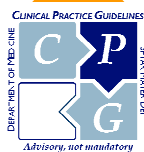


Peri-operative Glycaemic Control in Diabetes Mellitus



CLINICAL PRACTICE GUIDELINES
DEPARTMENT OF MEDICINE
SPTAR MATER DEI
Advisory, not mandatory

Advisory, not mandatory

DEPARTMENT OF MEDICINE



INTRODUCTION

Glycaemic control in diabetic patients about to undergo surgery, as well as in the postoperative phase, needs to be optimally managed. Uncontrolled hyperglycaemia has at times resulted in unplanned cancellations of surgical procedures resulting in undesired delays for patients as well as wasting theatre resources. A lack of post-operative guidance may also result in inadequate postoperative glycaemic control with its attendant morbidity.

Clinical areas where guideline is to be implemented:

- | | |
|--|-------------|
| 1. Inpatient surgical wards | Exclusions: |
| 2. Day care unit | a. ITU |
| 3. Any other inpatients coming for surgery | b. CICU |

GENERAL ASSESSMENT

Random/fasting Blood Glucose should be done on all patients undergoing surgery.

Other areas that the general assessment should address include:

1. Retinopathy: book for screening if not seen in past year. To be seen preoperatively if full heparinization required.
2. Ischaemic heart disease (ECG etc)
3. Renal (urine dipstick, eGFR, electrolytes).
4. **Repeat HbA1c if older than 3 months (not to be done as day case if >8.9).**

FLOWCHARTS DESIGNED FOR SPECIFIC SCENARIOS:

Scenario	Flowchart
PREOPERATIVE adult diabetic inpatients being admitted on the DAY BEFORE surgery	A
PREOPERATIVE adult diabetic patients scheduled for AFTERNOON lists	B
PREOPERATIVE diabetes care for fasting adult diabetic patients admitted as DAY CASE	C
PREOPERATIVE management of adult diabetic patients undergoing URGENT surgery	D
POSTOPERATIVE diabetes care for adult diabetic INPATIENTS	E
POSTOPERATIVE diabetes care for adult diabetic patients due for DAY CASE SURGERY	F



Advisory, not mandatory

ACTIVATION OF FLOW CHARTS

Four colour coded blood glucose charts with the relevant integrated pre and postoperative flowcharts are available.

- 1) Inpatient chart
- 2) Day case chart
- 3) Afternoon list chart
- 4) Urgent patient chart

House Officers shall be prescribing insulin according to the clinical situation, in the prn section of the patient's **treatment chart** as per table below. The designated nurse will then co-ordinate the care according to the flowchart guideline.

Scenario in diabetic surgical patients	Treatment chart prescription (prn section)
Admitted on the day before	"Actrapid according to in-patient periop diabetes guidelines"
Day case	"Actrapid according to Day case periop diabetes guidelines"
Afternoon list	"Actrapid according to Afternoon list periop diabetes guidelines"
Urgent	"Actrapid according to Urgent patient periop diabetes guidelines"



IMPORTANT POINTS IN ALL FLOWCHARTS

- ▶ All references to BG infer capillary Blood Glucose (previously referred to as HGT) and are values measured in mmol/l
- ▶ If patient has a **BG >15**, then check for urine ketones. If 2+, Call MO and take ABGs
- ▶ Flowchart does not cover maintenance/replacement fluids or nutrition. These are to be prescribed separately
- ▶ Long-acting insulin analogues include: Glargine (Lantus) Levemir (Detemir)
- ▶ **Patients on Metformin:** If eGFR <50 and/or receiving contrast: Contact Diabetes Services
- ▶ If in doubt or glycaemic control on suggested regimes problematic: contact Diabetes Services
- ▶ **Out of hours clarifications:** If in doubt or glycaemic control on suggested guidelines problematic contact medical senior on call
- ▶ See **Appendix A** for Insulin Via Syringe Pump with Glucose/Potassium (**IVSPGP**) infusion for adult diabetic patients



APPENDIX A

INSULIN VIA SYRINGE PUMP WITH GLUCOSE/POTASSIUM (IVSPGP) INFUSION VIA VOLUMETRIC PUMP FOR ADULT DIABETIC PATIENTS.

1. **Note it involves separate infusions of glucose and insulin (through the same cannula) and appropriate precautions should be taken to ensure both remain infusing e.g. by using an infusion set, with antisiphon and anti-reflux valves. Avoid 3-way taps.**
 2. Optimal glycaemic control will aid recovery.
 3. Check U&E's creat (eGFR). Repeat on admission if preop result > 1 week old or abnormal.
 4. Program the volumetric pump at **100 mL/hr**. If patient is, on renal replacement therapy, or in cardiac failure, or has raised intracranial pressure, contact the medical HST on call, or if already under the care of a medical team contact the latter for further advice regarding flow rate.
 5. Add 13.5 mmol **KCL (5 mL of 20% KCL solution)** to each 500-mL bag of 5% Glucose in 0.45% saline.
 6. a. **Omit KCL if potassium >5 mmol/L.**
b. If renal impairment (eGFR < 30) contact the medical HST on call, or if already under the care of a medical team contact the latter.
 7. Repeat serum potassium **daily**. Adjust potassium supplementation accordingly.
 8. A **separate infusion pump with 50 units of Actrapid in 50 mL 0.9% saline** is infused simultaneously (see point 1 above). See Table 2 below for rates.
 9. Agree individual blood glucose level targets e.g. 7-10 mmol/L and ensure IV insulin ratio in sliding scale is altered if this target is not being achieved. Occasionally the regime has to be adapted for a specific patient. It is not acceptable to allow blood glucose levels to be consistently greater than 10 mmol/L and hypoglycaemia <4 mmol/L should be avoided
 10. **Post op:** Once patient is established on normal diet, overlap IVSPGP by 1Hr after regular diabetes treatment is administered. Refer to post-op flowchart.
11. Check BG **1-2 Hrly**

BG mmol/L	Units of Insulin/Hr
< 4.0	STOP insulin if already started and use 10% dextrose @ 100 mL/hr (without insulin). Check BG after 20min. If altered consciousness give 100 mL of 10% dextrose IV and seek help.
4.0 - 6.9	1 unit
7.0 - 12.9	2 units
13.0 - 17.0	4 units (If BG not improving > 2Hrs: Call MO)
> 17	6 units Change glucose to 0.9% saline. Urine ketones Inform doctor

Table 1.

NB: If in doubt or glycaemic control on suggested regimes problematic: contact Diabetes Services

Further information may be found on the Intranet Annexes at <http://cpg.mdh.gov.mt>

