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Royal Cornwall Hospitals NHS Trust

Management of Adult Patients with Diabetes Mellitus during Surgery or Elective Procedures

Clinical Guideline

V6.1

July 2021

1. Purpose of this Guideline

1.1. This guideline is for the management of Adult patients with Diabetes Mellitus during surgery / elective procedures. It has been benchmarked against national guidance, to provide detailed guidance on the clinical management of Diabetes during surgery in line with best practice.

1.2. It applies to all HCP's managing diabetes during surgery.

1.3. For procedures requiring bowel preparation please refer to Care of Adults with Diabetes who Require Bowel Preparation Clinical Guideline

1.4. This version supersedes any previous versions of this document.

Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation

The Trust has a duty under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 please see the *Information Use Framework Policy* or contact the Information Governance Team rch-tr.infogov@nhs.net

2. The Guidance

2.1. General Guidance Notes

2.1.1. These guidelines propose guidance for the care for patients undergoing elective surgery and procedures but are also relevant to emergency care.

2.1.2. During surgery / fasting diabetes is managed by the anaesthetist.

2.1.3. Patients with Diabetes should ideally be placed as first on the morning list to reduce the fasting period prior to surgery.

2.2. Pre-Operatively

2.2.1. Where possible, blood glucose levels should be optimally controlled in the pre-operative period.

2.2.2. Check U&E's, venous blood glucose and HbA1C prior to surgery.

2.2.3. The recommended general targets for surgery are:

- Fasting glucose of 6–10 mmol/L HbA1C < 69 mmol/mol
- If HbA1C > 69 mmol/mol refer to GP for diabetes review
- If HbA1C > 69 mmol/mol but blood glucose 6-10 mmol/l following GP review/titration of diabetes treatment refer to Anaesthetic / Surgical team to review

2.3. On Admission

2.3.1 Ensure that hypo / hyper treatment is routinely prescribed on admission but not for discharge prescription

2.3.2 Post-surgery Metformin should not be re-instated earlier that 48 hours also ensuring that creatinine is not greater than 150

2.4. Specific Guidance for Bariatric / Colorectal Surgery

2.4.1 For patients undergoing Bariatric surgery and or requiring refer to the Bariatric guidelines and the Bariatric Specialist Nurse

2.4.2 For patients requiring liver reducing diet refer to bariatric guidelines

2.4.3 For Patients undergoing surgery / elective procedures requiring bowel preparation please refer to: Care of Adults with Diabetes who Require Bowel Preparation Clinical Guideline

3. Monitoring compliance and effectiveness

Element to be monitored	Management of Adult Patients with Diabetes Mellitus during Surgery or Elective Procedures
Lead	Specialist Adult Diabetes Team
Tool	Audit and review tool using patient documentation.
Frequency	Adults with diabetes having surgery and who are reviewed by the specialist diabetes team
Reporting arrangements	Non-compliance will be reported to the responsible medical / Surgical/Anaesthetic team Non-compliance resulting in an adverse patient event will be reported via Datix
Acting on recommendations	Medical/Surgical/Anaesthetic teams / ward / area managers will undertake subsequent recommendations and action planning for

and Lead(s)	any or all deficiencies and recommendations within reasonable timeframes for their areas The Specialist Adult In-Patient Diabetes Team will undertake any trust wide recommendations and action planning for any or all deficiencies and recommendations within reasonable timeframes
Change in practice and lessons to be shared	Lesson learned or changes to practice will be shared with all the relevant stakeholders

4. Equality and Diversity

4.1 This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the 'Equality, Inclusion & Human Rights Policy' or the Equality and Diversity website.

4.2 Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Document Title	Management of Adult Patients with Diabetes Mellitus during Surgery or Elective Procedures Clinical Guideline V6.1			
This document replaces (exact title of previous version):	Management of Adult Patients with Diabetes Mellitus during Surgery or Elective Procedures Clinical Guideline V6.0			
Date Issued/Approved:	15 May 2020			
Date Valid From:	July 2021			
Date Valid To:	June 2023			
Directorate / Department responsible (author/owner):	Amanda Veall Lead Diabetes Specialist Nurse RCH/CFT			
Contact details:	01872 253104			
Brief summary of contents	Guideline for management of adult patients with diabetes mellitus during surgery or elective procedures			
Suggested Keywords:	Diabetes, Surgery Procedures, Diabetic Care			
Target Audience	RCHT	CFT	KCCG	
	✓			
Executive Director responsible for Policy:	Medical Director			
Approval route for consultation and ratification:	Endocrine Governance Group, Diabetes Inpatient Specialist Nurse Team, Pre-Assessment Manager, Anaesthetic Team			
General Manager confirming approval processes	Rachael Pearce			
Name of Governance Lead confirming approval by specialty and care group management meetings	Becky Osborne			
Links to key external standards	DoH: NSF Diabetes 2001 standard 8			
Related Documents:	Care of Adults with Diabetes who Require Bowel Preparation Clinical Guideline Diabetes Type 2 Management of Medication Pre and Post Bariatric Surgery			
Training Need Identified?	Update on changes for Pre-Assessment			
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet & Intranet	✓	Intranet Only	
Document Library Folder/Sub Folder	Clinical / Endocrine and Diabetes			

Version Control Table

Date	Version No	Summary of Changes	Changes Made by *(Name and Job Title)*
2005	V1.0	Initial Issue	Amanda Veall CNS Diabetes
02 Nov 06	V2.0	Amendment to Metformin as per BNF	Amanda Veall CNS Diabetes
1 May 10	V3.0	Amendment to include GLP analogues	Amanda Veall CNS Diabetes
01 April 12	V4.0	Updated to reflect National Guidelines / combine with AM / PM Investigation Guidelines	Amanda Veall CNS Diabetes
17 Mar 14	V4.1	Increase frequency of monitoring pre op to reflect surgical governance issues/ additional of new therapies / National Guidance	Amanda Veall Lead CNS Diabetes
April 2016	V 5	Updated to reflect National Guidelines	Amanda Veall Lead CNS Diabetes
August 2018	V5.1	Line re metformin and NBM added	Amanda Veall Lead CNS Diabetes
May 2020	V6.0	Updated to reflect changes in National JBDS Guidance: including blood glucose levels, monitoring frequency and changes to long-acting insulin doses	Amanda Veall Lead CNS Diabetes
July 2021	V6.1	Unless NBM added to metformin	Amanda Veall Lead CNS Diabetes

Appendix 2. Equality Impact Assessment

<table>
<tr><th colspan="6">Section 1: Equality Impact Assessment Form</th></tr>
<tr><td colspan="6">Name of the strategy / policy /proposal / service function to be assessed
Management of Adult Patients with Diabetes Mellitus during Surgery or Elective Procedures Clinical Guideline V6.1</td></tr>
<tr><td colspan="3">Directorate and service area:
Endocrine and Diabetes</td><td colspan="3">Is this a new or existing Policy?
Existing</td></tr>
<tr><td colspan="3">Name of individual/group completing EIA
Amanda Veall, Lead CNS Diabetes</td><td colspan="3">Contact details:
01872 253104</td></tr>
<tr><td>1. Policy Aim
Who is the strategy / policy / proposal / service function aimed at?</td><td colspan="5">To provide detailed guidance on the clinical management of Adults with Diabetes during surgery / elective procedures in line with best practice guidelines.</td></tr>
<tr><td>2. Policy Objectives</td><td colspan="5">• To provide a consistent approach to the management of Diabetes during surgery / elective procedures within RCH sites.
• To maintain patient safety and improve outcomes for adult patients with Diabetes during surgery / elective procedures in RCH sites</td></tr>
<tr><td>3. Policy Intended Outcomes</td><td colspan="5">• Consistent management of Diabetes at RCHT sites.
• Prompt and safe management of Diabetes during surgery /elective procedures</td></tr>
<tr><td>4. How will you measure the outcome?</td><td colspan="5">• National Diabetes Inpatient Audit
• Datix Reporting
• Review of surgical / nursing documentation as required</td></tr>
<tr><td>5. Who is intended to benefit from the policy?</td><td colspan="5">All adult patients with diabetes who undergo surgery / elective procedures in hospital within all RCH sites.</td></tr>
<tr><td rowspan="3">6a). Who did you consult with?

b). Please list any groups who have been consulted about this procedure.</td><td>Workforce</td><td>Patients</td><td>Local groups</td><td>External organisations</td><td>Other</td></tr>
<tr><td>X</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Please record specific names of groups:
Endocrine Governance Group, Diabetes Inpatient Specialist Nurse Team, Pre-Assessment Manager, Anaesthetic Team</td></tr>
<tr><td>c). What was the outcome of the consultation?</td><td colspan="5">Agreed</td></tr>
</table>

7. The Impact
Please complete the following table. If you are unsure/don't know if there is a negative impact you need to repeat the consultation step.

Are there concerns that the policy **could** have a positive/negative impact on:

Protected Characteristic	Yes	No	Unsure	Rationale for Assessment / Existing Evidence
Age		✓		Does not impact on the guidance
Sex (male, female non-binary, asexual etc.)		✓		Does not impact on the guidance
Gender reassignment		✓		Does not impact on the guidance
Race/ethnic communities /groups		✓		Does not impact on the guidance
Disability (learning disability, physical disability, sensory impairment, mental health problems and some long term health conditions)		✓		Does not impact on the guidance
Religion/ other beliefs		✓		Does not impact on the guidance
Marriage and civil partnership		✓		Does not impact on the guidance
Pregnancy and maternity		✓		Does not impact on the guidance
Sexual orientation (bisexual, gay, heterosexual, lesbian)		✓		Does not impact on the guidance

If all characteristics are ticked 'no', and this is not a major working or service change, you can end the assessment here as long as you have a robust rationale in place.

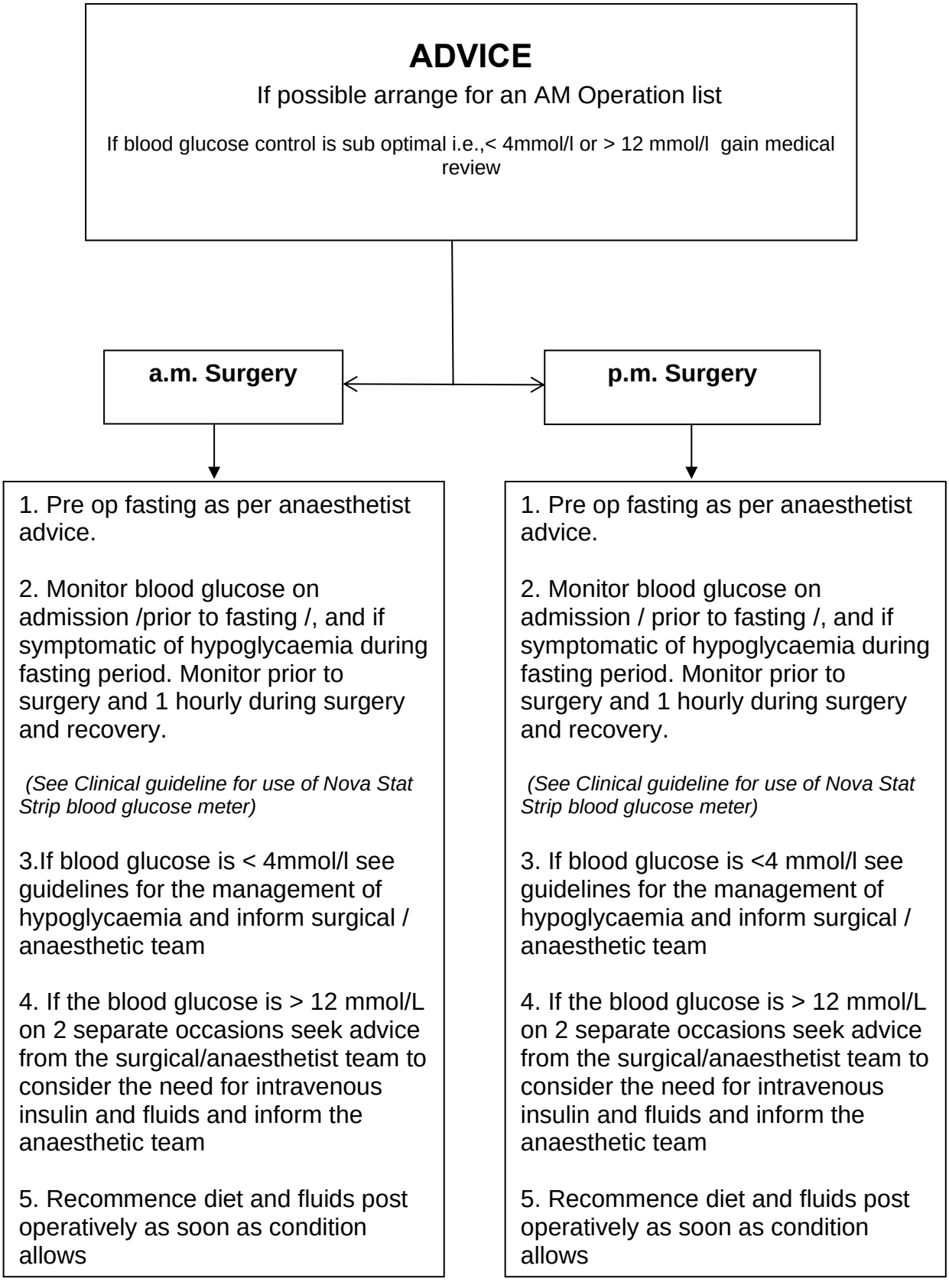
I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment:	Amanda Veall, Lead CNS Diabetes

If you have ticked 'yes' to any characteristic above OR this is a major working or service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis

For guidance please refer to the Equality Impact Assessments Policy (available from the document library) or contact the Human Rights, Equality and Inclusion Lead india.bundock@nhs.net

Appendix 3. Patients Managed with Diet Alone



Appendix 4. Patients Managed with Oral Hypoglycaemic's

Pre – Operative General Advice

If possible arrange for an AM Operation list

Metformin

If contrast medium is to be used and eGFR < 60 ml/min metformin should be omitted on the day of the procedure and for the following 48 hours

If eGFR < 30 ml/min stop metformin and review

Admission Advice

- If glucose control is suboptimal i.e. < 4 mmol/L or > 12 mmol/L (on 2 separate occasions) gain review of medication and consider referral to the diabetes specialist nurse
- If required Pre op fasting as per anaesthetist advice.
- Monitor blood glucose on admission /prior to fasting /, and if symptomatic of hypoglycaemia during fasting period. Monitor prior to surgery and 1 hourly during surgery and recovery.
- If blood glucose is < 4 mmol/l see guidelines for the management of hypoglycaemia and inform surgical / anaesthetic team
- If the blood glucose is > 12 mmol/l on 2 separate occasions inform surgical / anaesthetic team and consider the need for intravenous insulin and fluids
- Recommence diet and fluids as soon as condition allows

Tablet	Day Prior to Admission	Day of Surgery		
		a.m. surgery	**p.m. surgery**	**If using sliding scale insulin infusion**
Acarbose	Take as normal	Omit morning dose if nil by mouth	Give morning dose if eating	- Stop once infusion commenced - Restart once eating and drinking normally
Meglitinide *(repaglinide or natedlinide)*	Take as normal	Omit morning dose if nil by mouth	Give morning dose if eating	- Stop once infusion commenced - Restart once eating and drinking normally
Metformin (see above)	Take as normal	If taken once or twice a day take as normal, unless NBM If taken three times a day: omit lunchtime dose	If taken once or twice a day take as normal, unless NBM If taken three times a day: omit lunchtime dose	- Stop once infusion commenced - Restart once eating and drinking normally
Sulphonylurea's	Take as normal	If taken once daily am: omit the dose If taken twice daily: omit the morning dose	If taken once daily am: omit the dose If taken twice daily: omit both doses	- Stop once infusion commenced - Restart once eating and drinking normally
Pioglitazone	Take as normal	Take as normal	Take as normal	- Stop once infusion commenced - Restart once eating and drinking normally
DPP IV Inhibitor	Take as normal	Take as normal	Take as normal	- Stop once infusion commenced - Restart once eating and drinking normally
SGLT-2 inhibitors	Take as normal	Omit on the day of surgery	Omit on the day of surgery	Omit until eating and drinking normally

Appendix 5. Patients Managed With Insulin

Pre – Operative General Advice

If possible arrange for an AM Operation list

Metformin

If contrast medium is to be used and eGFR < 60 ml/min metformin should be omitted on the day of the procedure and for the following 48 hours

If eGFR < 30 ml/min stop metformin and review

Admission Advice

- If glucose control is suboptimal i.e. < 4 mmol/L or > 12 mmol/L (on 2 separate occasions) gain review of medication and consider referral to the diabetes specialist nurse
- If required Pre op fasting as per anaesthetist advice.
- Monitor blood glucose on admission / prior to fasting /, and if symptomatic of hypoglycaemia during fasting period. Monitor prior to surgery and 1 hourly during surgery and recovery.
- If blood glucose is < 4 mmol/l see guidelines for the management of hypoglycaemia and inform surgical / anaesthetic team
- If the blood glucose is > 12 mmol/l on 2 separate occasions inform surgical / anaesthetic team and consider the need for intravenous insulin and fluids
- Recommence diet and fluids as soon as condition allows

Insulin	**Day Prior to Admission**	**Day of Surgery**		
		a.m. surgery	**p.m. surgery**	**If using sliding scale peri-operatively insulin infusion**
Once daily evening dose	Reduce dose by 20%	Check blood glucose on admission	Check blood glucose on admission	Continue at 80% of usual dose
Once daily Morning dose	Reduce dose by 20%	Reduce dose by 20%	Reduce dose by 20%	Continue at 80% of usual dose
Twice Daily Insulin	Take Normal Dose	- ½ the morning dose - Usual evening dose	- ½ the morning dose - Usual evening dose	- Stop once infusion commenced until eating and drinking normally - Restart at a meal time once eating and drinking normally (see IV sliding scale chart for advice)
Three times daily mixed insulin	Take Normal dose	- ½ the morning dose - omit the lunchtime dose	- take the usual morning dose - omit the lunchtime dose	- Stop once infusion commenced until eating and drinking normally - Restart at a meal time once eating and drinking normally (see IV sliding scale chart for advice)
Basal Bolus Insulin *(e.g. 3 x rapid acting meal time insulin and background insulin)*	Take Normal dose	- background insulin if taken am reduce dose by 20% If taken pm usual dose - Omit the morning and lunchtime rapid acting insulin	- background insulin unchanged - am rapid insulin take the usual dose - lunchtime rapid acting insulin omit	- background insulin Continue at 80% of usual dose - omit all rapid acting insulin doses once sliding scale commenced - Restart rapid acting insulin at a meal time once eating and drinking normally (see IV sliding scale chart for advice)
Insulin Pump (Refer to DSN)	Normal doses	Normal Doses unless IV insulin	Normal doses unless IV insulin	Restart once eating and drinking normally 30 mins after first meal time bolus

Appendix 6. Patients Managed With Glp Analogue Injections

Pre – Operative General Advice

If possible arrange for an AM Operation list

Metformin

If contrast medium is to be used and eGFR < 60 ml/min metformin should be omitted on the day of the procedure and for the following 48 hours

If eGFR < 30 ml/min stop metformin and review

Admission Advice

- If glucose control is suboptimal i.e. < 4 mmol/L or > 12 mmol/L (on 2 separate occasions) gain review of medication and consider referral to the diabetes specialist nurse
- If required Pre op fasting as per anaesthetist advice.
- **Monitor blood glucose** on admission / prior to fasting /, and if symptomatic of hypoglycaemia during fasting period. Monitor prior to surgery and 1 hourly during surgery and recovery.
- If blood glucose is < 4 mmol/l see guidelines for the management of hypoglycaemia and inform surgical / anaesthetic team
- If the blood glucose is > 12 mmol/l on 2 separate occasions inform surgical / anaesthetic team and consider the need for intravenous insulin and fluids
- Recommence diet and fluids as soon as condition allows

Frequency	**Day Prior to Admission**	**Day of Surgery**		
		a.m. surgery	**p.m. surgery**	**If using sliding scale inulin infusion**
GLP analogue once daily/ twice daily	Take as normal	- If having bowel surgery omit - If not having bowel surgery take as normal	- If having bowel surgery omit - If not having bowel surgery take as normal	- If having bowel surgery omit - If not having bowel surgery take as normal - restart once eating and drinking
GLP -1 once weekly	If usually taken this day Take as normal	If usually taken this day - If having bowel surgery omit - If not having bowel surgery take as normal	If usually taken this day - If not having bowel surgery take as normal - If having bowel surgery omit	If usually taken this day - If having bowel surgery omit - If not having bowel surgery take as normal - restart once eating and drinking