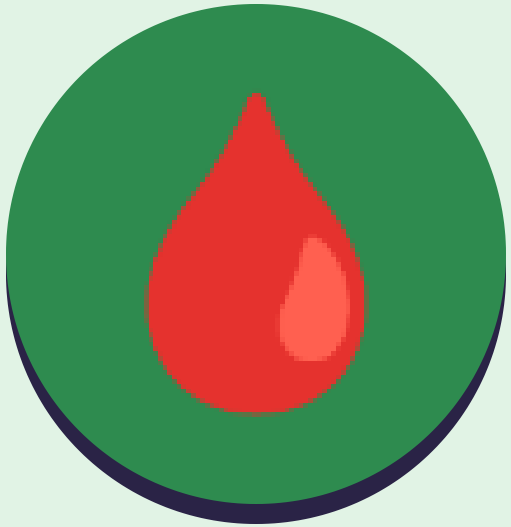
Both types of diabetes…

Hold up 1, 2, or 3:

1️⃣ Make too much insulin

2️⃣ Are caused by sugar only

3️⃣ Cannot control blood sugar well with insulin



Cannot control blood sugar well with insulin

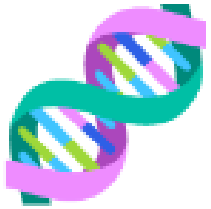
ClEvR #3: both cannot regulate blood sugar with insulin.

Compare

Risk Factors (A7)



Genetic



Family history
Can't change it
Bean/coin simulation

Environmental



Food, activity, sleep
Money and place
Some can change

Learn

Bigger Than One Person

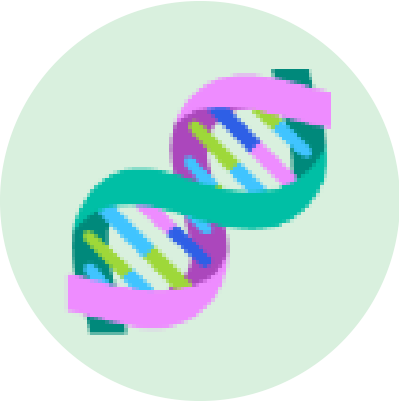


🏚️ Less money or less schooling → higher rates (CDC data, ClEvR #3).

🌽 History like forced relocation changed Native food ways (Roots of Resilience).

🤝 Solutions can be for people **and** communities.

🃏 Check 3 of 3



Which risk factor can a person change?

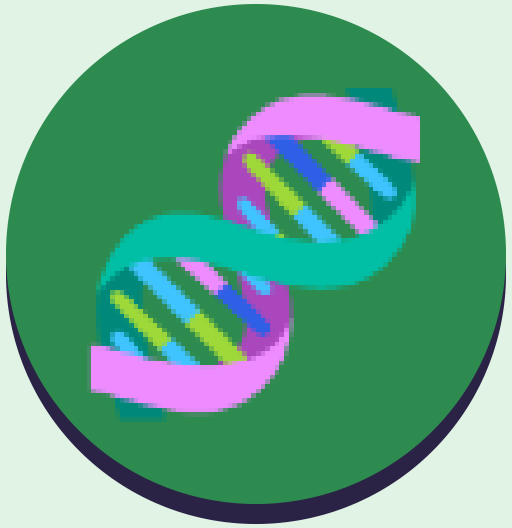
Hold up 1, 2, or 3:

1️⃣ How active they are

2️⃣ Their genes

3️⃣ Their age

✅ Answer · Card 3 of 3



How active they are

Activity can change; genes and age cannot.

Learn

Solutions (A8)



Drink water
skip sugary drinks



Move
PE, walks, bike paths



Labels
know the sugar



Treatment
medicine, doctor

Wrap-Up

Recap



Homeostasis
feedback keeps balance



Insulin
lowers blood sugar



Type 1 / 2
no insulin / cells don't answer



Lower risk
water, move, sleep

Wrap-Up

Exit Ticket



1️⃣ What does insulin do?

2️⃣ How are type 1 and type 2 different?

3️⃣ Name one genetic and one environmental risk factor.