

Endoscopy Protocol for the Management of Diabetic Patients

Protocol Responsibilities and Authorisation

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Protocol Review History

Version	Updated by	Date Updated	Description of Changes
01	Jeweleigh Bates	16 May 2016	New protocol
02	Jeweleigh Bates	19 Oct 2016	Wording change for clarity in 2.3

Endoscopy Guideline for the Management of Diabetic Patients

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Endoscopy Guideline for the Management of Diabetic Patients

1. Overview

1.1 Purpose

This guideline addresses the preparation and management of diabetic patients undergoing endoscopic procedures.

1.2 Scope

This guideline is for Waikato District Health Board endoscopy clinics at Waikato Hospital.

1.3 Definitions

COF (Clear Oral Fluids) includes: water, lemonade ice blocks, diet soft drinks (not coloured purple or red, also have normal soft drinks available if hypoglycaemic), coffee or tea without milk, clear broth e.g. beef stock.

BLOOD GLUCOSE HOME MONITORING: If diabetes present and normally on sulphonylureas or insulin, must check CBG 4 hourly starting at lunch time the day prior to the procedure. Treat hypoglycaemia (CBG < 4.0) as per “Hypoglycaemia Treatment Protocol”. If CBGs are 11 or higher, may give correctional rapid acting insulin every 4 hours if normally taking rapid acting insulin. See “Correction Rapid Acting Insulin”.

CBG = Capillary Blood Glucose

GA = General Anaesthesia

2. Clinical Management

2.1 Preparation for Upper Endoscopic Procedures

PROCEDURE	MORNING PROCEDURE	AFTERNOON PROCEDURE
Upper Endoscopy (UGI), Endoscopic Ultrasound (EUS), Endoscopic Retrograde Cholangio-Pancreatography (ERCP), Bronchoscopy, and Anterograde Double Balloon (ADBE)	<ul style="list-style-type: none"> No food from midnight. Stop fluids 4 hours prior to procedure 	<ul style="list-style-type: none"> Breakfast before 7am. Stop fluids 4 hour prior to procedure

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2.1.1 Changes to medications for patients on Non-insulin Hypoglycaemic medications

Class	Medication	Day before Procedure	Day of Endoscopy (both morning and afternoon list)
Biguanides	Metformin	<ul style="list-style-type: none"> • Take usual am dose. • Omit subsequent doses 	Omit
Sulphonylureas	Gliclazide, Glipizide, Glibenclamide, Tolbutamide	Take as usual	<ul style="list-style-type: none"> • Omit • May give correction rapid acting insulin if BSL \geq 11.
α -Glucosidase Inhibitors	ACARBOSE	Take as usual	Omit
PPAR γ Agonist	Pioglitazone	Take as usual	Omit
GLP-1 Analogue	Exenatide (Byetta)	Take as usual	Omit
DPP IV Inhibitor	Sitagliptin	Take as usual	Omit

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2.1.2 Changes to medication for patients on Insulin

 Refer to the sections entitled “Intermediate and Long Acting Insulin Precaution!” and “CSII – Insulin Pump Therapy Precaution”

Type of Insulin	Medication	Day before Procedure	Day of Procedure Morning List	Day of Procedure Afternoon List
Long Acting (Basal) PM Dosing	Lantus Levemir	• 2/3 rd usual dose	• Usual dose after procedure and eating	• As for morning list
Long Acting (Basal) AM Dosing	Lantus Levemir	• Usual dose	• 2/3 rd usual dose	• As for morning list
Intermediate Acting od or bd	Protaphane Humulin NPH	• Usual dose	• 2/3 rd usual am dose • Usual pm dose after procedure and eating	• As for morning list
Mixed od or bd	Humalog Mix 25 Humalog Mix 50 NovoMix 30 Penmix 30	• Usual dose	• Omit am dose • On admission, give 0.1 u/kg of Protaphane sc	• ½ usual am dose • Usual pm dose after procedure and eating
Rapid Acting (Prandial) (ie. with meals, onset 10 min) Short Acting (onset 30 min)	Novorapid Humalog Apidra Actrapid	• Usual dose	• Omit • May give correction rapid acting insulin if BSL \geq 11 four hourly.	• Usual am dose with breakfast • Usual pm dose after procedure and eating
CSII-Insulin Pump Discuss with DM registrar 021 759 485 or DM CNS 021 762 759 or on call CNS 021 759 815	Novorapid Humalog Apidra	• Usual dose	• Reduce basal rate by 20% when NBM • Omit prandial doses when NBM • Continue usual correction dose • If duration of procedure is \leq 1 hour, and the patient will be able to manage the pump within 30 min after the procedure, then continue on pump therapy. • If unable to remain on pump, give 0.1 units/kg Protaphane sc and restart pump as soon as possible post-procedure. • CBG should be \geq 8.0 for the procedure. • CBG must be checked hourly!	• As for morning list

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2.2 Preparation for Lower Endoscopic Procedures

PROCEDURE	DAY PRIOR	DAY OF PROCEDURE
<p>Colonoscopy & Retrograde Double Balloon Morning procedure</p> <p>Klean prep or Picosalax preparation</p>	<p>Able to have breakfast then nothing but clear oral fluids (COF) until procedure. At 1700 (5pm), commence drinking 3 sachets Klean prep mixed with 3 litres of COF or 1 sachet of Picosalax mixed with 150 ml of water. Then drink a further 5 X 250 mls COF.</p> <p>If diabetes present, the COF should be sugar free unless hypoglycaemia (CBG < 4.0) occurs.</p>	<p>At 0500 am, drink the remaining 1 Klean prep sachet mixed with 1 litre COF or the 2nd sachet of Picosalax mixed with 150 mls water, then drink an additional 3 X 250 mls of COF at 0500 am. Continue COFs until procedure (unless having procedure under GA. Then stop drinking 2 hours prior.</p> <p>If diabetes present, the COF should be sugar free unless hypoglycaemia (CBG < 4.0) occurs.</p>
<p>Colonoscopy & Retrograde Double Balloon Afternoon procedure</p> <p>Klean prep or Picosalax preparation</p>	<p>Able to have breakfast and lunch the day prior. Then nothing to eat or drink but COF until procedure. At 1800 (6pm), commence drinking 2 sachets of Klean Prep mixed with 2 litres of COF or 1 sachet of Picosalax mixed with 150 mls of water, then drink an additional 5 X 250 mls COF.</p> <p>If diabetes present, the COF should be sugar free unless hypoglycaemia (CBG < 4.0) occurs.</p>	<p>At 0800 am, drink the remaining 2 X sachets of Klean prep mixed with 2 litres of COF or the 2nd sachet of Picosalax mixed with 150 mls of water, then drink a further 3 X 250 mls of COF. Continue drinking until procedure unless having a GA. Then stop drinking 2 hours prior.</p> <p>If diabetes present, the COF should be sugar free unless hypoglycaemia (CBG < 4.0) occurs.</p>
<p>Capsule Endoscopy</p>	<p>Breakfast the day prior, then nothing but COF. Drink 1 sachet of Klean prep mixed with 1 litre of COF at 1300 (1pm) and 1 sachet of Klean prep mixed with 1 litre of COF at 1900 (7pm). Nil by mouth as of 2400 (midnight).</p> <p>If diabetes present, the COF should be sugar free unless hypoglycaemia (CBG < 4.0) occurs.</p>	<p>Nil by Mouth</p>

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2.2.1 Changes to medications for patients on Non-Insulin Hypoglycaemic Medications

Class	Medication	Day before Procedure	Day of Endoscopy (both morning and afternoon list)
Biguanides	Metformin	Omit	Omit
Sulphonylureas	Gliclazide, Glipizide, Glibenclamide, Tolbutamide	Usual am dose Omit subsequent doses	<ul style="list-style-type: none"> • Omit • May give correction rapid acting insulin if BSL \geq 11.
α -Glucosidase Inhibitors	ACARBOSE	Omit	Omit
PPAR γ Agonist	Pioglitazone	Omit	Omit
GLP-1 Analogue	Exenatide (Byetta)	Omit	Omit
DPP IV Inhibitor	Sitagliptin	Omit	Omit

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2.2.2 Changes to medications for patients on Insulin

 Refer to the sections entitled “**Intermediate and Long-Acting Insulin Precaution!**” and “**CSII – Insulin Pump Therapy Precaution**”

Type of Insulin	Medication	2 Days before Procedure	Day before Procedure	Day of Procedure Morning and Afternoon List
Long Acting (Basal) PM Dosing	Lantus Levemir	2/3 rd usual dose	• 2/3 rd usual dose	• Usual dose after procedure
Long Acting (Basal) AM Dosing	Lantus Levemir	Usual dose	• 2/3 rd usual dose	• 2/3 rd usual dose
Intermediate Acting od or bd	Protaphane Humulin NPH	Usual dose	• 2/3 rd usual dose	• 2/3 rd usual am dose • Usual pm dose after procedure and eating
Mixed Insulin od or bd	Humalog Mix 25 Humalog Mix 50 NovoMix 30 Penmix 30	Usual dose	• 2/3 rd usual am dose • ½ usual pm dose	• Omit am dose • On admission, give 0.1 u/kg of Protaphane sc
Rapid Acting (Prandial) Insulin (ie. taken with meals, onset 10 min) Short Acting (onset 30 min)	Novorapid Humalog Apidra Actrapid	Usual dose	• Omit prandial dosage after breakfast • Give correction rapid acting insulin if CBG \geq 11 four hourly.	• Omit • May give correction rapid acting insulin if BSL \geq 11 four hourly.
CSII-Insulin Pump Case should be discussed with diabetes registrar 021 759 485 or diabetes CNS 021 762 759 or on call CNS 021 759 815	Novorapid Humalog Apidra	Usual dose	• Reduce Basal Rate by 20% at lunch time • Continue usual prandial (per CHO counting) and correction dosages	• Reduce basal rate by 30% • Omit prandial as no CHO intake • Continue usual correction dose • If duration of procedure is \leq 1 hour, and the patient will be able to manage the pump within 30 min after the procedure, then continue on pump therapy. • If unable to remain on pump, give 0.1 units/kg Protaphane sc and restart pump as soon as possible post-procedure. • CBG should be \geq 8.0 for the procedure. • CBG must be checked hourly!

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2.3 Intermediate and Long Acting Insulin Precautions



Intermediate and Long Acting Insulin Precautions!

Ideally the patient with appropriately dosed intermediate or long-acting insulin should be able to manage their blood sugars during the day and night prior to the procedure by administering only basal insulin. However this leaves little room for error. A standard dosage of basal insulin in a person with normal insulin sensitivity is 0.2-0.3 units/kg of body weight a day. If you suspect that the dosage is set too high as an outpatient or well above standard dosage, then it would be wise to advise patients to reduce the dosage to half of their usual dosage as opposed to 2/3rd of their usual dosage.

CSII – Insulin Pump Therapy Precautions!

Continuous Subcutaneous Insulin Infusion (CSII), also known as insulin pump therapy, is now commonly used in patients with Type 1 diabetes. This has implications for inpatient procedures as the pump cannot be exposed to electromagnetic forces as this may alter infusion rates.

Pumps should be removed in the following radiological procedures:

- Radiology – general x-rays, CT, angiograms, nuclear medicine imaging, mammography, MRI and radiotherapy.
- If duration of these radiological procedures is expected to be less than one hour, remove the pump temporarily. Do not take the pump into the procedure room.
- If duration of procedure is expected to be greater than one hour, give basal insulin (Protaphane 0.1 units/kg) and then stop the pump. Restart the pump following procedure.

2.4 Monitoring of CBG for people with diabetes

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MONITORING OF CBG FOR PEOPLE WITH DIABETES

At home:

- If a person has diabetes and is taking sulphonylureas or insulin, they must check their blood sugars every 4 hours when they are nil by mouth or on COF at home.
- If CBG is < 4.0, then must treat for hypoglycaemia as per protocol.
- If CBGs are ≥ 11.0 , then correction rapid acting insulin can be given 4 hourly.

At hospital/clinic:

- If a person has diabetes, CBG is to be checked upon admission and then 2 hourly with a CBG check within 1 hour of the procedure.
- If a person is on CSII (Insulin Pump), then check CBGs hourly.
- If CBG is < 4.0, then must treat for hypoglycaemias per protocol.
- If CBG are ≥ 11.0 , then correction rapid acting insulin can be given 4 hourly.

2.5 Correction rapid acting Insulin

CORRECTION RAPID ACTING INSULIN

If a person with diabetes is already using correction dosages of rapid acting insulin and NBM or on COF, they may continue to use the correction dosages of their rapid acting insulin 4 hourly if the CBGs are 11 or higher according to their usual dosage.

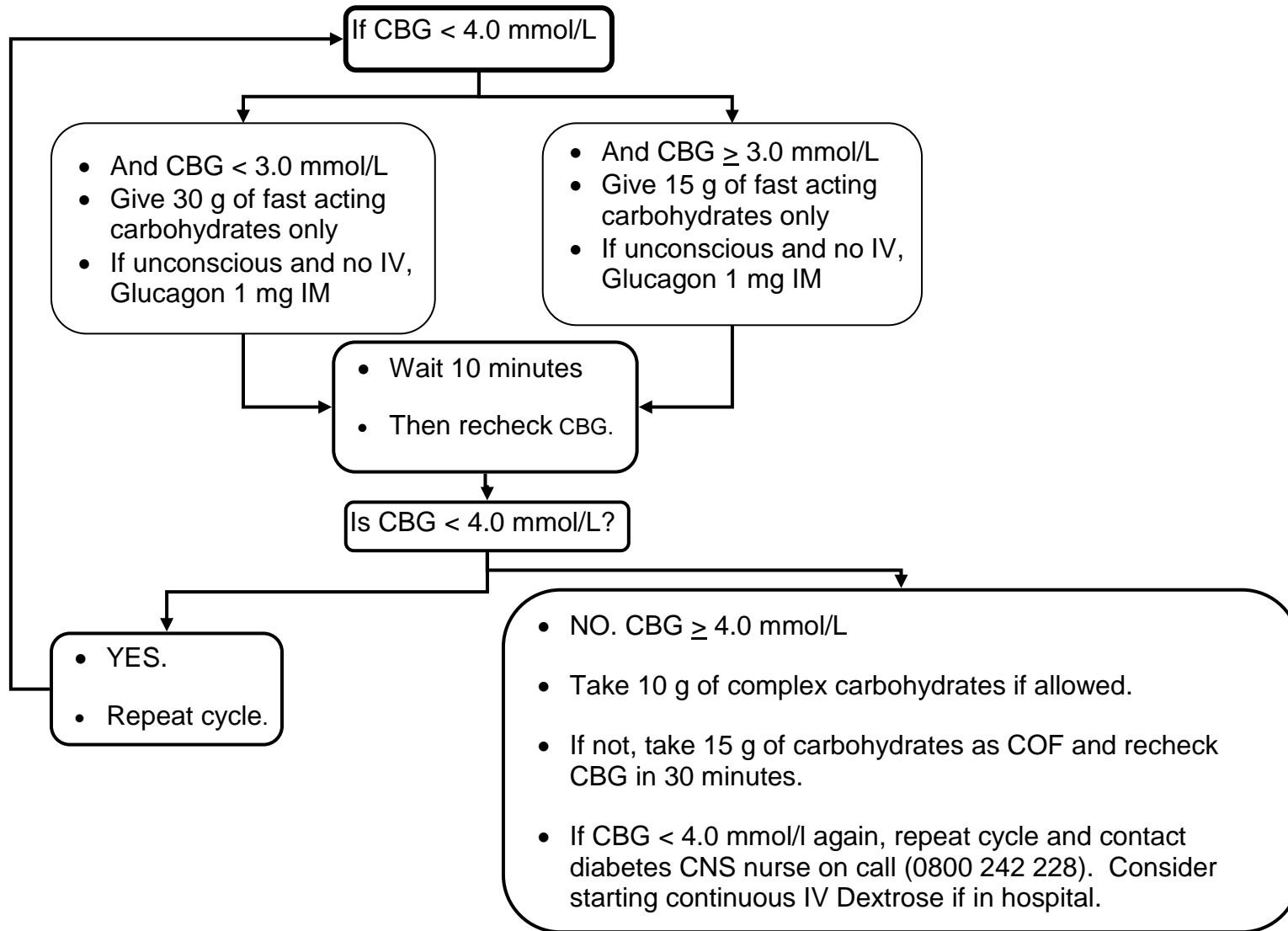
Standard correction doses which can be given with Novorapid, Humalog or Apidra:

- Give correction dosage at 1 unit for every 3mmol of CBG greater than 8.0 mmol/L when CBGs are 11 or higher.
- Correction dosages can be given 4 hourly when NBM or on COF or at meal times if eating normally.
- Repeat CBG 1 hour after correction dose to ensure CBG is decreasing.
- If CBG is not decreasing, consider starting insulin infusion in hospital.

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2.6 Management of hypoglycaemia (CBG < 4.0 mmol/L)



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2.7 Sources of 15g fast acting carbohydrates

Sources of 15 g of Fast Acting Carbohydrates		
When Not NBM and Conscious	When NBM or Unconscious	When Unconscious and No IV
<ul style="list-style-type: none"> • 1 sachet of Hypofit gel (COF) • 3 teaspoons sugar dissolved in water (COF) • 175 ml hypo juice (COF) • ¾ cup of regular fruit juice (COF) • 1 tablespoon honey (COF) • 5 vita glucose tablets • 9 jellybeans 	<ul style="list-style-type: none"> • 150 ml of 5% Dextrose IV • 15 ml of 50% Dextrose IV 	<ul style="list-style-type: none"> • Glucagon 1 mg IM (Glucose, in this case, comes from the liver.)

10 g of Complex Carbohydrates

- 1 slice of sandwich bread
- 2 crackers or plain biscuits
- Milky Milo (1 teaspoon of Milo)
- Piece of fruit
- Glass of milk (200 ml)
- 120 g lite yoghurt
- Small bran muffin (diabetic muffin)

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