

Diabetes

This area outlines the diabetes guidelines for elderly residents in long-term care facilities. This is an abridged version developed by the Diabetes Care Program of Nova Scotia¹ in conjunction with the Palliative Care and Therapeutics Harmonization (PATH) Program.

Recommendations

The guidelines advocate for more lenient blood glucose (BG) targets with frailty and make recommendations to avoid excessive blood glucose testing; and to identify, appropriately manager and prevent hypoglycemia.

Blood Glucose (BG) Targets

- Acceptable BG may be between 10 and 20 mmol/L
- For BG <7.0 mmol/L stop or reduce treatment
- For BG between 7.0 and 9.0 mmol/L consider reduced treatment

A1C Targets

Recommended A1C target is $\geq 8\%$ and $< 12\%$, as long as the resident does not have symptoms of hyperglycemia.

Blood Glucose (Bedside Capillary) Testing

On admission (with a diagnosis of diabetes) – twice daily at alternate times for one to two weeks to establish baseline and determine need to adjust treatment as per recommended glycemetic targets

Routine/ongoing (if BG is stable and within liberalized glycemetic target range):

- On oral agents or stable doses of basal insulin without regular/rapid insulin – routine testing is usually not necessary.
- On regular/rapid insulin (meal time insulin) – test once daily alternate times (See Clinical Pearl below)

A1C Testing

On admission (with a diagnosis of diabetes) – measure once to establish baseline

Routine/ongoing

- Lifestyle modification only – not more than once/year, but may not be needed at all
- Oral agents/insulin – once or twice/year

Clinical Pearls

- These guidelines do not apply to younger less frail residents of LTC.
- Consider that most oral medications decrease A1C by $\approx 1\%$ when deciding whether and which medications can be stopped.
- More frequent testing may be needed with acute changes in health status, change in oral intake, when adjusting diabetes medications, when starting prednisone and based on clinical judgment.
- Use NPH as basal insulin instead of long-acting insulin analogues such as Lantus® or Levemir® (less expensive with similar outcomes).
- Basal insulin alone (without regular or rapid insulin) may be preferable due to variations in oral intake that can lead to hypoglycemia.
- A1C targets $\geq 8\%$ and $< 12\%$ reflects BG of 10-16 mmol/L. Consistent BG measures between 16-20 mmol/L would yield an A1C of 12-14% and an increase in treatment may be indicated.

For a full version of this guideline (Phase 1 and 2), go to:
<http://diabetescare.nshealth.ca/guidelines-resources/professionals/guidelines/special-populations>

Rationale

- Older adults living in long care facilities are generally frail. The Nova Scotia Department of Health and Wellness data indicates that in 2010/2011, 27% of admissions had diabetes with a length of stay of 2.5 years.
- It takes at least five years to achieve benefits from tight control – an irrelevant timeframe with frailty.²⁻⁵
- When there is long standing diabetes (as occurs with frailty), studies show limited benefit³, no benefit⁴, or harm⁵ with tight control.⁶
- The demonstrated microvascular benefits in randomized controlled trials are surrogate, not clinical, outcomes that have limited relevance in frailty^{2,6,7} including:
 - Decreased photocoagulation, but no difference in vision.
 - Less albuminuria, but no difference in creatinine.
 - Less neuropathy, not based on clinical symptoms, but based on outcomes measured that may not be related to neuropathy, including changes in reflexes, biothesiometer readings, R-R intervals on EKG, lying and standing blood pressure measures, and self-reported erectile dysfunction.
- In the Veterans Affairs Diabetes Trial⁴, there was no difference in positive outcomes or serious hyperglycemic adverse events when HbA1c was 6.9% compared to 8.4%. Therefore, a HbA1c target above 8% is reasonable. The targeted range of HbA1c (>8 to <12%) was chosen to allow individualized treatment decisions based on drug tolerance and symptoms, as some frail patients may be able to tolerate higher blood glucose and HbA1c measures.
- The most consistent finding of randomized controlled trials of intensive blood glucose control has been an increased risk of hypoglycemia, which is particularly problematic for the elderly.
- There is increased hospitalization with intensive treatment.
- The cost and human resources needed to measure and maintain tight control in long-term care is significant.

Treatment of Hypoglycemia

A hypoglycemia treatment kit should be readily available (containing ready sources of glucose).

The risk associated with hypoglycemia and frailty is considerable. The diabetes guidelines aim to minimize hypoglycemic episodes. However, when hypoglycemia occurs, adjust treatment accordingly.

- If blood glucose is < 3.9 mmol/L:
 - Give oral carbohydrate (CHO), such as 15ml (one tablespoon) or sugar in water, $\frac{3}{4}$ cup juice or regular soft drink, or 15g in the form of glucose tablets.
 - Recheck BG in 15 minute intervals until BG is >4.0 mmol/L.
 - If meal is more than 30 minutes away, give snack containing CHO and protein such as bread and cheese or meat.
- If resident is unable to ingest or unconscious:
 - Give 1 mg glucagon, intramuscularly (write prn order in advance).
 - Notify the physician or nurse practitioner.

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References

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