GIG CYMRU NHS WALES | Bwrdd Iechyd Prifysgol Bae Abertawe | Swansea Bay University Health Board

THINKGLUCOSE™ Inpatient care for people with diabetes

Managing Diabetes at the End of Life: Summary Guidance

This summary relates to the management of glucose control in patients with diabetes at the end of their life. The complete care recommendation developed by the Association of British Clinical Diabetologists (ABCD), Diabetes UK, TREND UK & 'Diabetes, Frail' & endorsed by the Royal College of Nursing & the Primary Care Diabetes Society is available at: EoL_TREND_FINAL2_0.pdf and on COIN.

This document summarises the national consensus guidelines relating to:-

1. The principles of high quality diabetes care at the end of life.
2. Managing glucose control in the last days of life in patients with type 2 diabetes.
3. Managing glucose control in the last days of life in patients with type 1 diabetes.
4. Withdrawal of treatment.
5. Glucose management in patients treated with once daily steroid therapy.

1. The principles of high quality diabetes care at the end of life are:

- Ensure that effective symptom control is provided during the dying stage
- Tailor glucose-lowering therapy & minimise diabetes-related adverse treatment effects
- Avoid metabolic decompensation and diabetes-related emergencies such as:
  - Frequent and unnecessary hypoglycaemia
  - Diabetic ketoacidosis
  - Hyperosmolar hyperglycaemic state
  - Persistent symptomatic hyperglycaemia
- Avoid foot complications and pressure sores in frail, bed-bound individuals with diabetes
- Avoid symptomatic clinical dehydration
- Provide an appropriate level of intervention according to stage of illness, symptom profile, and respect for dignity
- Support and maintain the empowerment of the individuals (in their diabetes self-management) for as long as possible

During the last days of life:

- Discuss with the patient (family) changing the approach to the management of diabetes
- Relax glycaemic targets: 8-15mmol/L
- The priority is to avoid hypoglycaemia (capillary glucose <4mmol/L) & severe hyperglycaemia, both of which are associated with unpleasant symptoms
- Minimise unnecessary interventions & keep blood glucose testing limited to once daily
- Do not stop insulin in type 1 diabetes, even when not eating as there is a need for basal insulin. The dose can be decreased/adjusted
- For those patients who remain on insulin during last days of life contact the local Diabetes Inpatient Team

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2. Glucose control in the last days of life in patients with type 2 diabetes

Type 2 Diabetes (Diet controlled or metformin/gliptin treated)

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Stop metformin &/or gliptin
Stop blood glucose monitoring

Type 2 Diabetes (Sulfonylureas[a], SGLT2is[b], pioglitazone, and/or insulin or GLP-1 agonists[c])

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Stop tablets and GLP-1 injections
Stop insulin if on a small amount only (<8 units/day)

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If insulin stopped
Check capillary blood glucose
If glucose >20mmol/L-give 6 units of rapid acting insulin[d]

Recheck blood sugar 2-hours later:
If <20 mmol/L-no repeat testing

If >20mmmol/L, consider a further dose of rapid acting insulin

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If a patient requires more than 2 doses of rapid acting insulin in 24 hrs-consider starting on once daily isophane insulin
(Calculate total daily dose using 0.15 units/kg)

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Check blood glucose once a day at teatime:

- If below 8 mmols/l reduce insulin by 10-20%
- If above 20 mmols/l increase insulin by 10-20% to reduce risk of symptoms or ketosis)

If insulin to continue
Prescribe once daily morning dose of isophane[e] or long-acting insulin[f] at 25% less than previous total daily insulin dose

[a]sulphonulreas (e.g gliclazide, glimepiride)

[b]SGLT2 inhibitors (e.g. dapagliflozin, empagliflozin)

[c]GLP-1 agonists (e.g. liraglutide, dulaglutide, semaglutide)

[d]Rapid acting insulins (e.g. actrapid, novorapid, humalog, apidra, fiasp)

[e]Isophane insulins (e.g. humulin I, insulatard, insuman Basal)

[f]Long acting analogues (e.g. glargine (lantus), degludec (tresiba))

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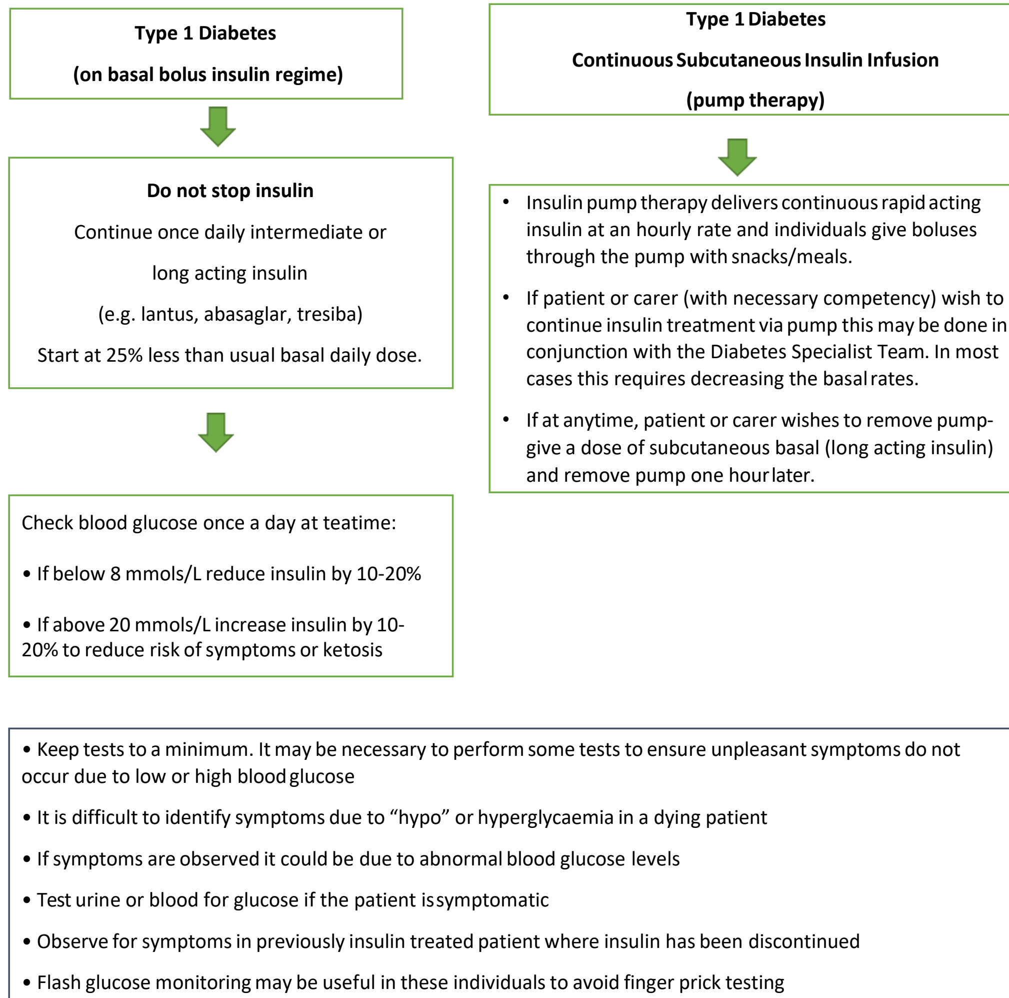
3. Glucose control in the last days of life in patients with type 1 diabetes



4. Withdrawal of treatment

Withdrawal of part or whole of diabetes-related treatment can be considered under conditions listed below:-

- When the individual with diabetes is entering the terminal phase of life
- Where frequent treatment-related hypoglycaemia is causing distress and significant management difficulties
- Where the benefits of stricter glucose control cannot be justified
- Where continued use of blood pressure or lipid lowering therapy cannot be justified on health benefit considerations
- Where continued food or fluids are not the choice of the individual
- Where continued treatment with insulin poses an unacceptable risk of hypoglycaemia or where the benefits of stricter glucose control cannot be justified

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5. Glucose management in patients treated with once daily steroid therapy

Not Known to have diabetes →

Check random blood sugar.
If >8mmols/L recheck once daily in evening
If >15mmol/L at anytime, recheck 2 hours later, if remains high consider starting once daily gliclazide with breakfast if eating or once daily insulin (see below)

Type 2 Diabetes (diet controlled or metformin/gliptin)

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Check glucose before evening mealtime
If two readings >15mmol/L start gliclazide 40mg with breakfast

Increase morning gliclazide by 40mg every 24 hours to aim for evening range of 6-15mol/L

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If gliclazide dose of 240mg reached but glucose remains above target & no hypoglycaemia add 80mg with evening meal or switch to insulin

Type 2 Diabetes (on sulfonylurea)

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Check glucose before evening meal. If >15 mmol/L and increase dose by 80mg BD to maximum of 240mg morning & 80mg evening

Aim evening glucose: 6-15mmol/L

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If glucose still above target stop gliclazide and start morning humulin I (6-10 units)
Aim evening glucose 6-15mmol/L

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If glucose before evening meal >15mmol/L and no hypos, increase humulin I by 4 Units every 24 hours to achieve target range of 6-15mmol/L

Type 1 Diabetes or Insulin dependent Type 2 Diabetes

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On once daily insulin or BD Mix insulin

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- **Morning dose** will need to increase according toglucose reading before evening meal
- Aim blood glucose 6-15mmol/L before evening meal unless patient has "hypo" before meals despite mid-meal snacks

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If glucose >15 mmol/L before evening meal

- Increase dose
- Review daily until stable increasing dose as necessary
- Consider increasing dose depending on risk of hypoglycaemia

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On Basal Bolus regimen

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- Breakfast & lunchtime rapid acting insulin may need to increase to avoid high readings before lunch or evening meal
- Aim glucose 6-15 mmol/L before lunch & evening meal unless patient has "hypo" before meals despite mid-meal snacks or has long gaps between meals

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If glucose >15 mmol/L before lunch or evening meal

- Increase breakfast or lunchtime dose
- Review daily until stable increasing dose as necessary

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Assuming no hypoglycaemia, pre-meal time glucose >10mmol/L an increase in dose is needed:
- Increase dose by 10-20% if dose below 20 units
- Increase dose by 10-20% units if dose 20-50 units
- Increase dose by 10-20% units if dose 50-100 units
- Review daily until stable increasing dose as necessary

If steroids are reduced or discontinued:

- Review any changes made and consider reverting to previous therapy or doses
- If unsure at any stage about next steps or want specific advice on how to meet with patients needs or expectations please contact the Diabetes Specialist Team
- If steroids are reduced and the individual is on a sulphonylurea agent or insulin there is a significant risk of hypoglycaemia . Please reduce the dose of these drugs in tandem with the steroid dose reduction

This guideline was developed by Dr F Iqbal (SpR) and Prof J Stephens. It has been reviewed by the ThinkGlucose lead, the Diabetes consultants and nursing staff across the health board, along with Dr Anthony Williams, consultant in Palliative Care.

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