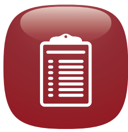

Preparing people with diabetes for surgery

Does the person have diabetes?

Yes → Referral for an elective surgical procedure?

- **No** → **Referral for an acute condition which may require surgery:** Measure HbA_{1c} and eGFR if not checked in last 3 months; check BP and smoking status
  - → Aim to optimise HbA_{1c} (69 mmol/mol [8.5%] or lower), eGFR and BP as soon as possible. Discuss smoking cessation

    Do not delay referral while improving control. Include details in ***Box 1*** (overleaf) in the referral letter
- **Yes** → Has the individual had their HbA_{1c} measured in the last 3 months?
  - **No** → Measure HbA_{1c} → Is HbA_{1c} <69 mmol/mol (<8.5%)?
  - **Yes** → Is HbA_{1c} <69 mmol/mol (<8.5%)?

No → Are they at risk of developing diabetes or hyperglycaemia? For example, do they have any of the following?

- Aged >40 years (>30 years in people of South Asian origin)
- Family history of diabetes
- Personal history of gestational diabetes
- Personal history of hypertension
- Personal history of dyslipidaemia
- Personal history of prediabetes
- BMI >25 kg/m² (>23 kg/m² in those of South Asian origin)
- On long-term glucocorticoid treatment

- **No** → Refer for surgery according to local protocol
- **Yes** → Measure HbA_{1c} → Is HbA_{1c} ≥48 mmol/mol (≥6.5%)?
  - **No** → Refer for surgery according to local protocol
  - **Yes** → If **asymptomatic** of diabetes, repeat HbA_{1c} within 2 weeks. If repeat HbA_{1c} ≥48 mmol/mol, make diagnosis and code

    If **symptomatic**, make diagnosis and code

    → Is HbA_{1c} <69 mmol/mol (<8.5%)?

Is HbA_{1c} <69 mmol/mol (<8.5%)?

- **Yes** → Refer for surgery – include the details in ***Box 1*** (overleaf) in the referral letter
- **No** → Can an HbA_{1c} of <69 mmol/mol (<8.5%) be safely achieved?
  - **No** → Refer for surgery – include details in ***Box 1*** (overleaf) in the referral letter and outline why glycaemic control could not be safely optimised. Refer to specialist diabetes team if appropriate
  - **Yes** → Depending on anticipated waiting list, defer referral, explaining that poor diabetes control can lead to serious complications. Adjust medications to help achieve HbA_{1c} <69 mmol/mol – re-measure in 3 months (→ Measure HbA_{1c})

What and why

- More than 323 000 operations take place in the UK each year in people with diabetes: 15% of all operations (CPOC, 2021).
- Hyperglycaemia in people undergoing surgery is associated with longer hospital stay and higher risk of adverse postoperative events, including infections, acute kidney injury, acute myocardial infarction and death.
- Those with undiagnosed hyperglycaemia are at particularly high risk. Thus, identifying them prior to referral is important.
- People referred for elective surgery should have an HbA_{1c} of <69 mmol/mol (8.5%) measured within 3 months prior to referral, if it is safe to achieve this.
- Communication is key. Informing the surgical team that someone has diabetes reduces delays due to surgery cancellation and postoperative complications. Currently, this is not being done as often as it could be.

Citation: Dhatariya K, Brown P (2022) How to prepare people with diabetes for surgery (updated January 2022). *Diabetes & Primary Care* **24**: 13–14

Authors
Ketan Dhatariya, Consultant in Diabetes, Endocrinology and General Medicine, Norfolk and Norwich University Hospitals NHS Foundation Trust, and Honorary Professor in Medicine, University of East Anglia; **Pam Brown**, GP, Swansea.

Aims

- Ensure potential effects of diabetes and associated comorbidities on surgery outcomes are considered **before** referral for elective procedures or more urgent conditions requiring surgery
- Ensure all relevant information (***Box 1***) is communicated fully in the referral
- Ensure that diabetes and comorbidities are optimally managed before the procedure
- Use surgery as a "teachable moment" and discuss lifestyle (see At a glance factsheet for an overview)

Recommendations

- Provide the relevant information in the referral letter (see ***Box 1***)
- Optimise glycaemic control, aiming for HbA_{1c} <69 mmol/mol (8.5%) before referral if possible and safe to do so
- State in the referral letter if glycaemic control is as good as you think it could be and you judge the patient ready for the elective procedure
- Refer people with hypoglycaemic unawareness to the diabetes specialist team irrespective of HbA_{1c}
- Optimise other diabetes-related comorbidities
- Provide written advice to patients undergoing investigative or surgical procedures requiring fasting (see **Diabetes drugs and surgery** box)

Box 1. When referring for surgery/procedures, ensure referral letter contains:

- Duration and type of diabetes
- Usual diabetes care venue (primary or secondary care)
- Comorbidities
- Treatment:
  - for diabetes (oral and injectable agents, insulin doses and frequency)
  - for comorbidities
- Complications and their management:
  - at-risk foot
  - renal impairment
  - cardiac disease
  - retinopathy
  - peripheral neuropathy
- Recent (within past 3 months) BMI, blood pressure, HbA_{1c} and eGFR

Note: 40% of referral letters do not provide any information on the status of diabetes management; less than 10% document a recent HbA_{1c} and, of those that do, 15% have HbA_{1c} >69 mmol/mol. Only 35% of hospital preoperative assessments in those with diabetes include an HbA_{1c} (CPOC, 2021).

Surgery cancellations

- Advise patient to carry a form of glucose (e.g. a clear, sugar-containing drink) for their admission that they can take in case of symptoms of hypoglycaemia that could otherwise lead to cancellation
  - If the patient is fasted and the operation is postponed or cancelled, the drink can be used to help break the fast
- Poorly controlled diabetes or blood pressure often leads to the cancellation of elective surgery

Smoking/smoking cessation advice

Provide **very brief advice** on smoking:

- **Ask** about tobacco smoking and record status
- **Advise** on the benefits of quitting before surgery:
  - reduced risk of complications (particularly pulmonary, cardiac complications, delayed wound healing, surgical site infections)
  - reduced risk of/need for postoperative intensive care
  - shorter length of hospital stay
  - better outcomes
  - long-term benefits, including reduced risk of heart disease, stroke, cancer and premature death
- **Advise** on the best way of quitting (a combination of medications with specialist support)
- **Act** on response:
  - build confidence
  - give information
  - refer to local NHS stop smoking service
  - prescribe nicotine-replacement therapy

HbA_{1c}

- Review HbA_{1c} measurement; consider repeating every 3 months while awaiting surgery
- Consider use of self-monitoring of blood glucose to motivate and assist to improve control
- Repeat HbA_{1c} measurement prior to seeing specialist if control was poor at referral
- Consider referral to the diabetes specialist team for advice if HbA_{1c} is >69 mmol/mol (8.5%) and it is felt that further optimisation cannot be achieved in primary care

Diabetes drugs and surgery (see Centre for Perioperative Care, 2021)

- **SGLT2 inhibitors:** Omit day before and day of surgery and while food or fluids are restricted. Stop on acute admission for any reason and monitor blood ketones; only restart when ketones normal and normal oral intake
- **Acarbose, meglitinides:** Omit doses if not eating
- **Sulfonylureas:** Omit on day of surgery; can take evening dose if eating again
- **Metformin:** Continue on day of surgery if taken once or twice daily; skip lunchtime dose
  - If eGFR <60 and iodine-containing contrast is to be used, omit on day of surgery and for 48 hours afterwards
- **Pioglitazone, DPP-4 inhibitors or GLP-1 RAs:** Take as normal

Key resources

Centre for Perioperative Care (2021) https://bit.ly/3HWm1cq

Frisch A et al (2010) *Diabetes Care* **33**: 1783–8

JBDS-IP (2016) https://bit.ly/3njQtWb

Kotagal M et al (2016) *Ann Surg* **261**: 97–103

Kwon S et al (2013) *Ann Surg* **257**: 8–14

National Centre for Smoking Cessation and Training (2020) https://bit.ly/3zUsPo3

NCEPOD (2018) https://bit.ly/3tkjqoB

Pournaras DJ et al (2017) *Int J Clin Pract* **71**: e12971