November, 2016

Alberta Health Services

Diabetes, Obesity & Nutrition Strategic Clinical Network

Improved Glycemic Management in Hospital

Project Bulletin

Project Scope

The DON SCN is leading a provincial initiative: with the goal of improving and standardizing how patients with diabetes are cared for in Alberta's hospitals. This is a multipronged quality improvement initiative, in collaboration with AHS provincial Pharmacy, AHS provincial Nutrition and Food Services, and the Zone operational areas. It involves a multidisciplinary approach to diabetes management, with the patient and family as key team members.

The inpatient diabetes management initiative is a priority for the DON SCN because hyperglycemia (high blood sugar) continues to be common in hospitals and increases the risk of complications including: post-operative infections, pneumonia, diabetic ketoacidosis (DKA), and delays in wound healing. Literature suggests that patients with diabetes experience hyperglycemia over 1/3 of the time when they are in hospital. Alberta data is consistent with this figure; with hyperglycemia experienced approximately 36% of the time blood sugars are tested.

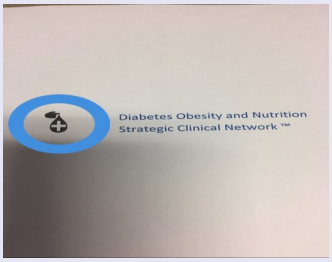
Improving blood sugar control in hospital has been associated with shorter length of stay in hospital and decreased rates of readmission. National Guidelines recommend blood glucose targets of 5-10mmol/L for patients with diabetes in hospital. See more information in the Canadian Diabetes Association (CDA) Clinical Practice Guidelines (CPGs) for In-Hospital Management of Diabetes

Elements of the multifaceted initiative:

Transition of Care
DKA Management
Hypoglycemia Protocol
Carbohydrate Counting
Hyperglycemia Protocol
Basic Diabetes Education
Safe Management of Insulin Pump Therapy
Basal Bolus Insulin Therapy
Self Management
Glycemic Management Policy
Simplified Insulin Formulary
Perioperative Guidelines

November Diabetes Awareness Month!

DON SCN™ is proud to support Albertans living with diabetes.



Sliding Scale Insulin (SSI) originated in 1934...

The Canadian Diabetes Association clinical practice guidelines from 2003-present have **NEVER** recommended SSI use for in-hospital management, and have **ALWAYS** recommended basal bolus insulin therapy.

Inside this issue

For more information about this initiative look us up online @ http://www.albertahealthservices.ca/scns/Page10970.aspx
Please contact the DON @ diabetesobesitynutrition.scn@ahs.ca.

BBIT (Basal Bolus Insulin Therapy)

A search of MEDLINE for the period from 1966 to 2003 with the terms "sliding scale insulin," "sliding scale," and "sliding" combined with "insulin" yielded a total of 52 publications, none of which showed a benefit of sliding scale insulin in improving glycemic control or clinical outcome. In fact, these clinical studies and reviews concluded that the use of sliding scale insulin is an inappropriate approach to blood glucose control in diabetic patients, and that the hazards of its use exceed the advantages of its convenience." Guillermo et. al. 2007

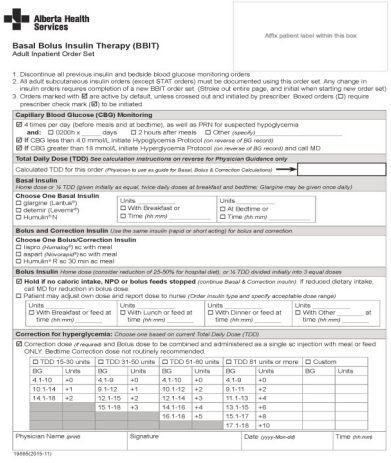
BBIT is a way of ordering multiple daily injections of subcutaneous (sc) insulin that better replicates how our body naturally produces insulin. BBIT has been shown to be an effective way to manage patients' diabetes during their hospital stay, and is similar to how many patients manage their diabetes in the community.

Sliding Scale Insulin (SSI) continues to be commonly used in the treatment of diabetes within the inpatient setting. Unfortunately, the use of the "sliding scale" regime treats hyperglycemia after it has occurred. SSI does not align with current practice guideline recommendations.

http://www.bbit.ca/ is the website that that the DON is using to share resources with early adopter sites and stakeholders. Watch for self directed learning module for Nursing to be posted in next month.

Order Set and BG Record

The paper based order set (form #19885) and blood glucose record (form #20115) that are being used at the first 3 early adopter sites, are currently being revised based on feedback from these teams, and then will be available provincially.



Alberta Health Services

Basal Bolus Insulin Therapy (BBIT)

Adult Inpatient Order Set

Affix patient label within this box

1. Discontinue all previous insulin and bedside blood glucose monitoring orders
2. All adult subcutaneous insulin orders (except STAT orders) must be documented using this order set. Any change in insulin orders requires completion of a new BBIT order set. (Stroke out entire page, and initial when starting new order set)
3. Orders marked with ☑ are active by default, unless crossed out and initialed by prescriber. Boxed orders (☐) require prescriber check mark (☑) to be initiated

Capillary Blood Glucose (CBG) Monitoring

☑ 4 times per day (before meals and at bedtime), as well as PRN for suspected hypoglycemia
and: ☐ 0200h ± ____ days ☐ 2 hours after meals ☐ Other (specify) _____
☑ If CBG less than 4.0 mmol/L initiate Hypoglycemia Protocol (on reverse of BG record)
☑ If CBG greater than 18 mmol/L initiate Hyperglycemia Protocol (on reverse of BG record) and call MD

Total Daily Dose (TDD) *See calculation instructions on reverse for Physician Guidance only*

Calculated TDD for this order (Physician to use as guide for Basal, Bolus & Correction Calculations) →

Basal Insulin

Home dose or ½ TDD (given initially as equal, twice daily doses at breakfast and bedtime; Glargine may be given once daily)

Choose One Basal Insulin

☐ glargine (Lantus®) — Units: ☐ With Breakfast or ☐ Time (hh:mm)
☐ determir (Levemir®) — Units: ☐ At Bedtime or ☐ Time (hh:mm)
☐ Humulin®-N — Units: ☐ At Bedtime or ☐ Time (hh:mm)

Bolus and Correction Insulin *Use the same insulin (rapid or short acting) for bolus and correction.*

Choose One Bolus/Correction Insulin

☐ Hepro (Humalog®) sc with meal
☐ aspart (Novorapid®) sc with meal
☐ Humulin®-R sc 30 min ac meal

Bolus Insulin *Home dose (consider reduction of 25-50% for hospital diet), or ½ TDD divided initially into 3 equal doses*

☑ **Hold if no caloric intake, NPO or bolus feeds stopped** *(continue Basal & Correction insulin)*. If reduced dietary intake, call MD for reduction in bolus dose.
☐ Patient may adjust own dose and report dose to nurse *(Order insulin type and specify acceptable dose range)*

Units: ☐ With Breakfast or feed at time (hh:mm) ____ | Units: ☐ With Lunch or feed at time (hh:mm) ____ | Units: ☐ With Dinner or feed at time (hh:mm) ____ | Units: ☐ With Other ____ at time (hh:mm) ____

Correction for hyperglycemia: *Choose one based on current Total Daily Dose (TDD)*

☑ Correction dose *(if required)* and Bolus dose to be combined and administered as a single sc injection with meal or feed ONLY. Bedtime Correction dose not routinely recommended.

☐ TDD 15-30 units		☐ TDD 31-60 units		☐ TDD 61-80 units		☐ TDD 81 units or more		☐ Custom	
BG	Units	BG	Units	BG	Units	BG	Units	BG	Units
4.1-10	+0	4.1-9	+0	4.1-10	+0	4.1-9	+0		
10.1-14	+1	9.1-12	+1	10.1-12	+2	9.1-11	+2		
14.1-18	+2	12.1-15	+2	12.1-14	+3	11.1-13	+4		
		15.1-18	+3	14.1-16	+4	13.1-15	+6		
				16.1-18	+5	15.1-17	+8		
						17.1-18	+10		

Physician Name (print) | Signature | Date (yyyy-Mon-dd) | Time (hh:mm)

19885(2015-11)

Knowledge translation (KT) is a term used to describe how we integrate research into our every day work. To change practice, it is important to think about what might get in the way of change - before we try to implement the change. Research shows that if we think through these barriers, and have a plan to address these, we are more likely to achieve our change goals.

It is a deliberate, planned approach that the DON SCN is using to help operational teams adopt BBIT, and improve glycemic management, into their routine management of patients with diabetes in hospital.

Early Adopter Sites

Canmore Hospital and ***Oilfields Hospital*** (Black Diamond, AB) (2 rural sites in Calgary Zone) were the first early adopter sites, both implementing at the beginning of this year.

Chinook Regional Hospital, in Lethbridge implemented BBIT and improved glycemic management across their site in April 2016.

Calgary Zone Hospitalist Program, who care for over 800 patients in hospital daily, are focused on glycemic optimization through the implementation of BBIT and multidisciplinary collaboration. They have partnered with the Physician Learning Program to support them in their Glycemic Optimization initiative.

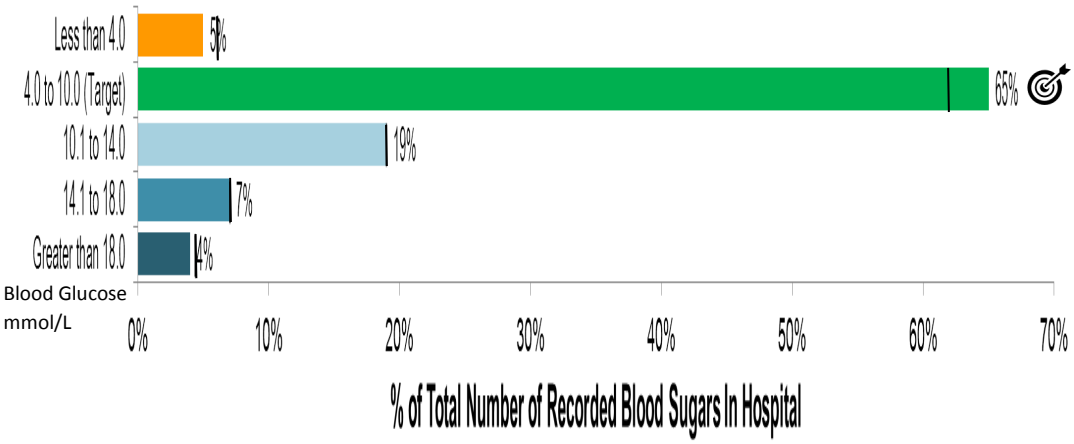
All of our early adopter sites have identified site champions (Physician, Nursing, Pharmacy and Administration) working collaboratively to support the implementation of this clinical practice change. They are currently collecting data that will be populated into an audit tool that has been created in Tableau, so the teams can see the outcomes of their practice changes.

Covenant Health Grey Nuns and the **University of Alberta Hospitals** in Edmonton are preparing their teams and starting their pre-implementation work.

Alberta Early Adopter Sites

Audit tool in Tableau for BBIT uptake - "Initial Data"

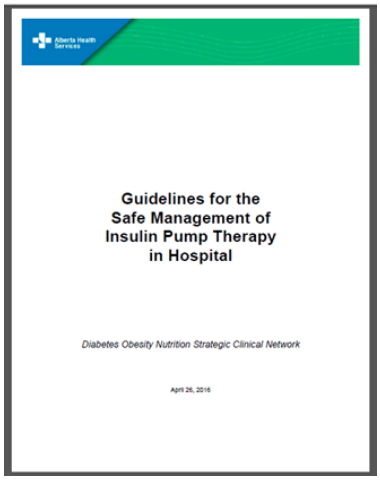
Data is one of the tools being used to support clinicians and teams in their transition to basal bolus insulin therapy. An audit tool has been created in Tableau. Below is some positive initial data (within the first 3 months of implementation) from Chinook Regional in Lethbridge (a 300 bed site). Please contact us for more information about the audit tool.



Demonstrates improvement in blood glucose levels following the *Implementation Strategy*:
•Out-of-target blood glucose levels were improved or sustained from baseline (baseline = black line in graph)
•Target blood glucose levels were improved from baseline (baseline = black line in graph)

Safe Management of Insulin Pump Therapy In Hospital

A reminder that the guidelines for safe management of IPT in hospital can be found on the DON website, as well as the AHS Policy website. They will also soon be populated on the new website:
"I Pump It"
The guidelines were developed to support patients that use IPT to manage their blood glucose to continue using their pumps when appropriate, or to safely transition them to an alternative regime.



For more information about this multifaceted initiative; please visit the DON webpage :
http://www.albertahealthservices.ca/scns/Page13149.aspx
Contact: diabetesobesitynutrition.scn@ahs.ca.

Update on Provincial Pharmacy Initiatives

Pharmacy Services has completed the transition from wardstock multi-dose insulin vials to patient-specific dispensing of insulin pens in all sites where feasible. This important safety initiative has been implemented province wide, although site based variability may exist due to local medication dispensing processes. Ongoing follow up and evaluation of the transition to insulin pens is underway. Evaluation activities include monitoring of related RLS reports and follow up with additional educational support where needed.
Find more information on INSTE @
http://insite.albertahealthservices.ca/13292.asp
Please contact Nancy Louis (Medication Safety Pharmacist) @ Nancy.Louis@ahs.ca

Providing Available Carbohydrate Information to Patients

Nutrition and Food Services has partnered with the DON SCN™ to improve the ability of inpatients to manage their own diabetes. As part of our multi-pronged approach, some sites will be providing available carbohydrate information to the patients. Two options have been created to provide this information.

At sites that have our CBORD menu software, available carbohydrate can be printed on the selective menus diabetic adult patients use for meal selection, and the tray tickets that patients receive with their meal. Total available carbohydrate will be calculated and provided on the bottom of the tray ticket for each meal. The patient or resident who practices carbohydrate counting will be able to determine the foods and the quantity they should consume to meet their carbohydrate goals.

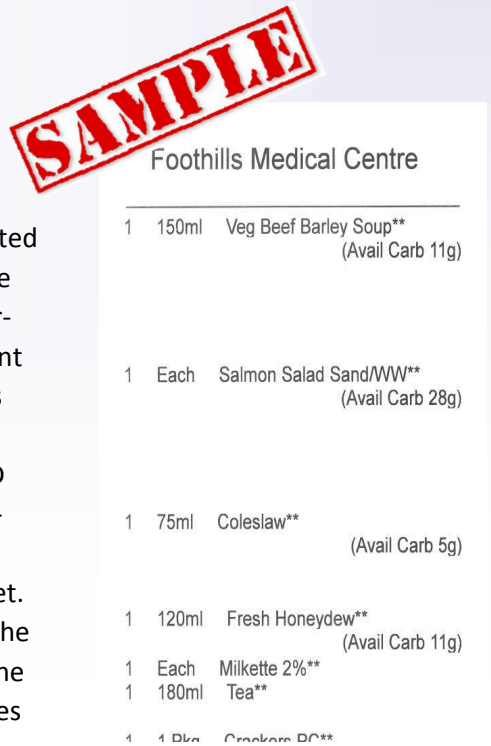
Both the **Calgary urban adult acute care hospitals** and **University of Alberta Hospital** will initiate the provision of available carbohydrate values to the patient, beginning in January 2017. Other health care facilities are in the planning stages to provide available carbohydrate values on their selective menus and tray tickets.

Since a patient survey carried out in Calgary indicated that patients want to receive available carbohydrate information in a written document as well as on the tray tickets that will be provided.

For sites without the CBORD software, available carbohydrate is only available in the form of the written pamphlet.

Any staff wishing to access the written information about the available carbohydrate values for menu items provided to inpatients, can use INSITE or follow the link: http://insite.albertahealthservices.ca/13292.asp

For more information, contact Janet Nielsen, RD, Program Lead, Standards and Practice, Nutrition Services @ janet.nielsen@ahs.ca.



Provincial Policy and Protocols

The DON SCN provincial glycemic management policy working group is proud to share the draft glycemic management policy and accompanying procedures for hypoglycemia and hyperglycemia management with stakeholders from across the organization. We are now needing your input as to whether the governance documents resonate with you, and if they can be operationalized across the province. AHS employees can view draft documents, and provide feedback on INSITE starting November 7th. (watch for a 'hot button' on the INSITE opening page.)

For more information about this initiative look us up online @ http://www.albertahealthservices.ca/scns/Page10970.aspx

PLEASE CONTACT THE DON SCN @ diabetesobesitynutrition.scn@ahs.ca