

The prevalence of **type 2 diabetes mellitus (T2DM)** increases with age, so that by age 75, approximately 20% of all Canadians will have the disease¹. This number may be higher among residents in long term care homes (LTCH).

Many of the LTCH residents may require insulin, a high alert medication to control their blood glucose (BG). The complexity and acuity of their care escalates when they are sick.

The following list, although not exhaustive, identifies some of the key components essential to optimize blood glucose control, and thus enhance the safety of the residents with T2DM.

❖ Individualize Target of Glycemic Control

Rationale:

Treatment goals must be tailored to each elderly resident, with consideration of individual risk factors.

Recommendation:

1. Achieve glycemic targets as recommended in Clinical Practice Guideline² if it can be done safely.
2. Pre meal BG **above 10 mmol/L** or post meal BG **above 14 mmol/L** can result in significant symptomatology, primarily unnecessary fatigue and frequent infections, and thus **should be avoided**³.
3. Hyperglycemia exceeding these thresholds should be managed by prompt adjustment /modification of antidiabetic medications.

❖ Monitor of Blood Glucose

Rationale:

Frequent scheduled capillary blood glucose monitoring (CBGM) using properly calibrated meter provides information essential to timely interventions.

Recommendation:

1. Establish schedule of CBGM for residents receiving antidiabetic medications especially insulin.
2. Minimize brands of meter used in LTCH.
3. Develop procedure to perform CBGM for each brand of meter used in LTCH; incorporating appropriate guideline for infection control.
4. Develop protocols to calibrate respective meters with control solution.
5. Develop protocol to perform lab-meter comparison to validate accuracy of CBGM².

❖ Management of Hypoglycemia (BG less than 4 mmol/L)

Rationale:

Hypoglycemia must be managed effectively and efficiently to ensure resident safety¹.

Recommendation:

1. Develop treatment protocol to define threshold of blood glucose (BG) requiring treatment; options of remedy; algorithm of care; use of Glucagon and procedure for notifying physician.
2. Centralize treatment supplies including Glucagon and facilitate access within LTCH.

❖ Administration of Insulin

Rationale:

Insulin is a high alert medication; its absorption may vary as much as 25% from day to day in a person and up to 50% between different people¹.

❖ Administration of Insulin

Rationale-cont'd

Consistency in technique of injection, proper selection of injection site and rotation of sites may help minimize variability.

Recommendation:

1. Develop diagram to facilitate selection of injection sites and explain site rotation⁴.
2. Provide education to raise staff awareness on action profile of insulin; proper technique on resuspension of insulin mixture and priming of injection needle³.

❖ Other Laboratory Monitoring

Rationale:

CBGM only help to establish pattern of daily blood glucose but does not offer assessment on management over extended period of time. Accuracy of CBGM may be affected by some suboptimal health conditions.

Recommendation:

1. Perform glycosylated hemoglobin (A1C) approximately every 3 months².
2. Perform complete blood count including hemoglobin, hematocrit; fasting plasma glucose, serum creatinine regularly. Monitor renal function and liver enzymes accordingly.

❖ Management on Sick Day

Rationale:

1. BG becomes more unstable on sick days with/without poor oral intake. Adjustment of antidiabetic medications must be guided by BG.
2. Adequate carbohydrate and fluid replacement is essential for the prevention of dehydration and the development of Hyperglycemic Hyperosmolar Non-ketotic State¹.