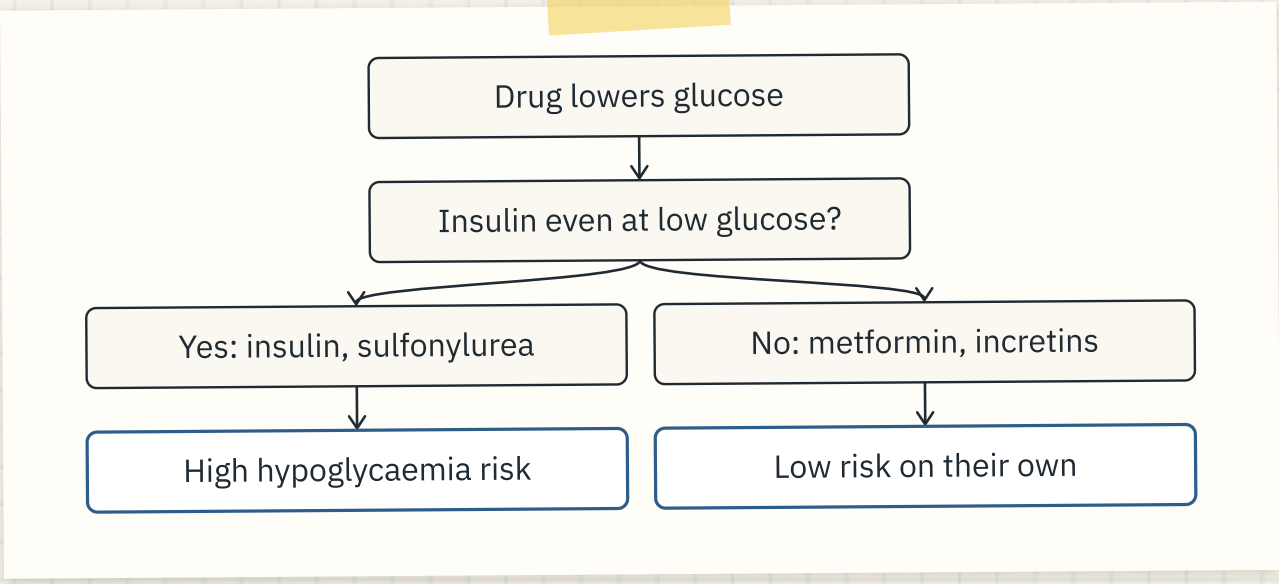
Diabetes drugs by mechanism

Site of action and signature side effect



Step by step

1. Liver: metformin
2. Beta cell: sulfonylureas
3. Gut hormones: GLP-1 agonists, DPP-4 inhibitors
4. Kidney: SGLT2 inhibitors
5. Fat and muscle: thiazolidinediones. Sixth site: insulin itself

Class	Site	Signature effect
Metformin	Liver	GI upset, B_{12} deficiency, rare lactic acidosis
Sulfonylureas	Beta cell	Hypoglycaemia, weight gain
GLP-1 agonists / DPP-4 inhibitors	Gut hormones (incretins)	GLP-1: nausea, weight loss, MTC or MEN2 contraindication; DPP-4: well tolerated; both: pancreatitis
SGLT2 inhibitors	Kidney	Mycotic infections, euglycaemic ketoacidosis
Thiazolidinediones	Fat and muscle	Fluid retention, heart failure, fractures
Insulin	Insulin itself	Hypoglycaemia, weight gain

Class, site and signature effect

The hypoglycaemia rule

Insulin supplied or forced out regardless of glucose = hypoglycaemia risk

Sulfonylureas and insulin carry it

Metformin and incretin drugs do not, on their own

Exam traps

- Metformin is avoided when the eGFR is below 30 mL/min/1.73 m²
- GLP-1 agonists are contraindicated with medullary thyroid cancer or MEN2
- SGLT2 inhibitors can cause ketoacidosis with a near-normal glucose
- Thiazolidinediones worsen heart failure through fluid retention

Diabetes drugs by mechanism: where each class acts

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/endocrinology/diabetes-drugs-by-mechanism

For exam study only, not medical advice. Follow local guidelines and your lab's ranges.
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