

Episode 11- Diabetes and the Adult Surgical Patient

Epidemiology

5% of the general population (1 in 20 people). 90% of cases are type 2 diabetes.
10% of the inpatient population.

Surgical

Higher mortality, longer hospital stay, higher rates of perioperative complications.

Diagnosis

	Fasting glucose
Normal	4-7 mmol/L (70-130 mg/dL) average 5.5 mmol/L = 100 mg/dL
Diabetes mellitus	> 7 mmol/L (> 130 mg/dL)

Pre-diabetic states: impaired glucose tolerance, impaired fasting glucose. Illness, surgery or pregnancy will effectively result in diabetes in these patients.

Associated medical conditions

Nephropathy, retinopathy, neuropathy (peripheral or autonomic), ischaemic heart disease, peripheral vascular disease, cerebrovascular disease. All are indicators of chronic course or poor control. Obesity and hypertension. Unfit patients, likely to be ASA 3.

HbA1c

HbA1c reflects the glycaemic control during the average lifespan of a red blood cell, which is about four months. It gives you some idea of whether the diabetes is poorly controlled, i.e. it helps to qualify (not quantify) the risk. As a cut off point, an HbA1c above 8.5% (69 mmol/mol) warrants diabetic team review and the postponement of elective surgery. In fact an HbA1c > 6% (42 mmol/mol) is associated with an increased risk of medical complications. A normal HbA1c can be falsely reassuring in conditions where the lifespan of a red blood cell is shortened thus lessening their exposure to circulating glucose.

Perioperative considerations

Nephropathy	Risk of acute kidney injury (combined with cardiovascular compromise, nephrotoxic drugs and contrast agents).
Peripheral neuropathy	Postoperative movement and mobilisation. Response to pain and discomfort. Increased risk of pressure sores (combined with peripheral vascular disease and increased infection risk). Document baseline neurological status before any neuraxial or regional block. Nerves are vulnerable to compression or stretching injuries and also to hypotension.
Autonomic neuropathy	Gastroparesis (risk of regurgitation and aspiration at induction of anaesthesia, risk of postoperative enteral feeding problems). Unpredictable cardiovascular reflexes. More so if they also suffer from hypertension or other cardiovascular disease.

Monitoring

Hourly blood gas analysis with glucose, ketones and potassium.

Red blood cell suspension contains glucose at 50 mmol/L. If receiving a transfusion it is normal to see a rise in blood glucose levels.

Postoperative care

Normal diet and medication - eating and drinking as soon as possible. Avoid postoperative nausea and vomiting, or ileus.

Pain control - catecholamines lead to an increase in blood glucose.

Diabetic team review
