

2014 Perioperative Glucose Control Best Practices

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Preoperative Period

In the weeks prior to surgery and on the morning of surgery

1.1 Preoperative Screening (prior to day of surgery)

- 1.1.a Check A1c in all patients with known diabetes within 90days of surgery
- 1.1.b Patients with an A1c of greater than 8.5 may benefit from further evaluation prior to elective surgery. A1c threshold alone should not be used to determine if a patient can proceed to surgery
- 1.1.c Consider checking fasting glucose or A1c in all patients at risk for diabetes or pre-diabetes (i.e. those with BMI \geq 30, those \geq 45 years old)

1.2 Day of Surgery Monitoring

- 1.2.a Check glucose on all patients with known diabetes on arrival the day of surgery.
- 1.2.b Check glucose on those at risk for perioperative hyperglycemia on arrival the day of surgery. BMI \geq 30 or those \geq 45 years old)

1.3 Glucose target

- 1.3.a Glucose on arrival on the day of surgery is $<180\text{mg/dL}$
- 1.3.b Glucose $\geq 180\text{mg/dL}$ alone is not a reason to cancel surgery; rather develop an institution protocol on how to monitor and manage glucose perioperatively for patients $\geq 180\text{mg/dL}$
- 1.3.c If acidemia or hyperosmolar in the setting of hyperglycemia, do NOT proceed with surgery unless urgent/emergent

1.4 Intervention

- 1.4.a Institutions should develop protocols for action for patients with glucose $>180\text{mg/dL}$
- 1.4.b Discuss plan to control intraoperative hyperglycemia prior to starting surgery on any patient whose glucose on arrival is $>100\text{mg/dL}$
- 1.4.c Develop a clear hypoglycemia protocol for this period

Intraoperative Period

From the start of surgery through end of case

2.1 Monitoring

- 2.1.a Check glucose following induction in all patients with diabetes or with initial day of surgery glucose >100mg/dL
- 2.1.b Consider rechecking glucose post incision to monitor for stress induced hyperglycemia or steroid induced hyperglycemia

2.2 Glucose target

- 2.2.a Goal intraoperative glucose 100-180mg/dL
- 2.2.b Consider goal of 100-150mg/dL in certain surgical types (i.e. cardiac surgery)

2.3 Intervention

- 2.3.a Treat with insulin to keep glucose <180mg/dL; insulin drip with frequent monitoring is the preferred method for intraoperative control when available within the institution
- 2.3.b Do NOT use sliding scale subcutaneous insulin in the intraoperative period
- 2.3.c Develop a clear hypoglycemia protocol for this period

Postoperative – Post Anesthesia Care Unit

From the arrival in PACU to transfer to inpatient unit or discharge

3.1 Monitoring

- 3.1.a Check glucose on arrival to PACU in all patients with any glucose >140mg/dL on the day of surgery
- 3.1.b Check glucose on arrival to PACU in all patients with a history of diabetes
- 3.1.c Consider checking glucose on arrival to PACU in any patient at risk for perioperative stress or stress induced hyperglycemia
- 3.1.d For any patient with a day of surgery glucose >140mg/dL continue to check glucose every hour while in PACU

3.2 Glucose target

- 3.2.a. Glucose 100-180mg/dL
- 3.2.b Consider goal of 100-150mg/dL in certain surgical types (i.e. cardiac surgery)

3.3 Intervention

- 3.3.a Continue insulin management if begun intraoperatively
- 3.3.b Develop transition protocol from insulin infusion to basal-bolus SQ insulin if infusion will not be continued on transfer to inpatient unit
- 3.3.c Develop a clear hypoglycemia protocol for this period

Postoperative – Inpatient Care

From the arrival on the inpatient unit until discharge

4.1 Monitoring

- 4.2.a Check blood sugar every six hours (or prior to meals and at bedtime) in all patients with a history of diabetes or who had any day of surgery glucose >140mg/dL
- 4.2.b Consider checking glucoses every six hours (or prior to meals and at bedtime) in all patients at risk for stress or steroid hyperglycemia

4.2 Glucose target

- 4.2.a Glucose 100-180mg/dL
- 4.2.b Consider goal of 100-150mg/dL in certain surgical types (i.e. cardiac surgery)

4.3 Intervention

- 4.3.a Stop home oral hypoglycemic agents or injectable anti-DM agents other than insulin
- 4.3.b Use available IV insulin infusion protocol or develop a basal/bolus insulin protocol for inpatient use
- 4.3.c Do NOT rely upon sliding scale insulin for glucose control
- 4.3.d Incorporate a clear hypoglycemia protocol into standardized insulin orders

Discharge

By the time of discharge

4.1 Monitoring

- 4.1.a Ensure patients with diabetes and those who experienced perioperative hyperglycemia have a working glucometer for home use
- 4.1.b Develop patient specific home monitoring recommendations

4.2 Glucose target (consistent with ADA outpatient recommendations)

- 4.2.a Pre-meal 70-130mg/dL
- 4.2.b All other glucoses <180mg/dL

4.3 Intervention

- 4.3.a Ensure patient education for all patients with perioperative hyperglycemia, prior to discharge to include topics: diet, monitoring, significance of hyperglycemia
 - 4.3.b Consider engaging a Certified Diabetes Educator in the discharge process
 - 4.3.c Develop clear and patient friendly discharge instruction sheet for patients with perioperative hyperglycemia to include information regarding: importance of glucose control perioperatively, frequency of home monitoring, home glucose targets, planned follow up, and what to do if glucose is out of range
 - 4.3.d Arrange follow up with primary care provider or another follow-up provider within 1 week of discharge to re-evaluate glucose control in all patients with perioperative hyperglycemia
 - 4.3.e Ensure summary of glucose control and goals are communicated to primary care provider and/or other follow-up provider
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