

RATIONALE

The goals of managing diabetes in frail³ elderly residents admitted to, or awaiting placement to, a LTC facility are different than for people in younger age groups. There is no evidence of benefit from tight glycemic control (i.e., fasting plasma glucose 4 to 7 mmol/L) for the LTC population.

- Hypoglycemia can lead to poor balance and risk of falls.
- Severe hypoglycemia can lead to seizures and death.
- Sustained hyperglycemia (over several days and not just a periodic spike) can lead to polyuria and nocturia. Trips to the bathroom late at night increase the risk of falls.
- Sustained hyperglycemia may also contribute to dehydration that can lead to coma or death.

The goal for elderly residents with diabetes is to avoid the acute complications of poor glycemic control, including hypoglycemia and prolonged, severe hyperglycemia.

HYPOGLYCEMIA REFERENCES

1. Yale JF, Paty B, Senior P. *Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada: Hypoglycemia*. Can J Diabetes 2018; 42:5104-5108.
2. Abdelhafiz A, Rodriguez-Manas L, Morley J, Sinclair A. Hypoglycemia in Older People - A Less Well Recognized Risk Factor for Frailty. *Aging Dis*. 2015 Mar; 6(2):156-167.
3. Moorhouse P, Rockwood, K. Frailty and its qualitative evaluation. *JR Coll PhysiciansEdin6*. 2012; 42:333-340.

RECOMMENDATIONS

If Random Blood Glucose (BG):

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|---|--|
| Less than 7 mmol/L | • Notify physician/nurse practitioner to decrease diabetes treatment. |
| 7.0 - 9.9 mmol/L | • This range may be acceptable. There is risk for hypoglycemia with Glyburide, Glidazide, and Glimepiride or insulin therapy. If the resident has hypoglycemia (more than once a month), notify the physician/nurse practitioner to decrease treatment. |
| 10.0 - 14.9 mmol/L | • This range is acceptable if the resident has no reversible symptoms such as polyuria or nocturia. • If the resident has reversible symptoms, notify the dietitian to assess food intake. Notify physician/nurse practitioner to assess the diabetes treatment. Increased treatment may not improve symptoms if due to other causes. |
| 15.0 - 20.0 mmol/L | • This range may be acceptable. Occasional values in this range (not persistent) do not require medication adjustment. • With persistent values, notify physician/nurse practitioner to assess possible medication change. |
| Greater than 20.0 mmol/L | • Notify physician/nurse practitioner to increase diabetes treatment. |
| Greater than 33.0 mmol/L with stupor or coma | • Notify the physician/nurse practitioner. |

When the health care team discusses an individual's overall health status and prognosis with either the patient or the family, a review of glycemic targets and the importance of avoiding hypoglycemia would be beneficial. If glycemic targets are different from the diabetes guidelines, this should be clearly documented and include the rationale.

DIABETES GUIDELINES for Frail Elderly Residents in or Awaiting Long-Term Care (LTC)

POCKET REFERENCE

Diabetes Care Program of Nova Scotia
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Bethune Building, Suite 548
Halifax, NS B3H 2Y9
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Revised Sept. 2018

HYPOGLYCEMIA (Low Blood Glucose)

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Aging is a risk factor for hypoglycemia. The goal of treatment should be to prevent hypoglycemia.¹

Hypoglycemia is defined as:¹

A blood glucose (BG) level less than 4.0 mmol/L with symptoms (trembling, sweating, palpitations, anxiety, nausea, hunger, tingling, confusion, drowsiness, weakness, difficulty speaking, and headache).

RATIONALE

Hypoglycemia in the elderly person with diabetes can be a serious and underestimated clinical problem that has significant morbidity and mortality.

- Older persons with diabetes may have fewer symptoms of hypoglycemia or decreased awareness of hypoglycemia.²
- Hypoglycemia in the elderly can be more severe and prolonged, and it can precipitate a cardiovascular event.
- Hypoglycemia is caused by inadequate carbohydrate (CHO) intake at meals, increased physical activity, or excess oral antihyperglycemic agents/insulin.
- Glucose or dextrose tablets or sugar dissolved in water (see Table 2) are the preferred choice for treatment because these are absorbed more quickly than orange juice or glucose gels. Although glucose and dextrose tablets are the preferred treatment choice, these tablets may be difficult to chew or swallow.
- Glucose gels are generally not recommended because they must be swallowed to be effective and are slowly absorbed.

The elderly are frequently on multiple medications and may have kidney or liver impairment that may lead to changes in breakdown of medications. Therefore, it is important to prevent, recognize, and treat hypoglycemic episodes secondary to the use of diabetes medications.

PRACTICE TIPS

It is important to have a hypoglycemia treatment kit readily available. It should include sources of CHO for treatment (see Table 2).

Do not use any examples in Table 2 if the person is unable to safely ingest or is unconscious.

RECOMMENDATIONS*

Prevent, recognize, and treat a low blood glucose level promptly to raise the blood glucose to a safe level (greater than or equal to 4 mmol/L).

- 15 g glucose will increase blood glucose by ~ 2.1 mmol/L within 20 minutes.¹

**Recommendations for treatment of hypoglycemia in elderly residents in LTC facilities are adapted from the Diabetes Canada 2018 Clinical Practice Guidelines.¹*

HYPOGLYCEMIA - Assessment

Table 1 BG less than 4.0 mmol/L

- Resident is able to ingest



- Resident is unable to ingest



- Resident is unconscious



HYPOGLYCEMIA - Treatment

Give:

- Oral ingestion of 15 g CHO. See Table 2 for examples.
- Wait 15 minutes and retest. If BG is less than or equal to 3.9 mmol/L, re-treat with 15 g CHO, wait 15 minutes and retest.
- Continue to treat/test until BG is greater than or equal to 4.0 mmol/L.
- If a meal is more than 30 minutes away, a snack containing CHO and protein should be provided (e.g., 1 slice bread and 1 oz. [30 g] cheese or meat).

Give:

- 1 mg glucagon (intramuscularly) if ordered by a physician/nurse practitioner. (There should be a prn/standing order for glucagon on the chart.)
- Notify the physician/nurse practitioner.

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After treatment (BG greater than or equal to 4.0 mmol/L) and symptoms remain, look for other causes of symptoms.

FOLLOWING A HYPOGLYCEMIC EVENT:

- Assess factors that may have contributed to the hypoglycemia, such as inadequate CHO intake at meals, increased physical activity, or too much oral antihyperglycemic agent/insulin, and adjust treatment accordingly.
- Reduce diabetes intervention accordingly if pattern of repeated hypoglycemia (greater than once a month).

Examples of 15 g CHO for treatment of hypoglycemia

Table 2

- 3 teaspoons (15 ml) or 3 packets of table sugar dissolved in water
- 1/2 cup (150 ml) juice or regular soft drink
- 1 packet (15 ml) honey or jam
- 6 Life Savers™ (1 = 2.5 g CHO)
- 15 g glucose in the form of glucose tablets
- 15 g glucose in the form of glucose gel (slowly absorbed)