

Diabetes Care in the Last Few Months of Life

Rationale

The goals of diabetes care alter in patients approaching the end of life because of advanced cancer or other conditions, such as advanced dementia or end-stage cardiac failure, and the care of such people with all types of diabetes should be reviewed with this in mind

Important principles

1. Aim of treatment is to avoid symptoms of hyperglycaemia and hypoglycaemia. If measured, the blood glucose target should be 6.0-15.0 mmol/L.
2. Treatment usually needs to be reduced because of anorexia and weight loss.
3. It is not necessary to aim for tight glucose control. Hypoglycaemia is the main metabolic threat.
4. Dietary restriction should be avoided. Patients should be encouraged to eat food which gives them pleasure as enhancing the quality of life is the main aim of management. They should avoid sugary drinks such as Lucozade and cola, if there is symptomatic hyperglycaemia (thirst, polyuria) and, otherwise, avoid large quantities of these drinks.
5. It is important to understand the views and preferences of the patient and the family; if treatment is being stopped this should not be misconstrued as the medical team having 'given up'.
6. Each patient needs individualised treatment; these guidelines may need to be adjusted according to the patient's condition or preference and the views of staff.

Medication adjustments in type 2 diabetes in the last few months of life

Metformin (standard and mr)	Sulfonylureas	Pioglitazone and SGLT2 inhibitors	Gliptins	GLP-1 receptor analogues	Insulin
Stop if anorexia and weight loss or distressing nausea, heartburn, diarrhoea or flatulence	Reduce* dose if anorexia and/or weight loss. Reduce or stop if hypoglycaemia; consider switch to glintin	Stop	Review dose or use linagliptin if renal impairment	Stop if significant anorexia, weight loss, nausea or abdominal pain	Reduce** dose by 25 -50% if BGs < 7 mmol/L, HbA1c < 60 mmol/mol or if new renal impairment
Stop if eGFR < 30ml/min/1.73m ²	Reduce dose if new renal impairment or liver dysfunction or HbA1c < 60 mmol/mol		Linagliptin can be used in all stages of renal disease		Reduce dose by ~ 50% if hypoglycaemia; sometimes insulin needs to be discontinued
Patients on oral agents: check blood glucose only if symptoms or high risk of hypoglycaemia or hyperglycaemia. *If gliclazide 160 mg bd, reduce to 80mg od; if gliclazide 80mg bd, reduce to 40mg od or bd					**Some patients may be able to self-manage
If treated with combinations of oral agents and insulin and reduced treatment needed, it is often simplest to discontinue oral agents; if bedtime-only insulin, move to the morning					

Type 1 diabetes (likely if patient on insulin since diagnosis or within two years)

- If anorexia, weight loss or hypoglycaemia reduce insulin doses by ~ 25%, monitor BG and reduce insulin further if hypoglycaemia persists **but do not discontinue** – risk of ketoacidosis.
- Many patients, especially those who can carbohydrate count, may be able to self-manage.
- If intercurrent illness (eg chest infection), may need to increase insulin doses – liaise with diabetes nurse specialists if advice needed.
- Check urine for ketones if symptoms suspicious of diabetic ketoacidosis: vomiting, abdominal pain, shortness of breath – if ketones positive ring diabetes nurse specialist or diabetes team for advice; admit if heavy ketones and suspected diabetic ketoacidosis.
- Increase treatment only if symptoms of hyperglycaemia – thirst, urinary symptoms, lethargy – **and** BG >15 mmol/L. May be necessary to do this in intercurrent illness (eg chest infection).

Management of diabetes during steroid therapy for malignancy

High dose steroid therapy

- Increases blood glucose levels in people with diabetes.
- Increases risk of developing diabetes especially in patients already at high risk due to, for example, obesity/family history.
- Typically raises blood sugar levels later in the day after a morning dose, blood sugars tending to fall again overnight.

Test for diabetes if suspicious symptoms (ie thirst polyuria weight loss fatigue) develop after starting steroids – random glucose >11mmol/L confirms diabetes.

Emergency management of steroid-induced diabetes

- Consider admission if patient dehydrated/drowsy/vomiting.
- Admit or refer urgently to hospital for insulin if BG >25mmol/l. Start gliclazide 160mg am pending referral.

Elective Treatment of steroid-induced diabetes

- Dietary advice – exclude sugary drinks (eg coke, lemonade, fruit juice). Otherwise avoid restricting diet.
- If osmotic symptoms persist, start gliclazide 80mg am, increasing to 160mg am over 48 hours if symptoms persist or random BG >20mmol/L.
- Check daily meter BG, ideally later in the day before tea, if symptoms persist; reduce frequency of monitoring if symptoms resolve and BG <20mmol/L.
- If symptoms persist or blood glucose levels >20mmol/L on gliclazide 160mg am start insulin (eg Humulin M3 insulin 8-12 units mane [higher insulin requirement likely if overweight]); stop oral agents, refer diabetes nursing service.

Management of *known* diabetes during steroid treatment

If osmotic symptoms, check random meter BG daily and if BG >15 mmol/L adjust treatment as follows:

Previous treatment	Recommended intervention
Diet alone	Start oral agent (eg gliclazide 80mg mane). Increase to 80mg bd if symptoms persist or random sugar >20mmol/l
Oral agents at maximum dose	Stop oral agents. Start insulin (eg Humulin M3 insulin 8-12u mane [higher dose if overweight]). Refer diabetes nurse specialists
Insulin	Increase morning and lunchtime doses by 20-50% or consult diabetes nurse specialists

NB If diabetes well controlled on high dose steroids, anticipate need for reduction in doses of insulin/oral agents when steroid dose reduced.

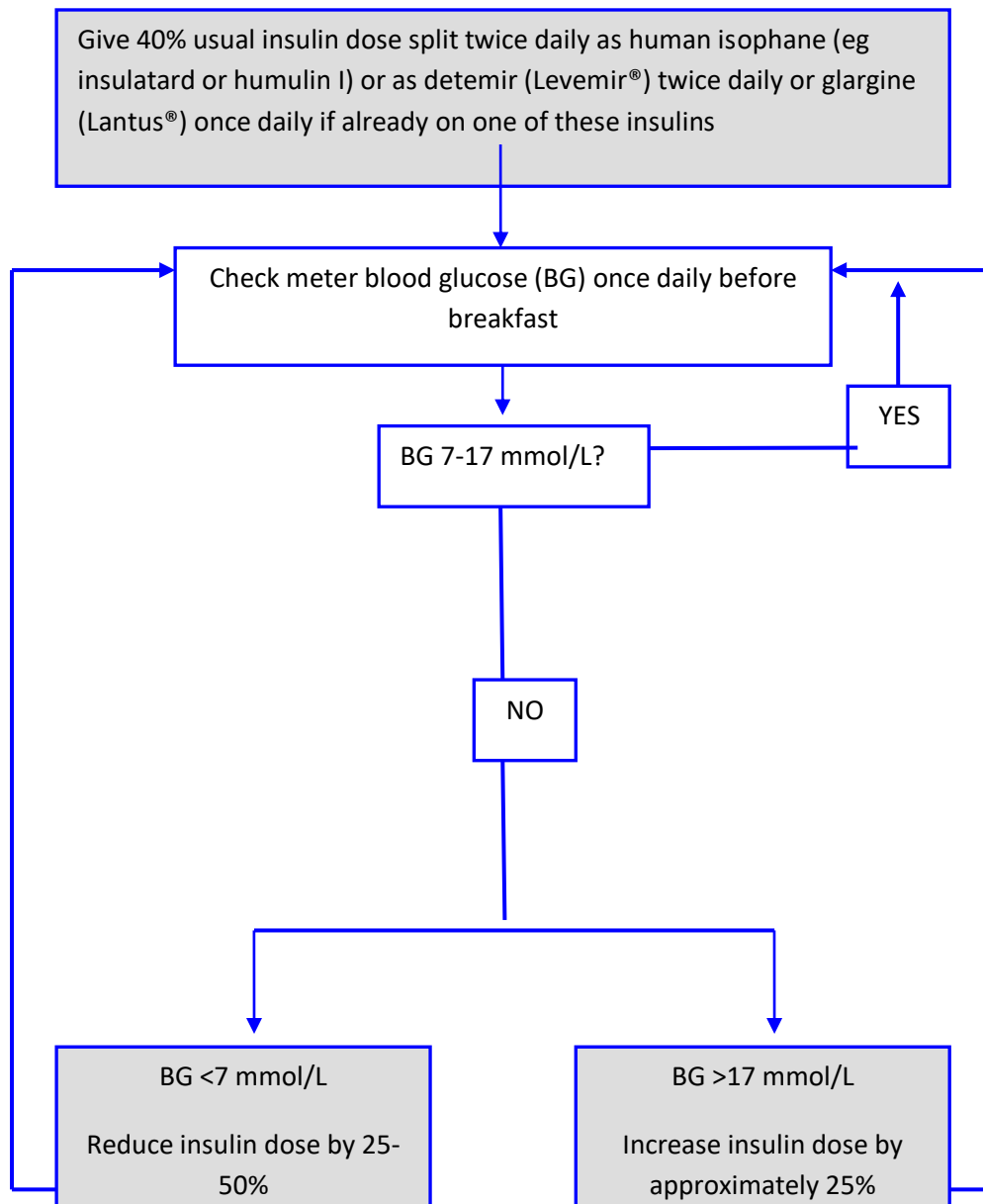
Terminal phase (last few days of life)

Practice points

- In type 2 diabetes insulin and oral agents can usually be stopped in the terminal phase; steroid-treated patients may be an exception.
- Blood glucose monitoring should be kept to the minimum necessary (see separate flow charts for guide to management of types 1 and 2 diabetes in the last days of life).
- It is important to ensure that clinical deterioration is not due to hyperglycaemia or hypoglycaemia before making decisions about management.
- Regular review of the patient and management plan is necessary, due to difficulties with prognostication of death and varying length of terminal phase.
- If death imminent (ie expected in < 24 hour, it may be appropriate to discontinue all monitoring and insulin, usually after discussion with the family.
- Contact diabetes nurse specialist if advice needed. For advice out of hours contact on call Diabetologist; if no diabetologist on call, contact on-call medical SpR.

Type I Diabetes

This is a general guide; insulin dose may need adjustment. Ring diabetes nurse specialists if advice needed (eg if BG levels > 20-25mmol/L)



Type 2 Diabetes

This is a general guide; insulin dose may need adjustment. Ring diabetes nurse specialists if advice needed (eg if BG levels > 20-25mmol/L)

