

Regional Local Health Networks

Protocol (Clinical)

Title: Hyperglycaemia Protocol: Basal Bolus Insulin Chart (MR62A)

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Protocol sponsor: Chief Clinical Advisor, Rural Support Service

Approved by: BHF LHN Clinical Governance Committee on: 23/02/2021

EFN LHN Acute and Specialist Services Committee on: 28/02/2021

FUN LHN Operational Clinical Governance Committee on: 24/02/2021

LC LHN Safety, Quality and Clinical Effectiveness Council on: 04/03/2021

RMC LHN Clinical Oversight Governance Committee on: 25/02/2021

Y&N LHN Operational Clinical Governance Committee on: 09/03/2021

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Summary This protocol outlines responsibilities and actions required by nurses and midwives to ensure the safety and quality of patient care.

Policy/Procedure reference This protocol supports the SA Health Recognising and Responding to Clinical Deterioration Policy Directive, Controlled Substances Act 1984, and SA Health Directive: High Risk Medicines Management.

Keywords Clinical, Protocol, LHN

Document history Is this a new LHN Protocol? **N**
Does this protocol *amend or update* an existing protocol? **Y**
Does this protocol *replace* an existing protocol? **Y**

- Hyperglycaemia Protocol Basal Bolus Insulin chart MR62A - April 2019
- Hyperglycaemia Protocol: Basal Bolus Insulin Chart: Adult (MR62A): Protocol - April 2019

Applies to This protocol applies to all hospital, medical, pharmacy, nursing and midwifery staff.

Objective file number 2021-02646

Version control and change history

Version	Date	Amendment	Amended by:
1.0	01/04/2014	Original version	Jane Giles
2.0	29/04/2019	Blood glucose chart format	Jane Giles
4.0	15/10/2020	Change to Optisulin® & amendments to signature blocks	Jane Giles Advanced Nurse Consultant Diabetes Service RSS

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PLEASE NOTE: The *Hyperglycaemia Protocol and Basal Bolus Insulin Chart* should **not** be used for diabetic emergencies or for peri operative management. Consultation must be sought regarding its use in the paediatric, obstetric and aged care settings.

Protocol | Hyperglycaemia: Basal Bolus Insulin Chart: Adult (MR62A)

1. Purpose and scope of use

Inpatients with diabetes can have suboptimal pre-admission glycaemic control. Medical stress (e.g. ischaemia, sepsis, inflammation) can worsen glucose control. In addition, patients in the post-surgical phase may also be at risk of hyperglycaemia. Optimising inpatient blood glucose levels (5.0 - 10.0mmol/L) during hospital admission has been shown to improve morbidity and mortality, patient outcomes and length of stay.

The purpose of this protocol is to aid clinicians in using the ***Hyperglycaemia Protocol and Basal-Bolus Insulin Chart: Adult (MR62A)*** in a safe and effective way.

Basal bolus insulin (BBI) refers to a combination of long acting (basal) insulin and rapid acting (bolus) insulin injections. BBI aims to mimic normal insulin secretion.

BBI is evidence based. Literature identifies BBI offers better blood glucose (BG) control than sliding scale insulin (SSI) as it aims to prevent the BG rising (*rather than only treating the BG when high*).

BBI is not associated with increased hypoglycaemia (*when compared with SSI*).

1.1. Patients who will benefit

Inpatients with diabetes who will benefit from this protocol are those who have an anticipated length of stay greater than 48 hours and:

- > have current hyperglycaemia where current diabetes therapy is insufficient (e.g. more than one BG greater than 10.0mmol/L within a 24 hour period)
- > have anticipated hyperglycaemia where current diabetes therapy is unlikely to be sufficient (e.g. more than one BG greater than 10.0mmol/L within a 24 hour period post operatively)
- > are transitioning from an intravenous (IV) insulin infusion
- > obstetric patients – for regional SA Health birth sites – requires management of care by specialist obstetrician, specialist physician and/or endocrinologist.

The protocol is not to be used in inpatients:

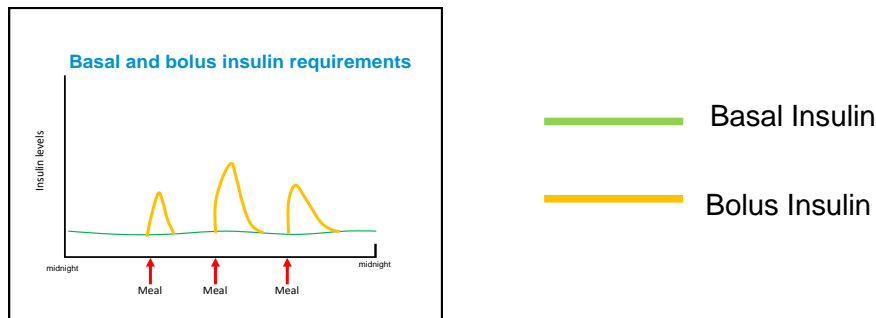
- > who have an anticipated length of stay less than 48 hours
- > with BG in target on their usual diabetes medication (e.g. oral and/or injectables)
- > with diabetic ketoacidosis (DKA) – refer to the DKA/Type 1 Protocol (MR-INF-A)
- > with hyperglycaemic hyperosmolar state (HHS) – refer to HHS/Type 2 Protocol (MR-INF-B)
- > in labour
- > in the paediatric or residential aged care setting – consultation must be sought from the paediatrician, specialist physician and/or endocrinologist.

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1.2. Insulin requirements

BBI refers to a combination of long acting (basal) insulin and rapid acting (bolus) insulin injections. BBI aims to mimic normal insulin secretion and figure 1 demonstrates the insulin response to basal metabolism and carbohydrate (CHO) intake.

Figure 1: Basal Bolus Insulin requirements

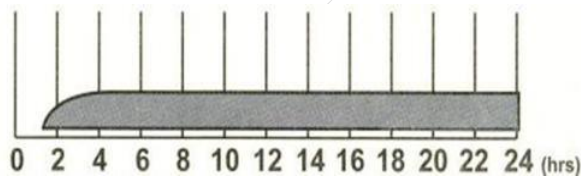


Basal (long acting) insulin requirements

Basal insulin is required for background metabolic needs and is not related to food or fluids consumed. The green coloured line in the diagram above represents endogenous basal insulin secretion over a 24 hour period.

Glargine 100units/mL (Optisulin[®]) insulin is used to cover basal needs in the Hyperglycaemia Protocol BBI Chart (MR62A). Glargine 100units/mL (Optisulin[®]) insulin is administered at 2100 hours and supper is not required.

The diagram below outlines the action profile of glargine 100units/mL (Optisulin[®]) insulin.



Note: In type 1 diabetes, insulin is required for survival. Withholding basal insulin will result in hyperglycaemia and diabetic ketoacidosis.

Bolus (rapid acting) meal related insulin requirements

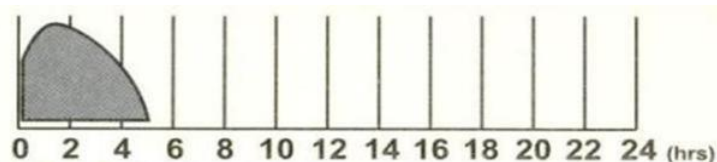
Bolus meal related insulin is released in response to carbohydrate (CHO) containing food or fluids consumed. The yellow coloured line in the diagram above represents endogenous bolus insulin secretion at main meal times over a 24 hour period.

The more CHO, the more insulin is required. In the inpatient setting, CHOs consumed will vary due to nausea, loss of appetite, fasting and re-introduction of food and fluids.

Aspart 100units/mL (NovoRapid[®]) and lispro 100units/mL (Humalog[®]) insulins are used to cover bolus needs in the Hyperglycaemia Protocol BBI Chart: Adult (MR62A).

Bolus (rapid acting) insulin are only to be administered at main meal times e.g. 3 times daily.

The diagram below outlines the action profile of NovoRapid[®] and Humalog[®] insulins.



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Bolus (rapid acting) correctional insulin requirements

A correctional (rapid acting) insulin bolus can be administered to address BG above target e.g. an extra 3units is added if the pre meal BG is 10.0-15.0mmol/L and an extra 6units if BGL is >15.0mmol/L.

A correctional (rapid acting) insulin bolus can be used alone if the patient is fasting or added to the bolus (rapid acting) meal related insulin dose/s.

Aspart 100units/mL (NovoRapid®) and lispro 100units/mL (Humalog®) insulins are used for correctional bolus requirements.

Correctional (rapid acting) insulin doses are limited to main meal times only.

Note: The Hyperglycaemia Protocol BBI Chart: Adult (MR62A) provides two sections for prescribing bolus (rapid acting) insulin:

- > bolus (rapid acting) insulin with meals
- > correctional (rapid acting) insulin at main meal times and given even if fasting.

1.3. Transitioning from an intravenous insulin infusion

Intravenous (IV) regular (Actrapid®) insulin has a half-life of only 7 minutes with a duration of approximately 1 hour.

To transition to the BBI chart (MR62A) from IV insulin infusion, the IV insulin infusion **MUST NOT** be discontinued until at least 4 hours after commencement of subcutaneous basal glargine (Optisulin®) insulin.

IV regular (Actrapid®) insulin adjustments can continue based on blood glucose levels as this ensures adequate insulin coverage during the 4 hour transition to the basal bolus insulin schedule.

1.4. How insulin is prescribed using the BBI chart (MR62A)

The Hyperglycaemia Protocol BBI Chart: Adult (MR62A) insulin orders are divided into three sections:

- > bolus (rapid acting) insulin with main meals
- > correctional (rapid acting) insulin if BG >10.0mmol/L at main meal times and given even if fasting
- > basal (long acting) insulin (given at 2100).

The prescriber **MUST** sign all sections of the chart.

Steps to initiate, review, adjust and cease for planned discharge therapy are outlined on the back of the chart.

Example Hyperglycaemia Protocol BBI Chart: Adult (MR62A) Appendix 1

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BOLUS
Rapid acting
insulin

BOLUS
Correctional rapid acting

BASAL
Long acting
insulin

Step 1: Using the chart

- > cease all regular current diabetes treatment bolus (rapid acting) insulin with meals
- > review/measure HbA1c to assess pre admission diabetes control.

Step 2: Calculating total daily insulin

Using the table below, calculate the total daily insulin (TDD) requirements using the patient's weight and current diabetes medications (e.g. oral/injectable agents or subcutaneous insulin/s).

Current diabetes treatment	Total initial daily insulin dose
Diet	0.3units/kg
Oral/injectable agents*	0.4units/kg
Subcutaneous insulin	Insulin used in last 24 hours
S/C insulin + oral /injectable agents*	Insulin used in last 24 hours + 10%
Intravenous infusion ^Δ	Four times insulin used in last 6 hrs

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Examples of how the TDD is calculated:

80kg patient diet-controlled

> TDD = 0.3 x 80kgs = 24units

90kg patient taking metformin and gliclazide

> TDD = 0.4 x 90kgs = 36units

75kg patient taking Mixtard 30/70, 40units mane, 15units evening. Also taking metformin BD.

> TDD = 40 + 15 = 55units

> Add 10% (5units) to account for ceasing metformin = 60units

Step 3: Calculating basal bolus split

Basal (long acting) insulin requirement; glargine 100units/mL (Optisulin®) insulin.

Write up 50% of calculated TDD insulin of as the glargine (basal) dose (bottom of the chart).

An example is provided using No.1 scenario from above.

GLARGINE (Optisulin®) INSULIN (Basal requirement)		SUBCUT				GIVE THIS DOSE EVEN IF FASTING			
		DATE							
12 units nocte	Name: B. BROWN Sign: B. BROWN Date: 25/8/2020 Desig: CP	2100	25/8/20	26/8/20	27/8/20	28/8/20			
..... units nocte	Name:..... Sign:..... Date:..... Desig:.....	2100							
..... units nocte	Name:..... Sign:..... Date:..... Desig:.....	2100							

Two nurses to check at the bedside, and then sign after prescribed basal (long acting) insulin dose administered.

Bolus (rapid acting) insulin requirement; aspart 100units/mL (NovoRapid®) or Lispro 100units/mL (Humalog®) insulin.

Write up 50% of the calculated TDD of insulin dose divided into 3 equal doses as the NovoRapid® or Humalog® (bolus) dose with meals.

RAPID INSULIN WITH MEALS (Bolus requirement)		SUBCUT				HOLD DOSE IF FASTING			
Circle preferred rapid insulin Humalog® or NovoRapid®		Administer immediately before or with meals							
		DATE							
B'fast Lunch Tea 4 4 4 Units Units Units	Name: B. BROWN Sign: B. BROWN Date: 25/8/2020 Desig: CP	1200 1200 1800	25/8/20	26/8/20	27/8/20	28/8/20			
B'fast Lunch Tea Units Units Units	Name:..... Sign:..... Date:..... Desig:.....	B'fast Lunch Tea							
B'fast Lunch Tea Units Units Units	Name:..... Sign:..... Date:..... Desig:.....	B'fast Lunch Tea							

Two nurses to check at the bedside, and then sign after prescribed meal related bolus (rapid acting) insulin dose administered.

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Bolus (rapid acting) correctional insulin requirement; aspart 100units/mL (NovoRapid®) or Lispro 100units/mL (Humalog®) insulin.

Correctional (rapid acting) bolus insulin doses are given at main meal times with the rapid acting insulin with meals or alone if the patient is fasting. The doses are predetermined but it must be signed by the prescriber.

An example is provided below.

CORRECTIONAL RAPID INSULIN			SUBCUT		GIVE THIS DOSE AT MAIN MEAL TIMES EVEN IF FASTING								
Only needed if BGL > 10.0mmol/L. If a correctional dose is required, use the same type of rapid insulin as above. This dose can be combined with the above rapid insulin dose for administration.													
BG	INSULIN		DATE										
< 10.0 mmol/L	none	Name: <i>B. Bronn</i>	<i>25/8/20</i>										
10.1 - 15.0 mmol/L	3 units	Sign: <i>B. Bronn</i>	<i>26/8/20</i>										
> 15.0 mmol/L	6 units	Date: <i>25/8/20</i> Desig: <i>CP</i>	<i>27/8/20</i>										
			<i>28/8/20</i>										
				B'fast									
				Lunch									
				Tea									

Two nurses to check at the bedside, and then sign after prescribed correctional bolus (rapid acting) insulin dose administered.

Step 4: Cross reference with the National Inpatient Medication Chart (NIMC)

When a patient is commenced on the BBI Chart (MR62A) here must be a cross reference on the National Inpatient Medication Chart (NIMC). This is attended by:

- > Place a √ (tick) in the BGL/insulin box on page 1 of the NIMC and identifying that the NIMC is '1 of 2'.

An example is provided below.

Medication chart number 1 of 2

Additional charts

- IV fluid
- BGL/insulin
- Acute pain
- Other
- Palliative care
- Chemotherapy
- IV heparin

- > Cross reference the insulin order in the NIMC chart to ensure the insulin prescribed on the BBI chart (MR62A) is NOT omitted during hospital admission. The authorised prescriber, pharmacist or registered nurse should note in the chart the following;

An example is provided below.

Regular medicines

Year 20...20....		Date and month →		<i>1/8/20</i>	<i>2/8/20</i>								
PRESCRIBER MUST ENTER administration times													
Date	Medicine (print generic name)	Frequency and NOW enter times		Tick if slow release									
<i>1/8/2020</i>	<i>NovoRapid Insulin Aspart</i>	<i>before main before bed (100u)</i>		<input type="checkbox"/>									
Route	Dose	Frequency and NOW enter times											
<i>sub cut</i>	<i>variable</i>	<i>before main before bed (100u)</i>											
Indication	Pharmacy												
<i>Type 1 diabetes</i>													
Prescriber signature	Print your name	Contact											
<i>B. Bronn</i>	<i>B BRONN</i>	<i>1994 1234</i>											

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Step 5: Monitoring blood glucose and blood ketones – notification instructions

Blood glucose target

For patients in hospital the recommended target range is 5.0-10.0mmol/L. However, there will be circumstances where the BG target needs to be modified. The BG target can be modified by the prescriber e.g. obstetric 4.1-7.9mmol/L.

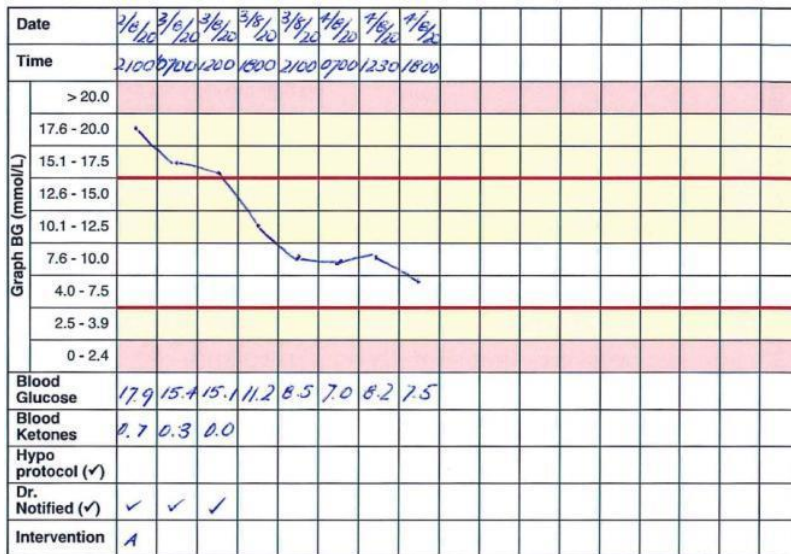
Blood glucose monitoring frequency

All patients on the BBI Chart (MR62A) must have their BG tested pre meals and 2100 hours. Consider testing BG at 0200 hours if there is a risk of recurrent or nocturnal hypoglycaemia or if the patient is fasting.

Blood ketone monitoring frequency

Blood ketones are a sign of insulin deficiency and risk of diabetic ketoacidosis (DKA). All patients on the BBI Chart (MR62A) must have their blood ketones tested daily and more frequently if BG is greater than 15.0mmol/L or if nausea or vomiting persists.

An example is provided below.



Notification instructions

The rapid detection and response (RDR) instruction highlight action required by the senior registered nurse for review, multidisciplinary review and medical emergency response.

Rapid Detection and Response Instruction	
<p>A Senior Registered Nurse (RN) review must occur when a blood glucose (BG) or blood ketone result is in the yellow zone:</p> <ul style="list-style-type: none"> BG is less than 4.0mmol/L (refer to Hypo Protocol) BG between 10.1 - 20.0mmol/L Blood ketone between 0.1 – 0.9mmol/L <p>Review: Recheck BG and/or ketones in 2 hours.</p>	<p>A Multi-Disciplinary Team (MDT) review must occur when a blood glucose (BG) or blood ketone result is in the red zone:</p> <ul style="list-style-type: none"> BG is less than 2.5mmol/L or greater than 20.0mmol/L Two consecutive BG results are greater than 15.0mmol/L Blood ketone is greater than 1.0mmol/L <p>Review: Recheck BG and/or ketones in 1 hour or when medically ordered.</p>
<p>A Medical Emergency Response (MER) review must occur when:</p> <ul style="list-style-type: none"> Blood glucose (BG) is less than 4.0mmol/L and the patient is unconscious, unsafe to swallow or has not responded to the RLHN Hypoglycaemia Protocol oral treatment in 45 minutes. The patient is drowsy, confused, breathing rapidly or having difficulty breathing or complaining of severe abdominal pain. <p>Review: Recheck BG and/or ketones when medically ordered.</p>	

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Step 6: Adjusting insulin doses

The aim of is for all BG levels to be in target without requiring correctional insulin. BG should be reviewed daily and insulin doses adjusted accordingly.

The table below is also on the back of the BBI Chart (MR62A) and provides instructions for adjusting the insulin doses.

Time BG taken	HIGH BG (greater than 10.0mmol/L)	LOW BG (less than 4.0mmol/L)
Before b/fast	Increase basal insulin	Decrease basal insulin
Before lunch	Increase b/fast rapid insulin	Decrease b/fast rapid insulin
Before tea	Increase lunch rapid insulin	Decrease lunch rapid insulin
2100 hours	Increase tea-time rapid insulin	Decrease tea-time rapid insulin

General principles

Before adjusting doses, review any clinical changes to the patient which may influence insulin requirements (e.g. infection is improving, appetite returning or increasing mobility).

If there is hyperglycaemia

Dose increases are generally between 10-25%. Use the amount and pattern of correctional rapid acting insulin used in the preceding 24-48 hours as a guide.

If there is hypoglycaemia

Reduce the appropriate insulin by 20-25%.

Adjusting insulin doses - Examples

ALL BG consistently high

Indicates not enough basal insulin, suggest increasing the glargine (Optisulin®) dose.

Fasting BG (e.g. 0700) - the only insulin impacting on this BG is the glargine (Optisulin®) dose. There will be no impact from the rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin administered at teatime the night before.

- > **High** fasting BG - increase evening glargine (Optisulin®) dose.
- > **Low** fasting BG - decrease evening glargine (Optisulin®) dose.

Lunchtime BG (e.g. 1200) - mainly influenced by the breakfast rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin dose.

- > **High** BG before lunch - increase breakfast rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin.
- > **Low** BG before lunch - decrease breakfast rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin.

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Teatime BG (e.g. 1700) - mainly influenced by the lunch time rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin dose.

- > **High** BG before tea - increase lunch rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin.
- > **Low** BG before tea - decrease lunch rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin.

2100 hours BG - mainly influenced by the teatime rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin dose.

- > **High** BG at 2100 - increase teatime rapid acting aspart (NovoRapid®) or lispro (Humalog®) insulin.
- > **Low** BG at 2100 - decrease teatime rapid acting Aspart (NovoRapid®) or Lispro (Humalog®) insulin.

Step 7: Stopping basal bolus insulin and transferring to discharge therapy

The admission HbA1c will assist in determining the best discharge therapy for the person. This is outlined on the back of the form.

- | | |
|---------------------------------------|---|
| HbA1c less than 7%
(53mmol/mol) | - Recommence on usual diabetes treatment. |
| HbA1c 7- 8% (53-64mmol/mol) | - May need increase in usual therapy, arrange follow up GP appointment. |
| HbA1c greater than 8%
(64mmol/mol) | - Will require increase in usual pre-admission treatment.
Arrange GP and diabetes education follow up. |

Once the patient's BG levels are consistently within target, consider transferring to planned discharge therapy. Ideally, this should happen 1-2 days before discharge or when medically stable.

Discharge on oral/injectable agents* without glargine (Optisulin®)

- > Reduce night time dose of glargine (Optisulin®) by 50% and give this as the last dose and commence oral/injectable agents* in the morning (consider eGFR for metformin dose).

Discharge on glargine (Optisulin®) with or without other oral/injectable agents*

- > Administer night time dose of glargine as usual and commence oral/injectable agents* the following day. Continue night time glargine (Optisulin®) at home.

Discharge on alternate insulin e.g. premix or morning glargine (Optisulin®)

- > Reduce night time dose of glargine (Optisulin®) by 50% and commence prescribed insulin and any oral/injectable agents* the following day.

* *metformin, sulphonylureas, DPP4 inhibitors, GLP1 injectables, SGLT2, glitazones*

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1.5. Referral to diabetes educator

Priority for referral includes;

- > pre-admission HbA1c above 8.5% (69mmol/mol)
- > admission diagnosis of hypoglycaemia or acute hyperglycaemia
- > commencement of insulin
- > pregnancy or paediatric
- > newly diagnosed.

1.6. Case scenario

58 year old man, admitted with pneumonia to medical ward. Type 2 diabetes for 5 years. On metformin 1.0g bd.

- > weight 80kg
- > BGL 16.5mmol/L on admission
- > HbA1c 8.6% (70mmol/mol) on admission.

BBI chart

- > consider referral to diabetes educator
- > cease metformin
- > estimated insulin $0.4 \times 80\text{kgs} = 32\text{units}$
- > start glargine (Optisulin®) insulin 16units 2100
- > rapid acting aspart (NovoRapid®) insulin 5units with meals
- > review blood glucose and adjust doses daily.

Prior to discharge

- > recommence metformin
- > commence additional agents to assist with improving glycaemic control (as admission HbA1c 8.6% (70mmol/mol))
- > consider referral to diabetes educator.

1.7 Example BBI (MR62A) COMPLETED

2/8/2020 Fasting BG 16.9mmol/L

3/8/2020 Fasting BG 13.1mmol/L

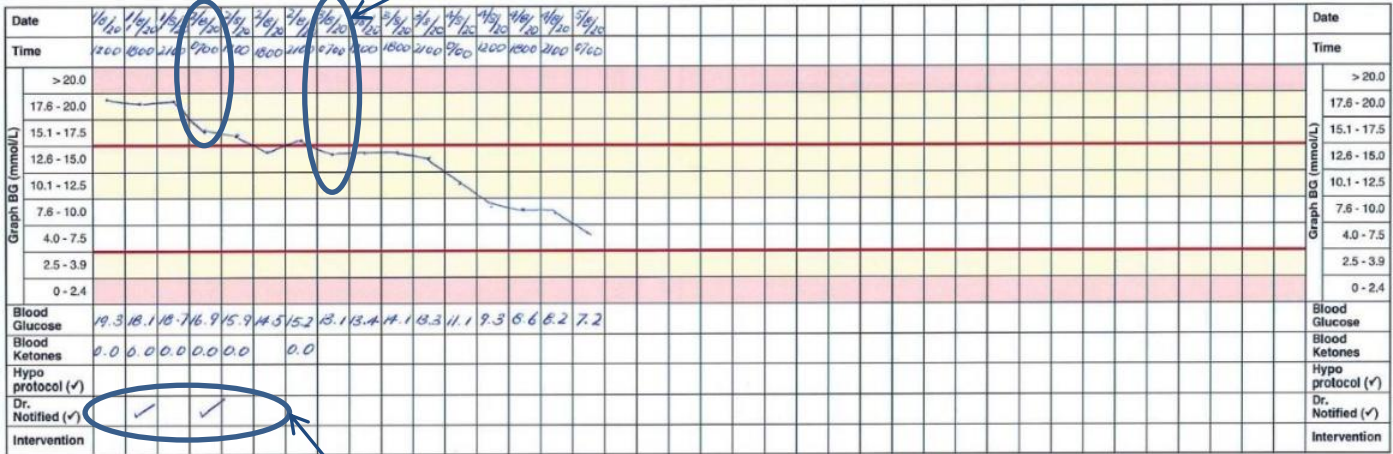
Blood glucose (BG) monitoring frequency instructions		
Routine (GID) Test all patients with diabetes before meals and at 2100hrs until review by medical practitioner.	Unstable (GID + 0200hrs) Routine times plus 0200hrs if admission for hypoglycaemia or nocturnal hypoglycaemia suspected.	Stable (BD) If not at risk of hypoglycaemia and BG is between 5.0-10.0mmol/L consider testing before breakfast and evening meal.
Blood ketone monitoring frequency instructions (for patients on insulin)		
Routine (Daily) If the patient is fasting.	Unstable If the BG greater than 15.0mmol/L.	Unwell If nausea or vomiting persist, recheck blood ketones as per the RDR Instruction.

**HYPERGLYCAEMIA PROTOCOL
BASAL BOLUS INSULIN
CHART
(ADULT) – MR62A**

Hospital/Site: QUIET CREEK

All patient identification label in this box

UR No: 12345
Surname: FRANKLIN
Given Name: LOUISE
Second Given Name: ANNE
D.O.B: 01/04/1972 Sex/Gender: F



RAPID INSULIN WITH MEALS (Bolus requirement)		SUBCUT		HOLD DOSE IF FASTING	
Circle preferred rapid insulin Humalog® or NovoRapid®	Administer immediately before or with meals				
Bfast Lunch Tea	Name: <u>B. Brown</u>	DATE: <u>1/8/20</u>	<u>1/8/20</u>	<u>1/8/20</u>	<u>1/8/20</u>
<u>6</u> <u>6</u> <u>6</u>	Sign: <u>B. Brown</u>				
Units Units Units	Date: <u>2/8/20</u> Desig: <u>CP</u>				
Bfast Lunch Tea	Name: <u>B. Brown</u>	DATE: <u>2/8/20</u>	<u>2/8/20</u>	<u>2/8/20</u>	<u>2/8/20</u>
<u>8</u> <u>8</u> <u>8</u>	Sign: <u>B. Brown</u>				
Units Units Units	Date: <u>2/8/20</u> Desig: <u>CP</u>				
Bfast Lunch Tea	Name: <u>B. Brown</u>	DATE: <u>2/8/20</u>	<u>2/8/20</u>	<u>2/8/20</u>	<u>2/8/20</u>
<u>6</u> <u>6</u> <u>6</u>	Sign: <u>B. Brown</u>				
Units Units Units	Date: <u>2/8/20</u> Desig: <u>CP</u>				

GLARGINE (Oral long acting insulin) (Basal requirement)		SUBCUT		GIVE THIS DOSE EVEN IF FASTING	
<u>22</u> units nocte	Name: <u>B. Brown</u>	DATE: <u>1/8/20</u>	<u>1/8/20</u>	<u>1/8/20</u>	<u>1/8/20</u>
	Sign: <u>B. Brown</u>				
	Date: <u>2/8/20</u> Desig: <u>CP</u>				
<u>26</u> units nocte	Name: <u>B. Brown</u>	DATE: <u>2/8/20</u>	<u>2/8/20</u>	<u>2/8/20</u>	<u>2/8/20</u>
	Sign: <u>B. Brown</u>				
	Date: <u>2/8/20</u> Desig: <u>CP</u>				
<u>28</u> units nocte	Name: <u>B. Brown</u>	DATE: <u>2/8/20</u>	<u>2/8/20</u>	<u>2/8/20</u>	<u>2/8/20</u>
	Sign: <u>B. Brown</u>				
	Date: <u>2/8/20</u> Desig: <u>CP</u>				

Rapid Detection and response instruction	
A Senior Registered Nurse (RN) review must occur when a blood glucose (BG) or blood ketone result is in the yellow zone:	A Multi-Disciplinary Team (MDT) review must occur when a blood glucose (BG) or blood ketone result is in the red zone:
<ul style="list-style-type: none"> BG is less than 4.0mmol/L (refer to Hypo Protocol) BG between 10.1 - 20.0mmol/L Blood ketone between 0.1 - 0.5mmol/L 	<ul style="list-style-type: none"> BG is less than 2.5mmol/L or greater than 20.0mmol/L Two consecutive BG results are greater than 15.0mmol/L Blood ketone is greater than 1.0mmol/L
Review: Recheck BG and/or ketones in 2 hours.	Review: Recheck BG and/or ketones in 1 hour or when medically ordered.
A Medical Emergency Response (MER) review must occur when:	
<ul style="list-style-type: none"> Blood glucose (BG) is less than 4.0mmol/L and the patient is unconscious, unsafe to swallow or has not responded to the RLHN Hypoglycaemia Protocol oral treatment in 45 minutes. The patient is drowsy, confused, breathing rapidly or having difficulty breathing or complaining of severe abdominal pain. 	
Review: Recheck BG and/or ketones when medically ordered.	

To change rapid acting meal related bolus dosage – cease current order and rewrite all three (3) new doses in a new row.

Due to elevated pre meal BG and correctional doses used over past 24 hours, rapid acting meal related bolus doses were increased.

RDR intervention: MO notified due to two (2) consecutive BG results greater than 15.0mmol/L.

To change long acting basal dosage – cease current order and rewrite the new dose in a new row.

Due to elevated fasting BG over past 24 hours, long acting basal dose was increased.

Regional Local Health Networks

1.8 Contacts and further information

Local contact

- > Clinical pharmacy or visiting pharmacist
- > Diabetes educator service
- > Director of Medical Services
- > Visiting local endocrinology or diabetes physician

For urgent medical advice/support, contact your nearest regional or metropolitan hospital.

Rural Support Service – Diabetes Service

www.chsa-diabetes.org.au

Australian Diabetes Society

www.diabetessociety.com.au

Diabetes management in general practice - guidelines for type 2 diabetes.

www.racgp.org.au

Diabetes Australia

www.diabetesaustralia.com.au

National Diabetes Service Scheme

www.ndss.com.au

Acknowledgements

- > Flinders Medical Centre
- > Repatriation General Hospital
- > Port Augusta Hospital

Enquiries to RSS Diabetes Service – (08) 8226 7168

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2. Attached Documents

Document Name
Hyperglycaemia Protocol Basal Bolus Insulin Chart: Adult (MR62A) Example

3. References

Document Name
Roberts, GW, Aguilar-Loza, N, Esterman, A, Burt, MG and Stranks, SN, 2012. Basal-bolus insulin versus sliding-scale insulin for inpatient glycaemic control: a clinical practice comparison . <i>Medical Journal Australia</i> 196(4): 266-269.
Australian Commission on Safety and Quality in Health Care, 2017. National consensus statement: essential elements for recognising and responding to acute physiological deterioration second edition . Sydney, ACSQHC.

4. Accreditation Standards

National Safety and Quality Health Service Standards (2nd edition)

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input checked="" type="checkbox"/>	5 <input checked="" type="checkbox"/>	6 <input checked="" type="checkbox"/>	7 <input type="checkbox"/>	8 <input checked="" type="checkbox"/>
Clinical Governance	Partnering with Consumers	Preventing & Controlling Healthcare Associated Infection	Medication Safety	Comprehensive Care	Communicating for Safety	Blood Management	Recognising & Responding to Acute Deterioration

Aged Care Quality Standards (includes Home care clients)

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input checked="" type="checkbox"/>
Consumer Dignity & Choice	Ongoing Assessment & Planning with Consumers	Personal Care & Clinical Care	Services & Supports for Daily Living	Organisation's Service Environment	Feedback & Complaints	Human Resources	Organisational Governance

National Disability Insurance Scheme (NDIS) Practice Standards

CORE MODULE				SUPPLEMENTARY MODULES	
1 <input type="checkbox"/>	2 <input checked="" type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>
Rights and Responsibilities	Governance and Operational Management	Provision of Supports (to participants)	Provision of Supports (environment)	High Intensity Daily Personal Activities Module	Early Childhood Supports Module

5. Consultation

Regional Local Health Networks

Version	Consultation
1.0	SA Health Metropolitan Diabetes Services, Nurse Practitioner-Diabetes - CHSALHN & Mt Gambier, CHSA Diabetes Specialist Nurse Network, CHSALHN Director of Endocrinology, Clinical Pharmacists, Flinders Medical Centre - Diabetes Service.
2.0	SA Health Metropolitan Diabetes Services, Nurse Practitioner-Diabetes - CHSALHN & Mt Gambier, CHSA Diabetes Specialist Nurse Network, CHSALHN Director of Endocrinology, Clinical Pharmacists, Flinders Medical Centre - Diabetes Service, Riverland Regional Health Service.
3.0	SA Formulary Committee and their Statewide Endocrine Consultation Group, Regional LHN Medication Safety Portfolio Nurses, Drug & Therapeutics Advisory Committee for regional LHNs, Dr Elaine Pretorius, Executive Director Medical Service, LCLHN & endocrinologist, Nurse Practitioner-Diabetes - RSS & Mt Gambier, Regional LHN Diabetes Specialist Nurse Network