Peri-operative Glucose Control Guidelines

SW Anesthesia
Revised May 2024

PRE-HOSPITAL

- Medicine consult if non-fasting BG > 200 or HbA1C > 9% for target surgeries:
  - Abdominal hysterectomy & colorectal
  - Total joint replacement
  - Open vascular surgery of lower body
  - Lumbar instrumented fusion
  - CABG

- Insulin instructions - Continue as normal until the morning of surgery:
  - If BG > 140, take one-half of AM dose of long-acting insulin
  - Pumps – suggest decreasing the basal rate by one-half (patient may override this instruction)
  - Hold all other insulins

- Non-insulin injectables – For those on once daily dosing, just hold the day of surgery. For those on weekly dosing, hold for 7 days whenever possible

  GLP1 agonists delay gastric emptying which increases the risk of aspiration

- Oral hypoglycemics – Hold the day of surgery

  Since SGLT2i's may cause ketoacidosis in diabetics during prolonged fasting, diabetics should hold them for 3 days before all major surgeries except total joints whenever possible SGLT2i's can be continued the DOS for minor cases, intermediate cases, and total joints since these patients will resume oral intake of carbohydrates on the DOS. Since SLGT2i's are also prescribed for cardiovascular conditions, they should always be continued the DOS if the patient is non-diabetic

- NPO instructions:
  - For AM surgery: no solids after MN
  - For PM surgery: light (non-fatty) breakfast permitted 6 hours before arrival time
  - Clears ad-lib up to 2 hours before arrival time (does not have to contain carbohydrate)
  - Sugar-containing clears anytime if BG < 80 or if experiencing hypoglycemic symptoms

Drug Class	Generic Name	Trade Name	Admin Route	Instuction before DOS	Instruction on DOS
Rapid-acting insulins	insulin aspart	NovoLog	Parenteral	Continue	Hold
	insulin glulisine	Apidra	Parenteral	Continue	Hold
	insulin lispro	Humalog	Parenteral	Continue	Hold
Short-acting insulins	regular insulin	Humulin-R, Novolin-R	Parenteral	Continue	Hold
				Continue	Hold
Intermediate-acting insulins	insulin isophane	Humulin-N, Novolin-N	Parenteral	Continue	Hold
Long-acting insulins	insulin detemir	Levemir	Parenteral	Continue	Decrease dose 50%
	insulin glargine	Lantus, Toujeo	Parenteral	Continue	Decrease dose 50%
	insulin degludec	Tresiba	Parenteral	Continue	Decrease dose 50%
Biguanides	metformin	Glucophage	Oral	Continue	Hold
DPP-4 inhibitors	alogliptin	Nesina	Oral	Continue	Hold
	linagliptin	Tradjenta	Oral	Continue	Hold
	saxagliptin	Onglyza	Oral	Continue	Hold
	sitagliptin	Januvia	Oral	Continue	Hold
GLP-1 agonists	semaglutide	Ozempic	Parenteral	Hold 7 days before DOS	Hold
	exenatide ER	Bydureon	Parenteral	Hold 7 days before DOS	Hold
	dulaglutide	Trulicity	Parenteral	Hold 7 days before DOS	Hold
	tirzepatide	Mounjaro	Parenteral	Hold 7 days before DOS	
	liraglutide	Victoza	Parenteral	Hold 1 day before DOS	Hold
	exenatide	Byetta	Parenteral	Hold 1 day before DOS	Hold
	semaglutide	Rybelsus	Oral	Hold 1 day before DOS	Hold
SGLT 2 inhibitors	dapagliflozin	Farxiga	Oral	Hold 72 hrs before major op if diabetic	Hold
	canagliflozin	Invokana	Oral	Hold 72 hrs before major op if diabetic	Hold
	empagliflozin	Jardiance	Oral	Hold 72 hrs before major op if diabetic	Hold
	bexagliflozin	Brenzavvy	Oral	Hold 72 hrs before major op if diabetic	Hold
Sulfonylureas	glimepiride	Amaryl	Oral	Continue	Hold
	glipizide	Glucotrol	Oral	Continue	Hold
	glyburide	DiaBeta	Oral	Continue	
Thiazolidinediones	rosiglitazone	Avandia	Oral	Continue	Hold
	pioglitazone	Actos	Oral	Continue	Hold

PAA

- Check BG on all diabetics
- Check BG on non-diabetics having a target surgery *(listed above)*
- If the patient is non-diabetic and the BG < 130, no further action is required until arrival to PACU
- Treat BG > 160 with IV Humulin-R *(see recommended doses)*
- Consider cancellation if BG > 280 for major elective procedures
- Remove CGMs for procedures involving extensive use of x-rays or monopolar cautery

INTRA-OP

- Target BG 110-180
- Check BG q45 minutes, starting from the time of last short-acting insulin dose, or from incision time if no short-acting insulin has been given
- Treat BG > 160 with IV Humulin-R *(see recommended doses)*
- Consider insulin infusion for any of the following:
  - BG > 220 after two corrective doses
  - Insulin pump had to be removed for a major surgery
  - ICU post-op is likely
- *The following steps apply to <u>cardiopulmonary bypass</u> cases only*
  - Check glucose at the time of heparinization
  - Re-bolus insulin at cannulation
  - Increase insulin infusion by a factor of 4 at cannulation
  - Check glucose q20 minutes on bypass; continue to run insulin infusion at 4 times the suggested rate
  - Decrease insulin infusion rate during rewarming: for routine cases, return infusion to suggested rate; for cases requiring high doses of inotropes, decrease infusion to 2 times the suggested rate

PACU

- Check BG on arrival or 60 min after the last short-acting insulin dose
- Treat BG > 160 with SQ Humalog *(see recommended doses)*
- Consider insulin infusion if BG > 220 and patient going to ICU

PERIOPERATIVE INSULIN DOSING

Glucose	Group A	Group B	
160	2U	4U	SLIDING SCALE Humulin-R IV -or- Humalog SQ
200	3U	6U	
250	4U	8U	
300	6U	12U	
150	*2U/ hour*	*4U/ hour*	CONT INFUSION Humulin-R
175	*3U/ hour*	*5U/ hour*	
200	*4U/ hour*	*6U/ hour*	
225	*5U/ hour*	*7U/ hour*	
250	*6U/ hour*	*8U/ hour*	
275	*8U/ hour*	*10U/ hour*	
Group A patients – standard dosing Group B patients – those on > 40U/day			