



Canadian Society of Internal Medicine

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Diabetes in the post operative period

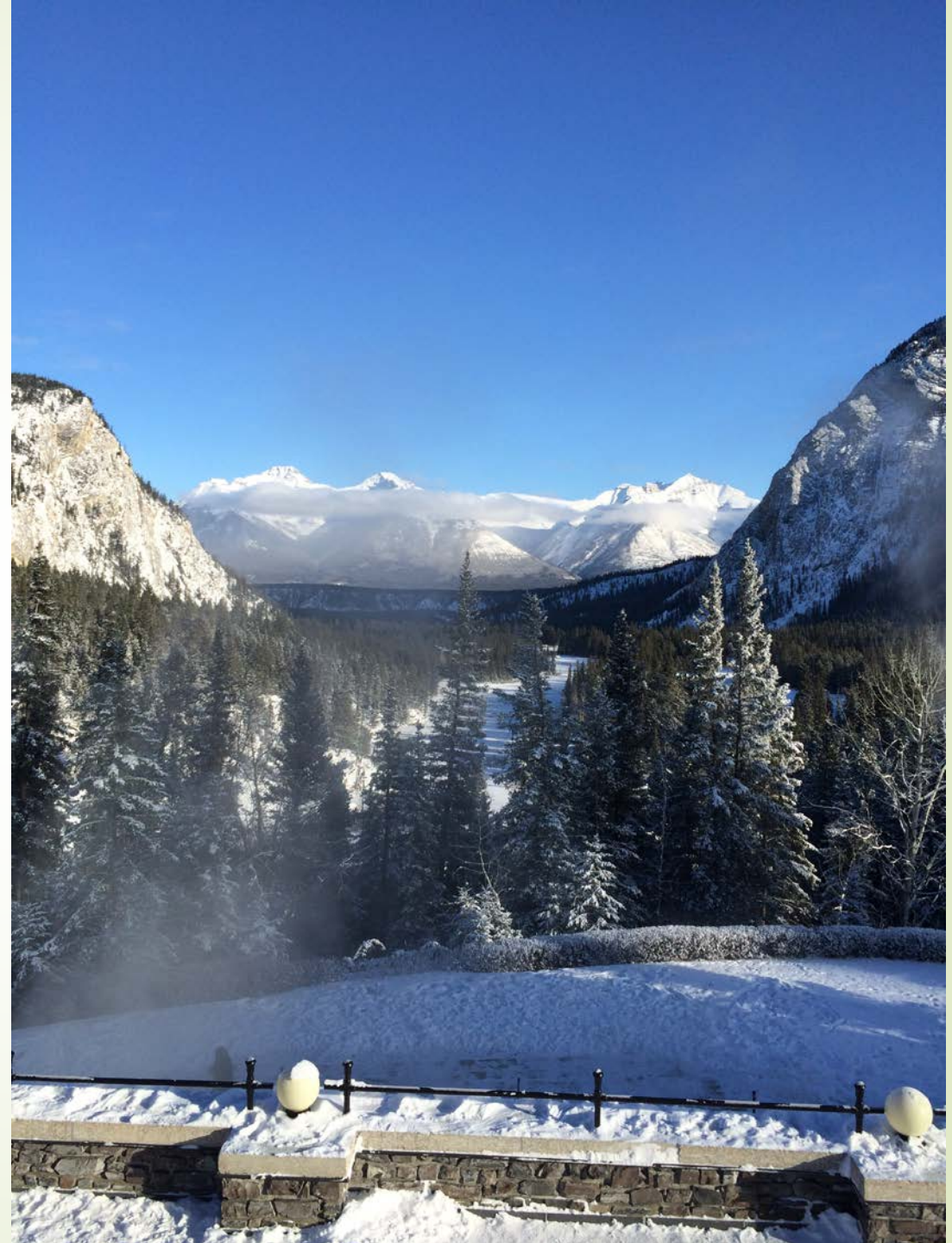
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CSIM 2018
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Disclosures

- **Conflict Disclosures**

- **Definition:** A Conflict of Interest may occur in situations where the personal and professional interests of individuals may have actual, potential or apparent influence over their judgment and actions.

- **I have no conflicts to declare**

- **I have not received any payments from pharmaceutical companies or any honoraria as a speaker**

CSIM Annual Meeting 2018

The following presentation represents the views of the speaker at the time of the presentation. This information is meant for educational purposes, and should not replace other sources of information or your medical judgment.

Learning Objectives:

Understand the importance of good perioperative care in the diabetic patient undergoing non-cardiac surgery


*How to manage diabetes in:
the neurosurgical patient
the patient on corticosteroids
the patient who is NPO, on enteral or parenteral nutrition*

Speaker: Dr Lynn Lambert, October 10 2018





Why is diabetes important in the hospital setting

- ▶ 4th most common comorbidity on hospital discharge summaries
- ▶ Acute illness can cause an increase in stress hormones and secondary hyperglycemia
- ▶ One US study (Umpierrez et al 2002) found hyperglycemia in 38% of in-patients; 12% were not known to be diabetic. Marker of in-patient mortality
- ▶ Blood glucose is often poorly controlled on general medical and surgical services



What are our goals for diabetes control in the perioperative setting?





What are our goals for diabetes control in the perioperative period?

Avoid hypoglycemia while patient is NPO

Avoid hypoglycemia while patient is anesthetised

Avoid hyperglycemia in the post operative period

Optimise diabetes management for patient's return home
could mean return to previous drugs

opportunity to introduce insulin and arrange teaching

Reduce in-hospital mortality

Is it a mountain to climb?





Guidelines to help us **DIABETES CANADA**

- **2018** In-hospital management of diabetes
- Target glycemic levels between 5-10 mmol/L for minor and moderate surgery. Use basal bolus insulin (not sliding scale short acting)
- Check glucose 4-6 hourly; 1-2 hourly if critically ill or on iv insulin (ICU)
- Maintain above 6mmol/L to avoid adverse effects of hypoglycemia



Guidelines from the **Association of Anaesthetists of GB & Ireland**

- Perioperative management of the surgical patient with diabetes, **2015**
- A more detailed checklist of what to do with oral regimens and insulins.
- Deals mainly with pre and peri-operative care of diabetes
- “ Aim for intraoperative glucose 6-10mmol/L”
- Doesn't say much about post operative management



Why is good diabetes control important in the perioperative period?

Risks of poor diabetic control

- Increase in mortality
- 2.4 increase in respiratory infections
- Doubling of surgical site infections
- 3x increase in UTI
- 50% increase in rate of MI and Acute kidney injury
- Surgery may be avoidably delayed




The post operative period

- ▶ Is influenced by the pre-operative assessment or lack of it
- ▶ A focussed pre-operative assessment
 - ▶ can make the pre-operative period much easier to manage
 - ▶ reduce the risks of above mentioned complications



The pre-operative assessment in the patient with diabetes

- ▶ Look for evidence of diabetes / prediabetes
 - ▶ Not all patients are aware of their status
 - ▶ Record of previous Blood glucose, HbA1c,
 - ▶ history of gestational diabetes, Family history
 - ▶ body habitus
- ▶ Consider whether the peri-operative period could be diabetogenic
 - ▶ High dose steroid usage
 - ▶ major pancreatic surgery
 - ▶ TPN or enteral feeding likely
- ▶ Mention this in the pre-op letter



GIM consult service: typical in-patient referrals

- ▶ **Patient 1**
- ▶ 68 year old, presented with seizures
- ▶ Has Stage 4 lung cancer with brain metastases,
- ▶ Listed for palliative resection of brain lesions
- ▶ History of Hypertension; Diabetes on Metformin
- ▶ Cerebral Edema
- ▶ Please see pre-op and follow post-op



Your thoughts?





Patient 1

- ▶ 68 year old with brain metastases from lung cancer
- ▶ HbA1c 2 months ago 9.0% - poor control
- ▶ On dexamethasone 4mg qid for edema
- ▶ Blood glucose 14-16 mmol/L
- ▶ What should we do?
- ▶ Stop metformin pre-op (and don't restart?)
- ▶ Lantus 8 units pre-op, 14 units post-op
- ▶ Consider need for mealtime short acting insulin
- ▶ Personality change –who gives the injections?




Patient 2

- ▶ 84 year old, Atrial fibrillation, on warfarin,
- ▶ Hypertensive,
- ▶ Diabetic on Metformin and Sitagliptin
- ▶ on urgent OR list for evacuation of subdural hematoma.
- ▶ Confused
- ▶ Please do pre-op consult and proceed with recommendations




Thoughts?





Patient 2 - subdural

- Pre-operatively: Metformin and Sitagliptin held
- Post operatively: Sugars initially 8-10 mmol/L
- BUT patient drowsy, swallow compromised
- Enteral feeding started by NG route; daytime only
- What did we give him?



Patient 2 -Subdural

- ▶ Insulin to cover feeds
 - ▶ Humulin N (not Lantus) 8 units in the morning, titrated up as feed rate increased
 - ▶ Needed 16 units daily; stabilised.
 - ▶ Then feeding changed to bolus at mealtimes
 - ▶ What to do now?
-
- ▶ What to do as pureed diet introduced and mobilisation increased?
 - ▶ Balance of increased calories versus increased energy expenditure



Pre and post op referrals

Patient 3

- ▶ On ENT ward:
- ▶ 74 year old, hypothyroid, 3rd surgery for head and neck cancer (palatal reconstruction) 2 weeks post- op , not doing well
- ▶ Diabetes, usually on diet , HbA1c 4.9% in 2 months ago: previous pancreatic surgery; BMI 20
- ▶ Wound breaking down, no appetite; gastrostomy tube in situ
- ▶ Consult: please see re blood sugars 16- 20 mmol/L



Patient 3 – on the ENT ward

- ▶ 2x 470 calorie cans of milk based liquid feed by bolus 3x daily
- ▶ Humulin N
 - ▶ 16 u in morning, 7 units in evening
 - ▶ Humulin R (or aspart) 6 units am, 8 units midday, 6 units evening
- ▶ Went home – we continued to advise and gradually reduced insulin as the cans of feed were omitted and diet substituted.
- ▶ Soft diet can't chew well
- ▶ Metformin avoided – poor appetite and nausea
- ▶ Gained weight, doing well



Patient 4

- ▶ 54 years old, on neurosurgical ward
- ▶ Right fronto-parietal mass
- ▶ diabetes 15 years, BMI 28, Sub cut Insulin pump 5 years
- ▶ Said to have good control but HbA1c 8.4%
- ▶ Just started Dexamethasone, 4mg 6 hourly
- ▶ Asked to see re: optimising blood sugars now and dealing with the perioperative period



Patient 4

- ▶ Pre-breakfast glucose is 8-10mmol/L, midday is 18, afternoon is 15, and 8pm is 10-12
- ▶ Usual insulin is 0.75 units per hour. Uses a sliding scale for meals.
- ▶ “Can control my own insulin”
- ▶ BUT sugars poor pre-steroid and now on high dose steroid.
- ▶ What did we do?



Patient with the insulin pump and the brain mass

- ▶ Recognised that the patient was an expert in the workings of his pump
- ▶ Recognised that he was a little “frontal” and antagonistic
- ▶ Increased the background rate to 1.5 units per hour
- ▶ Increased the mealtime insulin to 10, 12, 8 units
- ▶ All set for surgery
- ▶ BUT sent home on a tapering steroid dose to wait 2-3 weeks for surgery.
- ▶ Gave written instructions and a written sliding scale and a contact number for the diabetes nurse
- ▶ Gave instructions for the perioperative control/ told the anesthetist



Other patients to consider

- ▶ The patient with a prolonged ileus and TPN
- ▶ The patient who has a pancreatic resection
- ▶ The patient who has lost weight while ill and goes hypoglycemic when his "home meds" are restarted



Recommendations

- ▶ The peri- and post- operative period is a good time to reassess the patient with diabetes and try to regain better control (if appropriate) or to relax control if life expectancy has changed.
- ▶ A pre-operative HbA1c is really useful
- ▶ A thoughtful preop assessment of the diabetic patient is valuable
- ▶ We need to involve the patients and their families
- ▶ Also our specialist nurses, pharmacists and dieticians
- ▶ A GIM post operative consultation is really useful
- ▶ This is a good area in which to do a Quality Assurance project



References

- ▶ Association of anaesthetists of Great Britain and Ireland. Perioperative management of the surgical patient with diabetes 2015.
 - ▶ *Anaesthesia* 2015; **70**: 1427-1440
- ▶ Frisch A, Chandra P, Smiley D, et al : Prevalence and clinical outcome of hyperglycemia in the perioperative period in non-cardiac surgery
 - ▶ *Diabetes Care* 2010; **33**: 1783-8
- ▶ Diabetes Canada 2018 Clinical Practice guidelines



Comments and questions?

