



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 as hyperglycemia (high blood glucose) 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 while they are in hospital. Alberta data is consistent with this figure; with hyperglycemia experienced approximately 36% of the time blood glucose are tested.

Improving blood glucose 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 5.0–10.0mmol/L for most patients with diabetes in hospital. See more information in the Diabetes Canada [Clinical Practice Guidelines \(CPGs\) for In-Hospital Management of Diabetes](#).

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Elements of the multifaceted initiative:

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

NEW: BBIT Self- Study Guide for Nursing

www.bbit.ca

This new education resource is available on bbit.ca. The target audience for this self-study guide is nurses in Alberta who are involved in glycemic management and the administration of subcutaneous insulin to the adult population. The self-study guide includes case studies using the provincial basal bolus insulin therapy (BBIT) order set.

Nursing Education Days Inpatient Diabetes Management

Helping your patients achieve their glycemic targets

An interactive education day for LPNs, RNs and RPN's who work in acute care. DON SCN in collaboration with Zone operations.

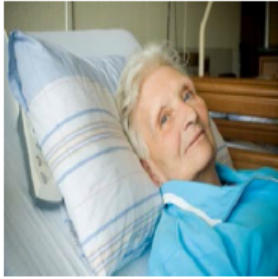
Calgary Zone

March 31, 2017—sold out
May 12, 2017—registration coming soon
For more information, please contact:
DiabetesObesityNutrition.SCN@ahs.ca

Edmonton Zone

June 9, 2017—registration coming soon
For more information, please contact:
DiabetesObesityNutrition.SCN@ahs.ca

Glycemic Management in the Frail Elderly



Frail elderly: Older adults assessed as physically and/or cognitively frail at risk for confusion, agitation or falls.

Consider a medication review and titration of insulin doses if not achieving target blood glucose (BG) values
5-12mmol/L
Keeping a patient above BG targets does not prevent hypoglycemia.

Blood Glucose (BG) targets of 5.0-10.0mmol/L are recommended for most patients. For patients that are assessed as:

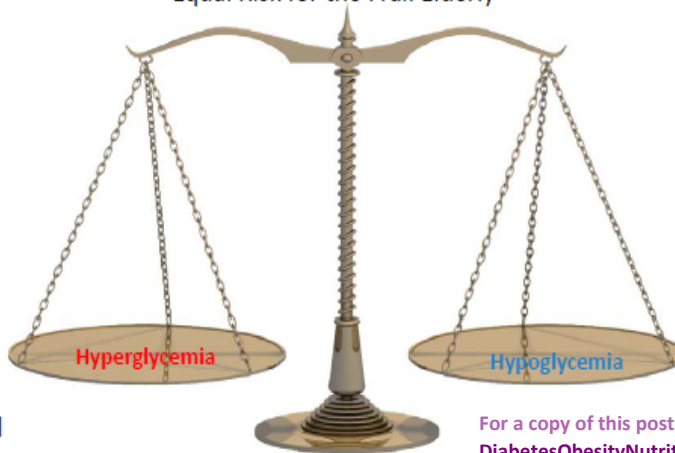
- frail elderly;
- having limited life expectancy;
- hypoglycemia unawareness

BG targets are **5.0-12.0mmol/L**.

This poster was created to bring awareness to risk of hyperglycemia and hypoglycemia in the frail elderly.

This poster was created in collaboration with the Seniors SCN and Calgary Hospitalist Innovation Committee (CHIC) to support staff education.

Equal Risk for the Frail Elderly



Hyperglycemia may increase risk for:

- Urinary tract infections
- Yeast infections
- Incontinence
- Dehydration and electrolyte imbalances
- Delirium and falls
- Patient feels unwell

Hypoglycemia may increase risk for:

- Confusion and falls
- Altered consciousness
- Patient feels unwell

For a copy of this poster; please contact us @ DiabetesObesityNutrition.SCN@ahs.ca

Basal Bolus Insulin Therapy

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.

Knowledge Translation (or implementation science) 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.

Some of the known **barriers** to this clinical practice change that site based teams are addressing are: Availability and continued use of SSI order set, BBIT orders not being given as prescribed, Fear of hypoglycemia, Lack of communication between care team and patients, Lack of ongoing education and monitoring of data, Practice regression in the absence of ongoing support, Lack of active titration of BBIT doses, Concern around transition to hospital and back to home.

Facilitators that are site based teams are using include: Site Champions (MD, RN, Pharmacist), Administrative Support / Champion, Communication between team and patient, Ongoing multidisciplinary multi-modal Education (profession to profession), Engaging residents and practicum students, Following up with Clinicians that order SSI, Linking glycemic control to order set, Building in direction about hyperglycemia management in order sets, Using data to measure and support change, Eliminating sliding scale option.

Each site / unit has their own unique barriers and facilitators.

BBIT

Basal Bolus Insulin Therapy

PROVINCIAL RESOURCES on the BBIT website

<http://www.bbit.ca/> is the website that the DON is using to share resources with early adopter sites and stakeholders. As new Education resources are being developed, based on learning from our early adopter sites, they are added to the www.bbit.ca website. Visit the website to see new posters, pamphlets, self-study guide, and more to come such as patient information handouts.

Provincial Order Set and BG Record

The paper based order set (form #19885) and blood glucose (BG) and insulin administration record (form #20115) are now available provincially from DATA group.

Early Adopter Sites

Canmore General Hospital and **Oilfields General Hospital** (Black Diamond, AB) are two rural sites in Calgary Zone who were the first early adopter sites, both implementing in early 2016. They are now sharing their experience with other rural sites in their zone. **Calgary Zone rural sites** are doing a zone-wide implementation this spring and summer.

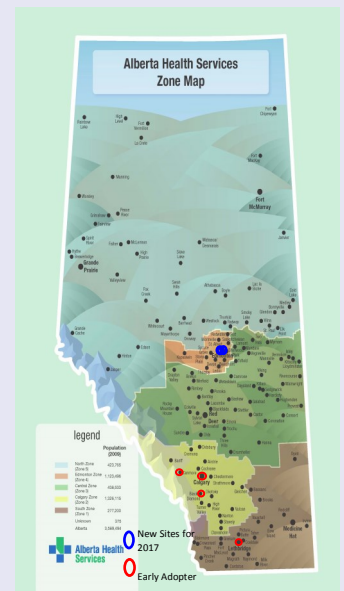
Chinook Regional Hospital in Lethbridge implemented BBIT and improved glycemic management across the site in April 2016. The hospital is now monitoring its audit data and sharing the collected data with its team members, as well as provincially.

Calgary Zone Hospitalist Program cares for over 800 patients in hospital daily, focusing on glycemic optimization through the implementation of BBIT starting in April 2016 and multi-disciplinary collaboration. The program has partnered with the Physician Learning Program to support its Glycemic Optimization initiative.

University of Alberta Hospital started a site wide implementation phase of the BBIT roll-out in March 2017. Site based champions are working collaboratively to support peer to peer education during the implementation phase. The site is in the process of collecting baseline and audit data.

Grey Nuns Community Hospital - Covenant Health On February 27, 2017 the GNCH hosted a Train The Trainer (TTT) day for site champions and Edmonton zone guests, including educators from nursing faculties at MacEwan University, NorQuest College and Athabasca University. The GNCH team is currently doing site-based peer-to-peer education, and baseline data collection. They are working towards a site-wide implementation in June 2017.

All of the early adopter sites have identified site champions (Physician, Nursing, Pharmacy and Administration) working collaboratively to support the implementation of 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.

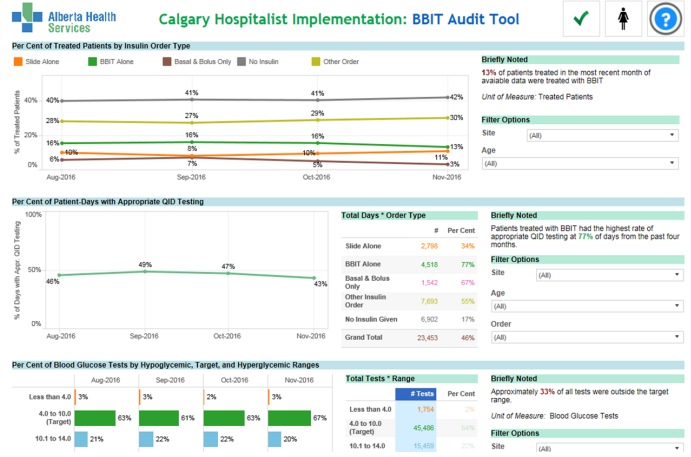


QEII in Grande Prairie is in the pre-implementation phase, getting their team together.

Edmonton Zone Accreditation Implementation Team (ZAIT) is partnering with DON SCN to support several sites in the Edmonton zone in the implementation of this clinical practice change.

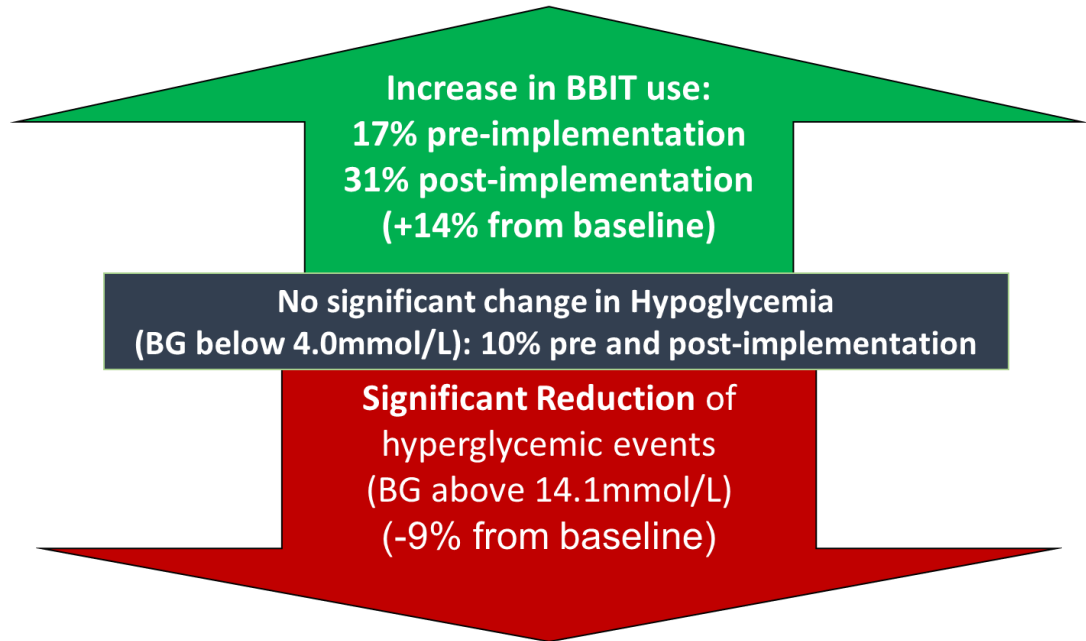
Early Data

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.



Audit data from the Chinook Regional Hospital

April 2016-September 2016



Early Data from the Calgary Zone Hospitalist Program and the GO Initiative

April 2016 to February 2017

Blood Glucose Data:

No change in hypoglycemia

Pre-intervention: 6.8% of patient days
 Post-intervention 7.0% of patient days, p=NS

Moderate-Severe Hyperglycemia (BG>14.1mmol/L)

2% patient-day decline from baseline, p<0.05

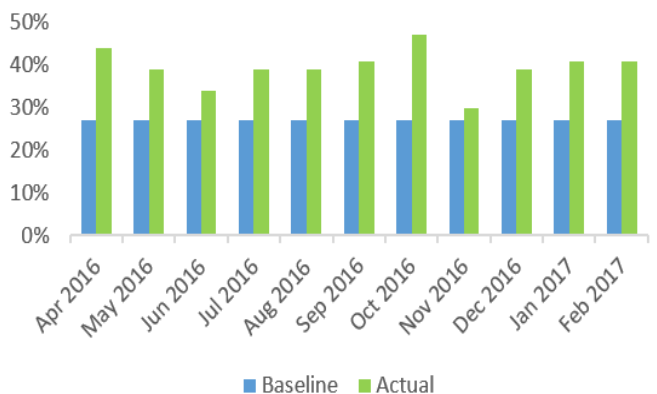
Looking at Length of Stay:



Preliminary data showed a significant **14% reduction in LOS** after taking into account age, gender, diabetes type, comorbidity count, and in-target status from the first 24 hours of acute stay. This suggests that a patient in the baseline period who stayed for 6 days could experience between a .42 day and 1.2 day reduction in LOS.

Uptake of the BBIT Prescription:

+13% Increase in BBIT prescription post-implementation



Update from Provincial Pharmacy

Safety Pen Needles—Unsafe use of insulin pens may result in harm to patients or staff. An updated [Safer Practice Notice](#) was distributed at the end of October that reminds staff of the correct technique when using insulin pens.

Provincial Pharmacy continues to hear from staff that they are experiencing issues with insulin administration with the safety pen needles.

As a result, the provincial pharmacy safety group are developing resources to assist Clinical Nurse Educators (CNEs) and front line staff:

These resources are tools to assist and support the CNEs in assessment of competency with the safety pen needles.

These resources will be distributed widely to in hospital CNEs via email distribution in the next month. They will also be posted on the pharmacy insulin safety webpage.

If you have any other suggestions for follow up, or if you are aware of a specific practice area that might be experiencing difficulties, please forward the information to Nancy Louis @ nancy.louis@ahs.ca (Medication Safety Pharmacist)

Provincial Glycemic Management Policy and Procedures

The provincial policy for Glycemic Management, along with procedures for hypoglycemia and hyperglycemia management were revised after broad stakeholder consultation in November 2016. The governance documents have now been reviewed by AHS Legal, and will be presented to the AHS Clinical Operations Executive Committee (COEC) in May, for approval.

These documents were shared with all 5 Zone Medical Advisory Councils (ZMAC) during the stakeholder consultation. DON SCN had the opportunity to present to Calgary ZMAC in February. Calgary ZMAC has endorsed the policy.

The aim of this policy suite is to improve glycemic management in Acute Care settings through a number of coordinated strategies, and to support staff in early recognition and treatment of hypoglycemia and hyperglycemia, to prevent negative outcomes for adult patients.

We are looking forward to advancing these provincial governance documents to assist staff in supporting their patients to achieve their glycemic (blood sugar) targets while in hospital.

Additional Alerts on Hospital Glucose Meters

The DON SCN has partnered with provincial lab point of care testing, and new alerts have been added to the Roche glucose meters at some hospital sites, to assist staff in early recognition and treatment of patients experiencing hypoglycemia or hyperglycemia. The added alerts are for:

Blood Glucose **less than 4.0mmol/L**

Blood Glucose **greater than 18.0mmol/L**



These additional alerts are aligned with the provincial Basal Bolus Insulin Therapy (BBIT) order set, as well as the draft provincial glycemic management policy and accompanying procedures for hypoglycemia and hyperglycemia management.

The current alerts on the glucose meters, that coincide with the lab services critical blood glucose values. (critical low-2.6, critical high-25.0), will also remain on the meters.

Chinook Regional added these alerts to their glucose meters last Spring. Calgary Zone (rural and urban) have recently added the alerts at all their adult sites. Grey Nuns Hospital in Edmonton is planning to add to their meters this Spring to support their Glucose Optimization project.

If your site is interested in having these alerts added, or would like more information about the added alerts; please contact Glenda Moore (Project Lead for the provincial diabetes inpatient management initiative) at diabetesobesitynutrition.scn@ahs.ca.

Update from NFS: Providing Available Carbohydrate Content In- formation to Patients Self- Managing Diabetes In-Hospital

Janet Nielsen, RD (Program Lead, Standards and Practice, Nutrition Services)

As part of continuing to improve the self-management of diabetes, Nutrition and Food Services is in the process of updating the available carbohydrate information **for inpatients**. The updates are almost complete and will be added to the appropriate pages before the end of April 2017. Presently the information on Insite is intended only for adult inpatients and provides values for the amounts of available carbohydrate in foods served on the menu.

Two additional documents will be added to Insite.

- One describes what to expect on a diabetic diet for adults.
- A second document designed for children with diabetes at Alberta Children's Hospital and Stollery Children's Hospital provides the available carbohydrate for foods on the inpatient pediatric menu.

The new information will be placed on the two pages of Insite that presently have available carbohydrate information. On Insite, search:

Insulin Safety & Diabetes Management Toolkit for Health Care Professionals (Under the tab "Nutrition Information for Patients with Diabetes") **and** *Diabetes Self-Management: Carbohydrate Content of Foods Served on AHS Menus*

Finally, inpatients with diabetes using an insulin pump and coming to hospital can access the information about the inpatient menus from www.ipumpit.ca page or on the AHS external website (<http://www.albertahealthservices.ca/scns/Page13209.aspx>).

We continue to expand the sites with our CBORD menu software that have available carbohydrate printed on the selective menus diabetic adult patients use for meal selection, and/ or the tray tickets that patients receive with their meal. This allows the patient or resident who practices carbohydrate counting to determine the foods and the quantities they should consume to meet their carbohydrate goals. Sites presently with this ability are Foothills Medical Centre, South Health Campus, Rockyview Hospital, Peter Lougheed Hospital, and University of Alberta Hospitals. Other sites such as Red Deer Regional Hospital and Grey Nun's (Covenant) are preparing for implementation of this initiative.

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

Peri-operative Guidelines for Patients with Diabetes

The DON SCN is excited to be collaborating with the Surgery SCN and Clinical Knowledge and Content Management (CKCM) to develop guidelines for patients with diabetes that are having surgery. We will be building on work already done in the province including:

- Work done by the nutrition working group creating guidelines for pre-op carb loading (including patients with diabetes)---modern fasting guidelines (part of Enhanced Recovery after Surgery [ERAS] initiative)
- Work done by Dr. Colin MacDonald (Edmonton GNCH) and others around peri-operative guidelines for patients with diabetes

The Perioperative Guidelines multidisciplinary working group to commence next month.



Safe Management of Insulin Pump Therapy in Hospital

In-Hospital Guidelines and required forms for the management on Insulin Pump Therapy in-hospital can be found at:

www.ipumpit.ca