**Diabetes Guidelines for Elderly Residents in Long-Term Care (LTC) Facilities**

**Diabetes Care Program of Nova Scotia**

**Supporting Document--Background**

**Why diabetes guidelines for elderly residents in LTC facilities in Nova Scotia were developed?**

*Currently in Nova Scotia, there are 6,869 LTC beds (nursing homes, residential facilities, and community-based options) of which 19.7% of residents have diabetes.*

It has been recognized for many years that there is a lack of standardized diabetes care for residents residing in LTC facilities throughout Nova Scotia. A Nova Scotia Department of Health (DOH) mandate is to achieve consistency in care of residents living in LTC facilities throughout the province. As a result, in 2002, the Diabetes Care Program of Nova Scotia (DCPNS) conducted a needs assessment to explore priorities for standardization of diabetes care in LTC facilities in Nova Scotia. The needs assessment was sent to 72 LTC facilities and was completed by directors/managers and care providers. Fifty-six (56) responses (78%) were received, and 80% of the respondents felt that standard protocols were required for diabetes care in their facilities.

**How were the guidelines developed?**

In 2003, the DCPNS Diabetes in LTC Committee was established to develop and promote safe and standardized diabetes care guidelines for optimum care of frail elderly with diabetes living in LTC facilities in Nova Scotia. Members of this committee included a Department of Health (DOH) LTC advisor, a geriatrician, a family practice physician practicing in LTC, an adult endocrinologist, an internist, LTC health professional staff (nurses and dietitians), representatives from Nova Scotia Diabetes Centers with a LTC affiliation, and consultants from the DCPNS.

The Committee identified the target audience for the guidelines to be non-palliative residents in whom diabetes care interventions were appropriate. Key characteristics of diabetes care guidelines for elderly residents include flexibility, individualization, and quality of life. Evidenced-based guidelines do not exist for this population, so the guidelines developed are “evidence-informed” only.

In the 2002 needs assessment, many diabetes care topics were identified for guideline development. Initially, the committee selected six topics: clinical assessment, foot care, nutrition, blood glucose monitoring, diabetes medications, and hypoglycemia. The committee formed small groups to work on guideline development. Because there was no literature to support evidence-based guidelines in the elderly population, it was difficult to reach consensus among the committee members. Following much discussion and feedback from some of the LTC facilities, it was decided to focus on two key areas for standardized diabetes care: targets for glycemic control and treatment of hypoglycemia. Guidelines were developed for these priority care areas, which were adapted from the 2008 Canadian Diabetes Association Clinical Practice Guidelines. A Pocket Reference was determined to be the preferred format. The guidelines were piloted in three LTC facilities - one rural facility and two urban facilities. The guidelines received preliminary approval of the DCPNS Advisory Council in 2007, and final amendments were approved in February 2009. A telehealth session was held in the fall of 2008 to review the guidelines and to provide an update to LTC staff, physicians, and diabetes educators. Some minor revisions were made in 2009 and the formal launch planned for April 2010.
Rationale of the Guidelines

The following is a reprint of a newsletter article written by Dr. Laurie Mallory at the time the LTC Guidelines were initially planned for release. Mallory L. Diabetes Guidelines for Elderly Residents in Long-Term Care (LTC) Facilities. *Diabetes Care in Nova Scotia*. 2009;19(1):1-2.

These guidelines principally advocate liberalized glycemic targets to avoid hypoglycemia. Any treatment recommendation for residents with diabetes in LTC must consider the characteristics of the individuals who live there. Older adults residing in LTC are frail, which is defined as the accumulation of multiple chronic illnesses and associated vulnerability. Residents who are frail commonly have dementia, functional decline, and geriatric syndromes such as falls, impaired mobility, and polypharmacy. They are at risk for adverse outcomes, hospitalization, and death.

How do these characteristics impact recommendations for diabetes treatment and particularly glycemic targets?

For those who are frail, care is made complex by interacting problems and precarious health. Frail older adults are not only more susceptible to adverse effects, such as hypoglycemia, but also they are likely to have more harmful and severe reactions. For this reason, the focus of these guidelines is to promote reasonable glycemic targets and avoid hypoglycemia.

A review of the evidence helps justify the recommendations for permissive glycemic targets. Firstly, the benefit of tight glycemic control in this population is uncertain. None of the randomized controlled trials (RCT) of glycemic control in people with type 2 diabetes enrolled frail older subjects. Consequently, it is difficult to extrapolate positive outcomes to this group. Secondly, the frail have a limited life expectancy. Therefore, treatments that require long periods-of-time to accrue benefit will not provide any practical advantage to this population. In the most well known RCT involving newly diagnosed people with type 2 diabetes, the UK Prospective Diabetes Study (UKPDS), glycemic control decreased the risk of microvascular disease, but only after 6 to 7.5 years. In addition, the demonstrated benefits in reduced microvascular disease were limited to surrogate outcome measures. For instance, although the UKPDS demonstrated that tight control reduced microvascular complications, this was largely due to a 25% risk reduction in the need for retinal photocoagulation. There was no difference in the deterioration of visual acuity or the proportion blind in both eyes. Likewise, the UKPDS demonstrated that intensive therapy decreased urinary albuminuria, but there was no difference in the clinical outcomes of renal failure with dialysis or plasma creatinine above 250 mmol/L. Except for obese patients using metformin, the UKPDS and other RCTs of type 2 diabetes failed to reduce the macrovascular complications of diabetes. Furthermore, the recent Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial demonstrated that a glycemic target of A1C<6% compared to a target between 7 to 7.9% increased mortality for individuals with type 2 diabetes, many of whom had underlying cardiovascular disease. Except for obese patients using metformin, the only study that showed a reduction in macrovascular outcomes was a 10-year follow-up study of the UKPDS, a benefit that took decades to achieve, time which the frail elderly does not have.

Every RCT of diabetic treatment shows that the risk of hypoglycemia, which can be life threatening for this population, increases with intensive therapy. Notably, in the later stages of dementia, residents have inconsistent oral intake, which may cause variable low blood glucose measurements. In addition, residents may not have the typical warning symptoms of hypoglycemia, limiting their ability to perceive low blood sugar. Because of cognitive impairment, even if the symptoms of hypoglycemia occur, residents may not be able to clearly communicate these symptoms, delaying the correction of low blood sugars. Hypoglycemia can cause falls and subsequent fracture, confusion and coma.
The guidelines also recommend avoiding extreme and prolonged hyperglycemia. Prolonged hyperglycemia can cause polyuria, which can potentially worsen nocturia and incontinence. Other symptoms of hyperglycemia include dehydration, weight loss, falls, infection, and impaired cognition. Nevertheless, residents with type 2 diabetes have fewer hyperglycemic related symptoms compared to younger patients with type 1 diabetes and it is not clear that better glycemic control will improve these non-specific symptoms, which are common in elderly patients.

Recommended glycemic targets were developed from this perspective. Any blood glucose (BG) below 7.0 mmol/L, which would be desirable for healthy individuals, would be considered too low for the frail. In this case, diabetes treatment should be decreased. BG between 7.0 and 9.9 mmol/L may be acceptable, although there is still a risk for hypoglycemia. BG between 10.0 and 20.00 mmol/L is acceptable, if the resident has no reversible symptoms.

Diabetes is a common condition for nursing home residents. For these residents, it is important to have realistic targets for glycemic control. A review of the literature shows that there is no evidence of benefit for intensive blood glucose control for this population. In actuality, frail older adults may experience increased harm from aggressive glucose management using complex treatment regimens.

The DCPNS acknowledge and thank the following individuals for their work in developing, revising, and reviewing these diabetes guidelines.

• **Members of the DCPNS Diabetes in LTC Committee:**
  - Ann Beauchamp, Care Coordinator, Parkstone Enhanced Care
  - Trish Bilski, Clinical Nurse Specialist, Veterans Memorial Building (VMB)
  - Lois Cartwright, RN, VMB
  - Dr. Barry Clarke, Associate Chief, VMB
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  - Dr. Lynne Harrigan, Internist, Medical Director, DCPNS
  - Sharon Hepburn, RN, former Chair (2002-2005), Diabetes Consultant, DCPNS
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  - Elizabeth Kingsland, PDt, Diabetes Center, Shelburne
  - Dr. Laurie Mallery, Acting Head, Division of Geriatric Medicine
  - Bev Muldoon, Long Term Care Advisor, DOH
  - Dr. Tom Ransom, Endocrinologist, Division of Endocrinology
  - Lauren Richardson, PDt, St. Vincent’s Guest House
  - Dr. Sonia Salisbury, former Medical Director, DCPNS
  - Sohani Welcher, NP, Capital Health

• **Directors of Long Term Care, Nova Scotia Association of Health Organizations, who provided direction for formatting and pilot testing the guidelines.**

• **LTC Directors who volunteered their facilities for the pilot project and the staff for carrying it out:**
  - Joy Boyle, Director of Care, North Queens Nursing Home, Caledonia, NS
  - Coleen Conway, Director of Health Care Services, Glades Lodge Care Centre, Halifax, NS
  - Dawn Ryan, Director of Residential Care, Parkstone, Halifax, NS
How should these guidelines be implemented in a LTC facility?

It is important that the resident, family, and LTC health team understand that the goals of diabetes management in elderly residents admitted to LTC facilities are different from the goals for people in younger age groups. Given, the frailty of elderly residents, their limited life expectancy, and that it takes five years to demonstrate a reduction in risk for micro and macro vascular complications, tight glycemic control is not recommended for this population. Therefore, it is important that everyone is aware of these important differences in order for these guidelines to be implemented safely and successfully. If glycemic targets for the elderly resident are different from the diabetes guidelines, this should be clearly documented and include the rationale.

How do we provide feedback on the content and format of these guidelines?

The DCPNS welcomes feedback on Diabetes Guidelines for Elderly Residents in Long-Term Care (LTC) Facilities in Nova Scotia. Please forward your questions or comments to dcpns@diabetescareprogram.ns.ca. In the future, the DCPNS will approach the development of further diabetes care guidelines for the elderly at the request of its external stakeholders.

References: