Diabetes Management for the Adult Surgical Patient

General principles

- Everyone needs glucose (~180g/day) and insulin to maintain normal metabolism
- Target blood glucose level is 4 – 10 mmol/l
- Type 1 diabetics need to continue insulin whilst fasting
- Assess glucose control and manage comorbidities, e.g. support renal perfusion with appropriate oral or IV hydration.
- Advise patients to bring their own insulin preparation into hospital
- Give written instructions for fasting and medications, including oral and injectable hypoglycaemic agents and insulin
- If in doubt seek help from Endocrine team or senior colleague as these are a general guide only

Preoperative management of blood glucose levels

All patients with diabetes require a blood glucose level check on admission and q4h once fasting (more frequently if unstable)	
If a preoperative BSL is outside the range of 4-10 mmol/L contact the anaesthetist to manage	
Hypoglycaemia BSL < 4 mmol/l	**Hyperglycaemia** BSL > 10mmol/l
Commence IV dextrose infusion 200ml 5% dextrose or 20ml 50% dextrose	Consider Novorapid supplemental insulin schedule (refer to eMeds and adapt to the individual's insulin sensitivity and oral intake)
Following corrective management • recheck the BSL after one hour • consider giving further insulin after two hours	
Diabetes Ketoacidosis	
Consider in the: - Unwell diabetic patient - Patients taking SGLT-2 inhibitors	- measure capillary blood ketones using fingerprick monitor

ORAL HYPOGLYCAEMICS

PREOPERATIVE OHG

NO BOWEL PREP		BOWEL PREP GIVEN	
DAY OF SURGERY	**DRUG**	**DAY 1 OF PREP**	**DAY OF PROCEDURE**
Omit DOS	DPP-IV Inh (...gliptin) Sulphonylureas (gli...) Meglitinide (...glinide) GLP-1 A (...tide)	Take morning dose only	Omit
	Acarbose	Omit	
Omit DOS Omit 48 hours post-op if renal impairment or IV contrast to be used (can result in lactic acidosis)	Metformin	Omit	Omit DOS Omit for the next 48 hours if renal impairment
Omit 2 days before surgery and DOS (can result in severe euglycaemic ketoacidosis)	SGLT-2 Inhibitors (...gliflozin)	Omit day before and day of bowel prep	Omit
Recommence post-operatively: - only when normal oral intake is tolerated - consider delaying SGLT-2 inhibitors until discharged from hospital			

INSULIN

PREOPERATIVE INSULIN

Practical points:

- Patients on subcutaneous (SC) insulin (incl. pump) need insulin prescribed for the DOS and day of bowel prep
- **Advise patients** to check BSL at 6AM and take their Insulin. If their 6AM BSL<10, have ONE glass clear apple juice or lemonade with their Insulin dose

DAY OF SURGEY	INSULIN MISSED 6 AM
	Give SC insulin on arrival to DSU If BSL < 10 mmol/l start an IV 5% dextrose infusion @ 100ml/hour

NO BOWEL PREP		CURRENT INSULIN	BOWEL PREP GIVEN	
DAY OF SURGERY	**DAY BEFORE SURGERY**		**DAY 1 OF PREP**	**DAY OF PROCEDURE**
Give 80% usual AM dose	Give 100% AM usual dose Give 80% PM usual dose	LONG ACTING	Give 80% of usual AM or PM dose	Give 50% usual AM dose
Give 50% total AM insulin dose	Usual dose	PRE-MIXED	Give 50% usual AM and PM doses	Give 50% usual AM dose
Take usual morning bolus ONLY if breakfast permitted for PM list	Usual dose	SHORT ACTING	Take usual morning bolus with breakfast. Nil further after breakfast	Omit
Consult Endocrinologist		Continuous SC Insulin Infusion pump	Consult Endocrinologist	

Postoperative management of diabetes for >12 hour starve or emergency surgery (Inpatients)

POSTOPERATIVE

Monitor BSL q 2-4 hourly depending on results and interventions

If BSL unstable or patient is unwell a variable rate intravenous insulin infusion (VRIII) should be established.

VRIII rate has to be titrated to hourly BSL measurement. If the BSL is less than 15mmol/l administer Normal saline + 5% dextrose +/-20mmolKCl @ 20-40ml/kg/day (See Appendix 3)

Type 1 diabetes	**Type 2 diabetes on regular insulin**
Contact Endocrine Team for ALL patients to discuss Insulin and IV glucose regimen	Continue 80% basal long-acting SC insulin. Seek advice for dosing of mixed insulin regimes if necessary.
Continue 80% basal SC insulin on DOS	Administer Normal saline + 5% dextrose +/-20mmolKCl @20-40ml/kg/day [Check EUC daily]
CSII Pumps should be managed with the patient's own endocrinologist or on-call endocrinologist, in-hours or out-of-hours	Troubleshooting

BSL < 4 mmol/l	BSL > 10mmol/l for 6 hours
↑ IV dextrose rate Avoid ↓ or ceasing insulin	Consider prescribing a Novorapid supplementary insulin schedule or VRIII (See Appendix 3)

- Consult the **Endocrine Team**:
  - Type 1 DM patients admitted overnight
  - Type 2 DM patients requiring Variable Rate Insulin Infusion (VRII) or adjustments to usual insulin doses or preparations
  - Patients with difficult control of their BSL