INPATIENT INSULIN DOSE PRESCRIBING GUIDE

www.ggc-youngdiabetes.org

- **The range within which a dose of insulin can be both effective and safe is narrow.** Too small or too large a dose may be dangerous, and so care and attention to detail when prescribing insulin are essential.
- The **"Walking Wounded" Patient Insulin Guideline** is an insulin regimen based on Body Weight.
- This regimen uses an **Insulin Total Daily Dose (TDD) of 0.75 U/kg/day**, and should either be used:
  - from the time of diagnosis (for those presenting well enough to eat and drink normally) *or*
  - on transitioning from intravenous to injected insulin therapy (for those presenting in ketoacidosis).
- This regimen is very useful *prior to* training in carbohydrate counting and Blood Glucose correction.

USING CALCULATION TABLES TO PRESCRIBE CARBOHYDRATE AND CORRECTION BOLUS INSULIN DOSES:

- The **"Basal-Bolus" system of insulin prescription (TDD approx. 1 U/kg/day) is used for diabetes patients:**
  - transitioning from the Walking Wounded regimen, prior to discharge home, and
  - established with the condition, and already using a Basal-Bolus regimen at home.
- **BASAL DOSES** are relatively set, at approx. 35% of Total Daily Dose (usually once daily at Dinner).
- **BOLUS DOSES** vary according to four factors, including:
  - **Carbohydrate eaten** (grams)
  - **Current Blood Glucose** (mmol/l)
  - **Carb: Insulin Ratio** (CR): (g/Unit) = Carbs eaten per Unit insulin to maintain BG after eating.
  - **Insulin Sensitivity** (IS): (mmol/l/Unit) = BG fall per Unit insulin.
- Carb: Insulin Ratio and Insulin Sensitivity are *prescribed*, rather than prescribing a particular insulin dose.
- Bolus doses can be directly calculated using the prescribed variables, but may also be calculated, rounded and displayed using a Table, as below, to minimise error and standardise dosage.

CARBOHYDRATE DOSE AND CARB: INSULIN RATIO:

- **Carbohydrate Dose** (Units) =
  - Carbohydrate amount eaten (grams) ÷
  - Carb: Insulin Ratio (grams/Unit).
- **Carbohydrate Dose Table** at Right takes into account Carbohydrate amount eaten and Carb: Insulin Ratio.
- **Calculated Carbohydrate Dose** (6 Units) = where:
  - **"Carbohydrate Eaten" row** (32 grams) meets
  - **"Carb Ratio" column** (5 g/Unit).

CARBOHYDRATE: INSULIN RATIO (gr	2	2·5	3	3·5	4	4·5	5	6
5-9	2.5	2	1·5	1	1	1	1	0·5
10-14	5	4	3	2·5	2·5	2	2	1·5
15-19	7.5	6	5	4	3·5	3	3	2·5
20-24	10	8	6·5	5·5	5	4	4	3
25-29	12	10	8	7	6	5·5	5	4
30-34	15	12	10	8·5	7·5	6·5	6	5
35-39	17	14	11	10	8.5	7·5	7	5·5

CORRECTION DOSE AND INSULIN SENSITIVITY:

- **Correction Dose** (Units) =
  - (Current BG – Target BG) (mmol/l) ÷
  - Insulin Sensitivity (mmol/l/Unit).
- Note that there are ***two* calculations** necessary here:
  - **Required BG Fall** = (Current BG – Target BG) *and*
  - **Dose** = Required BG Fall ÷ Insulin Sensitivity.
- **Correction Dose Table** at Right *already takes into account* Required BG Fall = 6.5 mmol/l:
  (= Current BG (12.5 mmol/l) – Target BG (6 mmol/l)).
- **Calculated Correction Dose** (3 Units) = where:
  - **"Current Bld Glucose" row** (12.5 mmol/l) meets
  - **"Insulin Sensitivity" column** (2 mmol/l/Unit).

CURRENT BLOOD	INSULIN SENSITIVITY (mmol/l fall per IS =	1	1·2	1·5	1·7	2	2·5	3
	7-7·9	1	0·5	0·5	0·5	0·5	-	-
	8-8·9	2	1·5	1	1	1	0·5	0·5
	9-9·9	3	2·5	2	1·5	1·5	1	1
	10-10·9	4	3	2·5	2	2	1·5	1
	11-11·9	5	4	3	2·5	2·5	2	1·5
	12-12·9	6	5	4	3·5	3	2	2
	13-13·9	7	5·5	4·5	4	3·5	2·5	2

- *While it will not usually be expected that staff outside the GGC Children' Diabetes Service (CDS) would routinely prescribe "Basal-Bolus" insulin dose regimens, when required it would be appreciated if insulin prescriptions could be rewritten/amended as recommended in this document or following appropriate guidance. Thank you.*

* NB: To prescribe insulin for more than 100 grams of carbohydrate, first calculate the dose for 100 grams, and then add this to the dose for any remaining grams of carbohydrate to give the total Carb Dose.

DOSING FOR BASAL-BOLUS INSULIN REGIMENS

The **four principal dosage categories** used when prescribing insulin for patients with Type 1 diabetes include:

- **Basal Dose** - slow-acting insulin to maintain Blood Glucose while fasting (1-2 times daily) (~35% TDD).
- **Carbohydrate Dose** - fast-acting insulin to maintain Blood Glucose after eating carbohydrate meal (~65% TDD).
- **Correction Dose** - fast-acting insulin to correct hyperglycaemia, returning high BG to Target BG (6 mmol/l).
- **Ketone Dose** - fast-acting insulin to correct ketonaemia, given for absolute or relative insulin deficiency.

Basal Dose

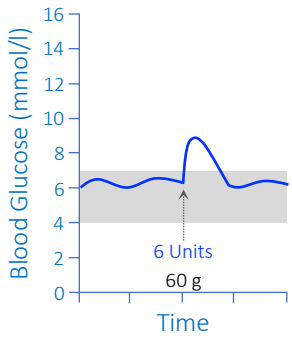
- An appropriate insulin "**Basal Dose**" maintains a steady Blood Glucose (BG) when *no carbohydrate* is eaten.
- Most easily determined while fasting (e.g. overnight or following carb meal omission).
- Basal Dose usually 30% to 40% of total daily insulin requirement ("Total Daily Dose", or "TDD").
- For established patients 35% of TDD gives an approximate Total Daily Basal Dose of insulin.
- Daily Basal Dose is usually given once daily (usually at Dinner, though other administration times possible).
- Daily Basal Dose may be halved and given twice daily (Breakfast and Dinner) if insulin need uncertain.
- Adolescent hormones tend to increase BG on waking. Basal Dose is titrated by using BG results at Bedtime, Midnight and 3 a.m. (ideally steady at these times but a high BG on waking must be corrected).

Carbohydrate Dose

- An appropriate insulin "**Carbohydrate Dose**" maintains a steady BG when carbohydrate *is* eaten.
- "Carbohydrate: Insulin Ratio" ("Carb Ratio" or "CR") is Carbohydrate amount eaten per Unit of insulin taken.
- Appropriate CR should cause *no* significant BG rise or fall 2 hours after eating (+/- 2 mmol/l from pre-meal BG).
- Carbohydrate Dose (Units) = Carbohydrate eaten (grams) ÷ Carbohydrate: Insulin Ratio.
  e.g. Carbohydrate Dose if 50 grams Carbohydrate eaten & Carb Ratio 10 g/Unit = 50 g ÷ 10 g/U = 5 Units.

Carbohydrate eaten: 60 grams
Carb: Insulin Ratio: **10** g/Unit
Carbohydrate Dose: 6 Units

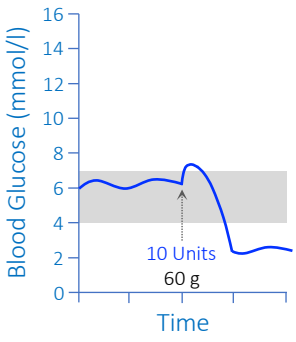
Dose Appropriate



After-meal BG **within** Target Range
Carbohydrate Dose appropriate
Carb: Insulin Ratio **Appropriate**

Carbohydrate eaten: 60 grams
Carb: Insulin Ratio: **6** g/Unit
Carbohydrate Dose: 10 Units

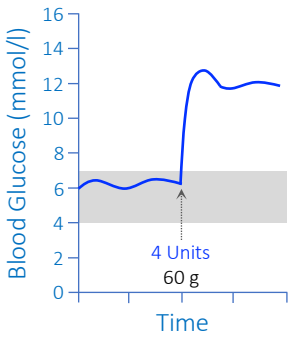
Dose Too Large



After-meal BG **below** Target Range
Carbohydrate Dose too large
Carb: Insulin Ratio **too Low**

Carbohydrate eaten: 60 grams
Carb: Insulin Ratio: **15** g/Unit
Carbohydrate Dose: 4 Units

Dose Too Small



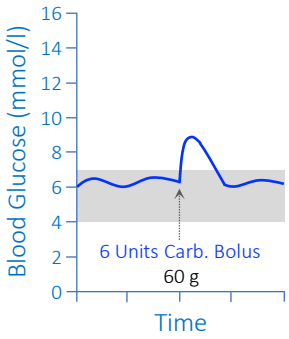
Post-prandial BG **above** Target Range
Carbohydrate Dose too small
Carb: Insulin Ratio **too High**

Correction Dose

- An appropriate insulin "**Correction Dose**" returns a high BG result to the Target BG (6 mmol/l).
- "Insulin Sensitivity" (IS) estimates expected BG fall for each extra Unit of rapid-acting insulin given.
- The "100 Rule" estimates Insulin Sensitivity, dividing 100 by TDD to give expected BG fall (mmol/l per Unit).
- Dividing required BG fall (Current BG less Target BG) by Insulin Sensitivity calculates required Correction Dose.
- Working out the Correction Dose therefore requires completion of *two* calculations:
  - Required BG fall (Current BG *minus* Target BG) *and*
  - Division of Required BG Fall by Insulin Sensitivity.

Carbohydrate eaten: 60 grams
Carb: Insulin Ratio: 10 g/Unit
Carbohydrate Dose: 6 Units

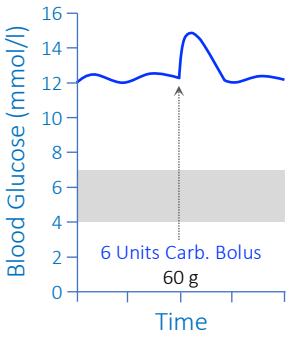
Carbs Dose Appropriate



After-meal BG **within** Target Range
Carbohydrate Dose appropriate
Carb: Insulin Ratio **Appropriate**

Carbohydrate eaten: 60 grams
Carb: Insulin Ratio: 10 g/Unit
Carbohydrate Dose: 6 Units

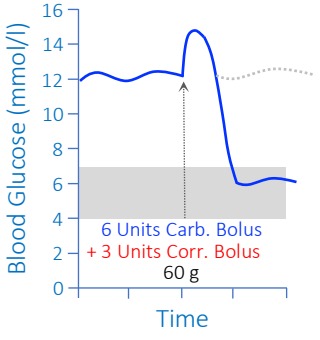
Carbs Dose Appropriate
Total Dose Too Small



Before-meal BG High
Carbohydrate Dose Appropriate
After-meal BG remains High

Carbohydrate eaten: 60 grams
Carb: Insulin Ratio: 10 g/Unit
Carbohydrate Dose: 6 Units
Correction Dose: + 3 Units

Total Dose Appropriate

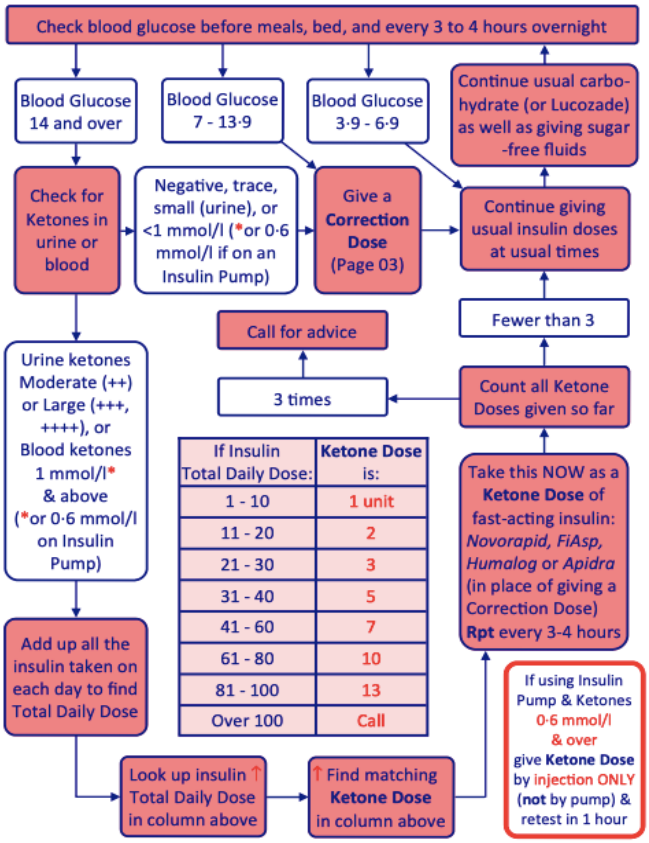


Before-meal BG High
Carbohydrate Dose Appropriate
Correction Dose returns BG to Target

Ketone Dose

- A **Ketone Dose** is extra insulin used to treat *ketosis*.
- Ketosis occurs due to insulin deficiency, which is either:
  - Absolute (pre-diagnosis or insulin omission), *or*
  - Relative (e.g. insulin increase needed due to illness).
- Ketosis differentiates high BG due to *excess Carbs* (non-ketotic) from high BG due to *insulin deficiency* (ketotic).
- Ketone dose is needed if BG >14 mmol/l & Ketonaemia:
  - ≥ 1.0 mmol/l (if taking injected insulin) or
  - ≥ 0.6 mmol/l (if using insulin pump).
- Ketone Dose *replaces* Correction Dose but is given *as well as* usual daily Basal and Carbohydrate Doses.
- Correction Doses *vary* according to BG to be corrected, but Ketone Doses are *fixed*, whatever the current BG.
- Ketone Dose is calculated by dividing TDD by 6, giving rapid-acting insulin dose to be taken 4-hourly until ketosis clears (recommended maximum of 3 consecutive doses until medical assessment to determine cause of ketosis).
- Extra Carbs may be needed to allow extra insulin doses.
- Instructions for home management by patients at Right. Note that Ketone Dose is approximated here using TDD.
- Ketone Doses should **not** be written-up in advance, *but* **only** prescribed and given after medical assessment.
- KETOSIS REQUIRES URGENT CLINICAL ASSESSMENT to determine and manage the likely cause.

Home and Outpatient
Ketone Dose and Sick Day Management



Summary

- The following pages show how to prescribe insulin on paper charts for new and established diabetes patients.
- HEPMA prescription of insulin should record basic information only, while the paper prescription chart includes details of administration and refers to the prescribing Tables used to calculate variable insulin doses.
- Guidance for HEPMA prescribing of insulin is included on Page 12 of this document.

While it will not usually be expected that staff outside the GGC Children' Diabetes Service (CDS) should routinely prescribe "Basal-Bolus" insulin dose regimens, when required it would be appreciated if insulin prescriptions could be rewritten/amended as recommended in this document or following appropriate guidance. Thank you.

PAEDIATRIC **GENERAL PRESCRIPTION** **INSULIN ONLY**

Hospital Name: .....

MEDICINES RECONCILIATION

Medicines Reconciled on Admission YES ☐

Date _____ Name (Print) _____

Discharge Prescription Prepared & Reconciled YES ☐

Date _____ Name (Print) _____

Date and time this form prepared:	Sheet No	2nd Prescription in use
11/01/22 Time: 20:00	1 of 2	YES ☑ NO ☐

DOCTOR'S DECLARATION (if required by Local Protocol)

I authorise nurse/midwife administration of the medicines included in the symptomatic relief policy & local protocol:

_____

with the following exceptions: _____

Print & Sign: _____ Date: _____

COMMUNITY PHARMACY INFORMATION

Name _____ Tel No. _____

Address _____

Consultant Name: DR FRED BANTING

PATIENT DETAILS

Hospital Number: 1707081908	Height: 1.60 m
DOB: 17.07.08	Surface area:
Date of Admission: 11/01/22	Ward: 2C

ONCE ONLY AND PREMEDICATION DRUGS

DATE	DRUG	DOSE	ROUTE	TIME (24hr)	PRESCRIBER (PRINT & SIGN)	GIVEN BY	TIME GIVEN (24hr)
11.01.22	TRESIBA (17)	UNITS	SC	14:10	Charlie Best	AB /CD	14:15
11.01.22	FIASP (5)	UNITS	SC	14:10	Charlie Best	AB /CD	14:15
11.01.22	FIASP (TWO POINT FIVE) (2·5)	UNITS	SC	21:00	Charlie Best	AB /CD	21:10
12.01.22	FIASP KETONE DOSE (5)	UNITS	SC	00:40	Joan Macleod	EF /GH	00:45

OXYGEN PRESCRIPTION (Continuous or as required)

Prescriber (Print & Sign) _____

Date: _____

On Home Oxygen Yes ☐ No ☐

Document Flow Rate & Saturations on Cews Chart

TARGET SATURATIONS
(circle correct range)

94 - 98% | OTHER (please specify)

Name LEONARD THOMPSON

CHI No 1707081908 / Weight 50 kg

Drug Allergies / Sensitivities None Known ☐ Yes ☐ (provide details below)

PAEDIATRIC **GENERAL PRESCRIPTION** **INSULIN ONLY** 1·1

Hospital Name: .....

MEDICINES RECONCILIATION

Medicines Reconciled on Admission YES ☐

Date _____ Name (Print) _____

Discharge Prescription Prepared & Reconciled YES ☐

Date _____ Name (Print) _____

1·2

Date and time this form prepared:	Sheet No.	2nd Prescription used
11/01/22 Time: 20:00	1 of 2	YES ☑ NO ☐

1·6

DOCTOR'S DECLARATION (if required by Local Protocol)

I authorise nurse/midwife administration of the medicines included in the symptomatic relief policy & local protocol: 1·7

_____

with the following exceptions: _____

Print & Sign: _____ Date: _____

COMMUNITY PHARMACY INFORMATION

Name _____ Tel No. _____

Address _____

Consultant Name: DR FRED BANTING

PATIENT DETAILS

Hospital Number: 1707081908	Height: 1.60 m
DOB: 17.07.08	Surface area:
Date of Admission: 11/01/22	Ward: 2C

1·8

Name LEONARD THOMPSON

CHI No 1707081908 / Weight 50 kg

ONCE ONLY AND PREMEDICATION DRUGS

DATE	DRUG	DOSE	ROUTE	TIME (24hr)	PRESCRIBER (PRINT & SIGN)	GIVEN BY	TIME GIVEN (24hr)
			1·3	1·4			
11.01.22	TRESIBA (17)	UNITS	SC	14:10	Charlie Best	AB /CD	14:15
11.01.22	FIASP (5)	UNITS	SC	14:10	Charlie Best	AB /CD	14:15
11.01.22	FIASP (TWO POINT FIVE) (2·5) 1·5	UNITS	SC	21:00	Charlie Best	AB /CD	21:10
12.01.22	FIASP KETONE DOSE (5)	UNITS	SC	00:40	Joan Macleod	EF /GH	00:45

PRESCRIBER NOTES FOR "WALKING WOUNDED" & KETONE INSULIN DOSES

1.1 ▶ The chart used to prescribe insulin should be marked as for prescribing "**Insulin Only**".

1.2 ▶ This **paper chart** should be used as the **main site to prescribe insulin** as the HEPMA system is currently unable to record sufficient detail to guide calculation of variable Carbohydrate Doses and Correction Doses.

▶ Basic information recording insulin type and frequency of dosing should be entered on the **HEPMA system.**

1.3 ▶ **Do not abbreviate UNITS** to "U", "IU" or similar.

1.4 ▶ Record time using a **24-hour clock** (e.g. "19:00").

1.5 ▶ Prescribe **decimalised doses** in both words and numbers (e.g. "2·5, TWO POINT FIVE").

1.6 ▶ Prescribe "**Walking Wounded Protocol" Correction Doses** on this page as separate "once only" doses.

1.7 ▶ Prescribe **Ketone Doses** on this page as separate "once only" doses, after mandatory medical review.

▶ Ketone Doses are fixed insulin doses to **reverse Ketosis** in the presence of **hyperglycaemia** (**BG ≥ 14** mmol/l).

▶ Ketone Doses are given **instead of Correction Doses**, and should be given **as well as all other daily insulins.**

1.8 ▶ Record both **Height and Weight** on admission so Body Mass Index can be calculated.

OXYGEN PRESCRIPTION (Continuous or as required)

Prescriber (Print & Sign) _____

Date: _____

On Home Oxygen Yes ☐ No ☐

Document Flow Rate & Saturations on Cews Chart

TARGET SATURATIONS (circle correct range)

94 - 98% | OTHER (please specify)

Drug Allergies / Sensitivities None Known ☐ Yes ☐ (provide details below)

REGULAR FIXED INSULIN DOSES

Parenteral Drugs: Regular Prescription

DRUG: TRESIBA BASAL INSULIN

DOSE	ROUTE	DATE	STOPPED DATE:	STOPPED INITIALS:
(17) UNITS	SC	12.01.22		

PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: DINNER ONLY

TIME	12 JAN	13 JAN	14 JAN	15 JAN
Other time				
0800-1000				
1200-1400				
(1600-1800)	AB CD	AB CD	AB CD	AB CD
2000-2200				
Other time				

DRUG: FIASP BOLUS INSULIN

DOSE	ROUTE	DATE	STOPPED DATE:	STOPPED INITIALS:
(6.5) SIX POINT FIVE UNITS	SC	12.01.22	13.01.22	CB

PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: BREAKFAST, LUNCH AND DINNER

TIME	12 JAN	13 JAN	14 JAN	15 JAN
Other time				
(0800-1000)	AB CD			
(1200-1400)	AB CD			
(1600-1800)	EF GH			
2000-2200				
Other time				

Charlie Best 13.01.22

DRUG: FIASP BOLUS INSULIN

DOSE	ROUTE	DATE	STOPPED DATE:	STOPPED INITIALS:
(5.5) FIVE POINT FIVE UNITS	SC	13.01.22	14.01.22	JM

PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: BREAKFAST

TIME	12 JAN	13 JAN	14 JAN	15 JAN
Other time				
(0800-1000)	→	AB CD		
1200-1400				
1600-1800				
2000-2200				
Other time				

DRUG: FIASP BOLUS INSULIN

DOSE	ROUTE	DATE	STOPPED DATE:	STOPPED INITIALS:
(6.5) SIX POINT FIVE UNITS	SC	13.01.22	14.01.22	JM

PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: LUNCH AND DINNER

TIME	12 JAN	13 JAN	14 JAN	15 JAN
Other time				
0800-1000				
(1200-1400)	→	AB CD		
(1600-1800)	→	EF GH		
2000-2200				
Other time				

SEE INSULIN CARBS DOSE RESCRIPTION

14.01.22 Joan Macleod

REGULAR FIXED INSULIN DOSES 2·2

2·1 Parenteral Drugs: Regular Prescription

DATE: 12 JAN | 13 JAN | 14 JAN | 15 JAN

MONTH

DRUG TRESIBA BASAL INSULIN 2·3

DOSE 2·4 (17) UNITS | ROUTE SC | DATE 12.01.22 | STOPPED DATE: | INITIALS:

PRESCRIBER (PRINT & SIGN) Charlie Best (CHARLES BEST)

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: DINNER ONLY 2·5

	12 JAN		13 JAN		14 JAN		15 JAN		
Other time	2·6								
0800-1000									
1200-1400									
(1600-1800)	AB	CD	AB	CD	AB	CD	AB	CD	2·7
2000-2200									
Other time									

DRUG FIASP BOLUS INSULIN 2·8

DOSE (6.5) SIX POINT FIVE UNITS 2·9 | ROUTE SC | DATE 12.01.22 | STOPPED DATE: 13.01.22 | INITIALS: CB

PRESCRIBER (PRINT & SIGN) Charlie Best (CHARLES BEST)

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: BREAKFAST, LUNCH AND DINNER 2·10

	12 JAN		13 JAN		14 JAN		15 JAN		
Other time									
(0800-1000)	AB	CD			Charlie Best	13.01.22			
(1200-1400)	AB	CD							
(1600-1800)	EF	GH							
2000-2200									
Other time									

DRUG 2·11 FIASP BOLUS INSULIN

DOSE (5.5) FIVE POINT FIVE UNITS | ROUTE SC | DATE 13.01.22 | STOPPED DATE: 14.01.22 | INITIALS: JM

PRESCRIBER (PRINT & SIGN) Charlie Best (CHARLES BEST)

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: BREAKFAST

	12 JAN		13 JAN		14 JAN		15 JAN		
Other time									
(0800-1000)	→		AB	CD			2·13		
1200-1400							SEE INSULIN CARBS		
1600-1800							DOSE RESCRIPTION		
2000-2200									
Other time									

DRUG 2·12 FIASP BOLUS INSULIN

DOSE (6.5) SIX POINT FIVE UNITS | ROUTE SC | DATE 13.01.22 | STOPPED DATE: 14.01.22 | INITIALS: JM

PRESCRIBER (PRINT & SIGN) Charlie Best (CHARLES BEST)

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: LUNCH AND DINNER

	12 JAN		13 JAN		14 JAN		15 JAN		
Other time									
0800-1000									
(1200-1400)	→		AB	CD					
(1600-1800)	→		EF	GH					
2000-2200									
Other time									

14.01.22 Jean Maitland

PRESCRIBER NOTES FOR REGULAR FIXED *BASAL* INSULIN DOSES (INCLUDING FOR "WALKING WOUNDED" PATIENTS)

2.1 ► Prescribe **Regular fixed Basal and Bolus insulin doses** on the "**Parenteral Drugs: Regular Prescription**" pages of the chart.

2.2 ► This chart should be marked as for prescribing "**Fixed Insulin Doses**".

2.3 ► **Regular fixed Basal Insulin doses** should be prescribed here, including:
- **Insulin Degludec (Tresiba)** - once daily (preferred Basal insulin).
- Insulin Detemir (Levemir) - once or twice daily (common alternative insulin).
- Insulin Glargine (Lantus) - once daily (less common alternative insulin).

2.4 ► **Record insulin dose in Units**. Circling dose can help distinguish dose from other numbers used, such as dates or even types of insulin (e.g. Novomix 30).

2.5 ► **Prescribe administration time** both by writing and by circling appropriate hour.

► **New patients** usually start **once daily Insulin Degludec (Tresiba)** as Basal insulin, though twice daily Insulin Detemir (Levemir) is an alternative.

► **Insulin Degludec (Tresiba)** is usually given at Dinner, though Bedtime is an option.

2.6 ► If Insulin Detemir (Levemir) dose at Diagnosis given within 6 hours of scheduled regular Breakfast Basal Dose **Omit Day 1 Breakfast dose** and commence regular twice daily Basal insulin dosing from Day 1 Dinner time.

2.7 ► **Regular Fixed Basal insulin doses** should continue to be prescribed on the "Parenteral Drugs: Regular Prescription" pages once **Regular Variable Insulin Doses** (calculated using Carbohydrate Ratios and Insulin Sensitivities) are prescribed on the "As Required Prescriptions" chart.

PRESCRIBER NOTES FOR REGULAR FIXED *BOLUS* INSULIN DOSES (INCLUDING FOR "WALKING WOUNDED" PATIENTS)

2.8 ► **Regular fixed Bolus insulin doses** should be prescribed here the "**Parenteral Drugs: Regular Prescription**" pages of the chart.

2.9 ► Prescribe **decimal doses of insulin** in both numbers and words to avoid error.

2.10 ► Bolus doses are better given ***immediately before*** **Main meals**, but may be given *after* meals (e.g. young child, not hungry or oral intake uncertain for any reason).

2.11 ► If a **hypoglycaemic event** is thought due to a particular mealtime Bolus consider reducing same mealtime's fixed Bolus dose 10-20% next day and from then on.

2.12 ► Unchanged mealtime regular **fixed Bolus doses** will need to be represcribed.

2.13 ► **Cancel fixed "Walking Wounded" Bolus insulin doses** once variable Bolus insulin doses are prescribed (using Carb: Insulin Ratios and Insulin Sensitivities).

VARIABLE INSULIN DOSES

All Routes: As Required Prescriptions

Patient's Own Medicine

BEFORE ADMISSION ☐ NEW DOSE ☐ NEW MEDICATION ☐

DRUG			STOPPED
FIASP CARBOHYDRATE DOSE			DATE:
DOSE: SEE BELOW	ROUTE: SC	INDICATION: B'FAST	INITIALS:
PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)		MAX. FREQ.: DAILY	DATE: 14.01.22

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: CARB:INSULIN RATIO = (6) GRAMS PER UNIT (SEE TABLE 1: INSULIN CARBOHYDRATE DOSE)

DATE	14.01.22	15.01.22	16.01.22									
TIME	08:20	08:30	08:30									
DOSE (UNITS)	6·5	8	6·5									
GIVEN BY	AB CD	AB CD	AB CD									

For Use Y/N | Qty: | Date: | Assessed by: | Further Supplies

BEFORE ADMISSION ☐ NEW DOSE ☐ NEW MEDICATION ☐

DRUG			STOPPED
FIASP CARBOHYDRATE DOSE			DATE:
DOSE: SEE BELOW	ROUTE: SC	INDICATION: LUNCH & DINNER	INITIALS:
PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)		MAX. FREQ.: DAILY	DATE: 14.01.22

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: CARB:INSULIN RATIO = (8) GRAMS PER UNIT (SEE TABLE 1: INSULIN CARBOHYDRATE DOSE)

DATE	14.01.22	14.01.22	15.01.22	15.01.22	16.01.22							
TIME	12:35	17:40	12:10	17:30	12:20							
DOSE (UNITS)	5	10	6·5	10	7·5							
GIVEN BY	AB CD	EF GH	AB CD	AB CD	AB CD							

For Use Y/N | Qty: | Date: | Assessed by: | Further Supplies

BEFORE ADMISSION NEW DOSE NEW MEDICATION

DRUG			STOPPED
FIASP CARBOHYDRATE DOSE			DATE:
DOSE: SEE BELOW	ROUTE: SC	INDICATION: BEDTIME SNACK	INITIALS:
PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)		MAX. FREQ.: IF EATEN	DATE: 14.01.22

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: CARB:INSULIN RATIO = (16) GRAMS PER UNIT (SEE TABLE 1: INSULIN CARBOHYDRATE DOSE)

DATE	15.01.22											
TIME	20:15											
DOSE (UNITS)	1											
GIVEN BY	EF GH											

For Use Y/N | Qty: | Date: | Assessed by: | Further Supplies

BEFORE ADMISSION NEW DOSE NEW MEDICATION

DRUG			STOPPED
			DATE:
DOSE:	ROUTE:	INDICATION:	INITIALS:
PRESCRIBER (PRINT & SIGN):		MAX. FREQ.:	DATE:

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY:

DATE												
TIME												
DOSE												
GIVEN BY												

For Use Y/N | Qty: | Date: | Assessed by: | Further Supplies

Note: To discontinue a prescription, initial and date appropriate boxes, draw a diagonal line through section & record reason

VARIABLE INSULIN DOSES 3·1

All Routes: As Required Prescriptions

BEFORE ADMISSION ☐ **NEW DOSE** ☐ **NEW MEDICATION** ☐

DRUG: FIASP CARBOHYDRATE DOSE (3·2)			STOPPED DATE:	
DOSE: SEE BELOW (3·3)	ROUTE: SC (3·4)	INDICATION: B'FAST (3·5)	INITIALS:	
PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)	MAX. FREQ.: DAILY	DATE: 14.01.22		

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY (3·6): CARB:INSULIN RATIO = (6) GRAMS PER UNIT

DATE	14.01.22		15.01.22		16.01.22	
TIME	08:20		08:30		08:30	
DOSE (UNITS)	6·5		8		6·5	
GIVEN BY	AB	CD	AB	CD	AB	CD

(SEE TABLE 1: INSULIN CARBOHYDRATE DOSE) 3·7

Further Supplies

BEFORE ADMISSION ☐ **NEW DOSE** ☐ **NEW MEDICATION** ☐

DRUG: FIASP CARBOHYDRATE DOSE			STOPPED DATE: (3·8)	
DOSE: SEE BELOW	ROUTE: SC	INDICATION: LUNCH & DINNER	INITIALS:	
PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST) (3·9)	MAX. FREQ.: DAILY	DATE: 14.01.22		

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: CARB:INSULIN RATIO = (8) GRAMS PER UNIT

DATE	14.01.22		14.01.22		15.01.22	
TIME	12:35		17:40		12:10	
DOSE (UNITS)	5		10		6·5	
GIVEN BY	AB	CD	EF	GH	AB	CD

(SEE TABLE 1: INSULIN CARBOHYDRA

BEFORE ADMISSION **NEW DOSE** **NEW MEDICATION** 3·11

DRUG: FIASP CARBOHYDRATE DOSE			STOPPED DATE:	
DOSE: SEE BELOW	ROUTE: SC	INDICATION: BEDTIME SNACK	INITIALS:	
PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)	MAX. FREQ.: IF EATEN (3·10)	DATE: 14 2		

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: CARB:INSULIN RATIO = (16) GRAMS PER UNIT

DATE	15.01.22					
TIME	20:15					
DOSE (UNITS)	1					
GIVEN BY	EF	GH				

(SEE TABLE 1: INSULIN CARBOHYDRA

BEFORE ADMISSION **NEW DOSE** **NEW MEDICATION**

DRUG			STOPPED DATE:	
DOSE	ROUTE	INDICATION	INITIALS:	
PRESCRIBER (PRINT & SIGN)	MAX. FREQ.	DATE:		

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY

DATE						
TIME						
DOSE						
GIVEN BY						

Note: To discontinue a prescription, initial and date appropriate boxes, draw a diagonal line through section & record reason

Supplies

3·12 3·13

* NB: To prescribe insulin for more than 100 grams of carbohydrate, using Table 1: Insulin Carbohydrate Dose, first calculate the dose for 100 grams, and then add this to the dose for any remaining grams of carbohydrate to give the total Carb Dose.

Patient's Own Medicine

PRESCRIBER NOTES FOR INSULIN CARBOHYDRATE DOSES USING CARBOHYDRATE: INSULIN RATIOS

3.1 ► **Prescribe variable Insulin Carbohydrate Doses** and Carb: Insulin Ratios on the "As Required Prescriptions" chart of the standard Prescription Chart (Kardex).

3.2 ► Record **Carbohydrate Bolus insulin type** (e.g. FiAsp, Novorapid, Humalog, Apidra, etc.)

3.3 ► Direct person administering insulin to use **Carbohydrate: Insulin Ratio** prescribed in "Additional Instructions/Comments" text box below.

3.4 ► Record **Subcutaneous (SC) route** for insulin delivery.

► Record **Carbohydrate: Insulin Ratio** (Grams of Carbohydrate eaten per Unit of insulin taken that maintains a steady Blood Glucose after eating) for use with each meal.

3.5 ► Record **meal or time** (use 24-hour clock) at which the particular Carb Ratio is to be used.

3.6 ► **Carbohydrate: Insulin Ratio** ("Carb Ratio" or "CR") is prescribed in "grams (of Carbohydrate)" per Unit (of insulin)" rather than as a specific insulin dose in "Units".

► Prescribe **decimal doses of insulin** in both **numbers and words** to avoid error.

3.7 ► Instruct person administering insulin dose to use **Table 1 - Carbohydrate Dose Prescription Table** (using Carbohydrate: Insulin Ratio) for dose calculation.

3.8 ► **Carb Ratio may differ** from one meal to the next, and so require individual prescriptions.

► **Carb Ratios usually increase** during the day, delivering less insulin for same Carbs eaten.

3.9 ► Prescriber should both **sign and print** their name on the prescription.

3.10 ► Bedtime (Supper) Carbohydrate Dose **may be optional**, using the indication, "If Eaten".

► No Bedtime Carb dose was administered on 14.01.22 as **no Bedtime Snack** was eaten.

3.11 ► Suggested **initial Bedtime CR** is twice the Evening Meal CR, giving half the insulin dose for the same amount of Carbohydrate eaten, to lessen risk of nocturnal hypoglycaemia.

► **Bedtime Snack Dose of insulin** may decrease Basal insulin dose required, reducing risk of overnight hypoglycaemia.

3.12 ► Both **Date and Time** of insulin administration should be recorded.

► Mealtime **insulin given *before* eating** is more effective at controlling Blood Glucose.

► Mealtime **insulin given *after* eating** may be useful if intake uncertain (e.g. young, unwell).

3.13 ► **Carb: Insulin Ratios** allow insulin doses to vary according to Carbohydrate amount eaten.

VARIABLE INSULIN DOSES

Patient's Own Medicine

BEFORE ADMISSION ☐ / NEW DOSE ☐ / NEW MEDICATION ☐	DRUG		STOPPED DATE: INITIALS:
	DOSE	ROUTE	INDICATION
	PRESCRIBER (PRINT & SIGN)	MAX. FREQ.	DATE:
	ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY		

DATE												
TIME												
DOSE												
GIVEN BY												

For Use Y/N · Qty: · Date: · Assessed by: · Further Supplies

BEFORE ADMISSION ☐ / NEW DOSE ☐ / NEW MEDICATION ☐	DRUG: FIASP CORRECTION DOSE		STOPPED DATE: INITIALS:
	DOSE: SEE BELOW	ROUTE: SC	INDICATION: B'FAST
	PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)	MAX. FREQ.: ONCE DAILY	DATE: 14.01.22

DATE	14.01.22	15.01.22	16.01.22									
TIME	08:35	08:10	07:55									
DOSE (UNITS)	4	2	3									
GIVEN BY	AB CD	AB CD	AB									

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: INSULIN SENSITIVITY = (2) MMOL/L FALL IN BLOOD GLUCOSE/UNIT INSULIN (SEE TABLE 2: INSULIN CORRECTION DOSE).

For Use Y/N · Qty: · Date: · Assessed by: · Further Supplies

BEFORE ADMISSION / NEW DOSE / NEW MEDICATION	DRUG: FIASP CORRECTION DOSE		STOPPED DATE: INITIALS:
	DOSE: SEE BELOW	ROUTE: SC	INDICATION: LUNCH & DINNER
	PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)	MAX. FREQ.: 3-4 HOURLY	DATE: 14.01.22

DATE	14.01.22	15.01.22										
TIME	12:40	17:30										
DOSE (UNITS)	5	7.5										
GIVEN BY	EF GH	EF GH										

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: INSULIN SENSITIVITY = (2.5) (TWO POINT FIVE) MMOL/L FALL IN BLOOD GLUCOSE/UNIT INSULIN (SEE TABLE 2: INSULIN CORRECTION DOSE).

For Use Y/N · Qty: · Date: · Assessed by: · Further Supplies

BEFORE ADMISSION / NEW DOSE / NEW MEDICATION	DRUG: FIASP CORRECTION DOSE		STOPPED DATE: INITIALS:
	DOSE: SEE BELOW	ROUTE: SC	INDICATION: 20:00 TO 0500
	PRESCRIBER (PRINT & SIGN): Charlie Best (CHARLES BEST)	MAX. FREQ.: 3-4 HOURLY	DATE: 14.01.22

DATE	14.01.22	15.01.22										
TIME	20:15	01:00										
DOSE (UNITS)	1	1										
GIVEN BY	EF GH	EF GH										

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: INSULIN SENSITIVITY = (5) MMOL/L FALL IN BLOOD GLUCOSE/UNIT INSULIN (SEE TABLE 2: INSULIN CORRECTION DOSE).

For Use Y/N · Qty: · Date: · Assessed by: · Further Supplies

The 'Regular' and 'as required' medicines sections should be checked at each administration round to ensure that inadvertent omission or double dosing is avoided.

VARIABLE INSULIN DOSES 4.1

Patient's Own Medicine

BEFORE ADMISSION ☐ NEW DOSE ☐ NEW MEDICATION ☐

DRUG | DOSE | ROUTE | INDICATION | STOPPED DATE: / INITIALS: | PRESCRIBER (PRINT & SIGN) | MAX. FREQ. | DATE: | ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY

DATE			
TIME			
DOSE			
GIVEN BY			

DRUG: FIASP CORRECTION DOSE (4.2)

DOSE: SEE BELOW (4.3) | ROUTE: SC (4.4) | INDICATION: B'FAST (4.5) | STOPPED DATE: / INITIALS:

PRESCRIBER (PRINT & SIGN): *Charlie Best* (CHARLES BEST) (4.6) | MAX. FREQ.: ONCE DAILY | DATE: 14.01.22

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: INSULIN SENSITIVITY = (2) MMOL/L FALL IN BLOOD GLUCOSE/UNIT INSULIN (SEE TABLE 2: INSULIN CORRECTION DOSE). (4.7, 4.8)

DATE	14.01.22		15.01.22		16.01.22
TIME	08:35		08:10		07:55
DOSE (UNITS)	4		2		3
GIVEN BY	AB	CD	AB	CD	AB

(4.15)

DRUG: FIASP CORRECTION DOSE (4.9, 4.10)

DOSE: SEE BELOW | ROUTE: (4.11) | INDICATION: LUNCH & DINNER | STOPPED DATE: / INITIALS:

PRESCRIBER (PRINT & SIGN): *Charlie Best* (CHARLES BEST) | MAX. FREQ.: 3-4 HOURLY | DATE: 14.01.22

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: INSULIN SENSITIVITY = (2.5) (TWO POINT FIVE) MMOL/L FALL IN BLOOD GLUCOSE/UNIT INSULIN (SEE TABLE 2: INSULIN CORRECTION DOSE).

DATE	14.01.22		15.01.22		
TIME	12:40		17:30		
DOSE (UNITS)	5		7.5		
GIVEN BY	EF	GH	EF	GH	

BEFORE ADMISSION ☐ NEW DOSE ☐ NEW MEDICATION ☐

DRUG: FIASP CORRECTION DOSE

DOSE: SEE BELOW | ROUTE: SC | INDICATION: 20:00 TO 0500 | STOPPED DATE: (4.12) / INITIALS:

PRESCRIBER (PRINT & SIGN): *Charlie Best* (CHARLES BEST) (4.13) | MAX. FREQ.: 3-4 HOURLY | DATE: 14.01.22

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY: INSULIN SENSITIVITY = (5) MMOL/L FALL IN BLOOD GLUCOSE/UNIT INSULIN (SEE TABLE 2: INSULIN CORRECTION DOSE). (4.14)

DATE	14.01.22		15.01.22		
TIME	20:15		01:00		
DOSE (UNITS)	1		1		
GIVEN BY	EF	GH	EF	GH	

Further Supplies

PRESCRIBER NOTES FOR INSULIN CORRECTION DOSES USING INSULIN SENSITIVITIES

- **4.1** ▶ Prescribe **Insulin Correction Doses** and **Insulin Sensitivities** on the "As Required Prescriptions" chart of the standard Prescription Chart (Kardex).
- **4.2** ▶ Record **Correction Bolus insulin type** (e.g. FiAsp, Novorapid, Humalog, etc.)
- **4.3** ▶ Direct person administering insulin to guidance in the **"Additional Instructions"** below.
- **4.4** ▶ Record the **Subcutaneous (SC) route** for insulin delivery.
- **4.5** ▶ Record **meal or time** (use 24-hour clock) at which the Insulin Sensitivity is to be used, including overnight **every 3-4 hours until 05:00**, according to the Correction Dose Table.
- **4.6** ▶ Prescribers should both **sign and print** their name.
- **4.7** ▶ Record **Insulin Sensitivity** (BG fall in mmol/l per Unit) for use with each meal, rather than a single insulin dose in "Units".
- **4.8** ▶ Direct person administering insulin to "Table 2" for calculation of **Insulin Correction Dose**.
- **4.9** ▶ **Carb Ratio may differ** from one meal to the next, and so require individual prescriptions.
- **4.10** ▶ The **same Insulin Sensitivity** may be prescribed for more than one meal or time of day.
- **4.11** ▶ When indicated, **Bolus doses** are given 3-4 hourly, fast-acting insulin's duration of action.
  ▶ Correction Dose may be given **with or without** a Carbohydrate Dose, depending on intake.
  ▶ Actual **timing of a Correction Bolus** depends on meal time or time of previous bolus dose.
- **4.12** ▶ **Insulin Sensitivities tend to increase** during the day, delivering less insulin for the same fall in Glucose, and **Bedtime and Overnight Insulin Sensitivity** is usually the highest of the day.
- **4.13** ▶ **Bedtime Correction Doses** may prevent higher overnight Blood Glucose while also reducing the amount of Basal insulin required, so reducing risk of early morning hypoglycaemia.
  ▶ **Overnight Correction Doses** should be given no more frequently than 3-4 hourly.
- **4.14** ▶ Suggested **initial Bedtime Insulin Sensitivity** (IS) is twice that of the Evening Meal IS, giving half the insulin for the same expected fall in BG, reducing risk of nocturnal hypoglycaemia.
- **4.15** ▶ **Insulin Sensitivities** allow Correction Doses to vary according to Blood Glucose result.

The 'Regular' and 'as required' medicines sections should be checked at each administration round to ensure that inadvertent omission or double dosing is avoided.

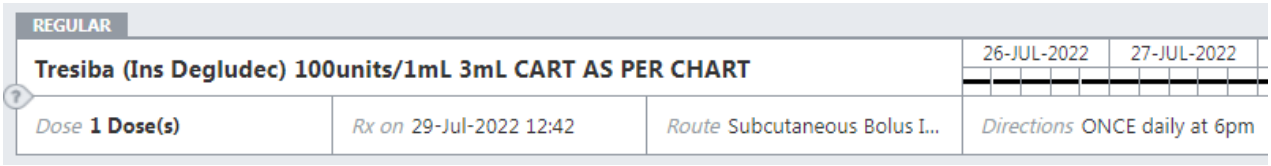
HOW TO PRESCRIBE INSULIN ON HEPMA

GENERAL PRINCIPLES

1. Insulin should be **prescribed** on HEPMA **and** the paper Kardex.
2. Insulin **administration** should be documented on the paper Kardex **only**

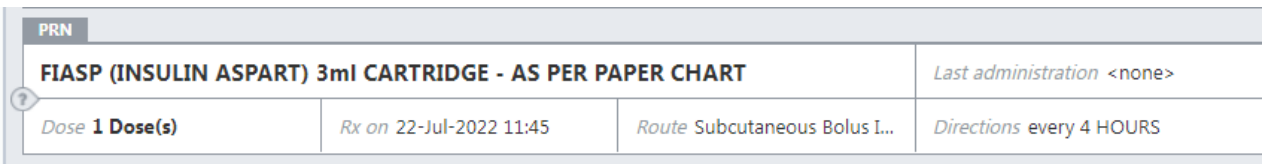
BASAL INSULIN

- Prescribe on the **regular** section on HEPMA with dose **AS PER CHART.**
- The time should be prescribed **as close to the time** on the **paper Kardex** as possible.
- Add a patient note to **"Appear when charting"**
  - Title the note with the name of the **basal** insulin
  - Type ***"Please ensure insulin administration is documented on the paper Kardex only."***



BOLUS INSULIN

- Prescribe on the **PRN** section on HEPMA with dose **AS PER CHART**
- Set the time to **"every 4 hours"**
- Add a patient note to **"Appear when charting"**
  - Title the note with the name of the **bolus** insulin
  - Type ***"Please ensure insulin administration is documented on the paper Kardex only."***



HOW TO CALCULATE INSULIN CARBOHYDRATE & CORRECTION DOSES

1 TABLE 1: INSULIN CARBOHYDRATE DOSE (USING *CARB: INSULIN RATIO*)

	CARBOHYDRATE: INSULIN RATIO (grams per Unit) to keep Blood Glucose steady after meals																		
CARBOHYDRATE TO BE EATEN (Grams)	CR=	2	2·5	3	3·5	4	4·5	5	6	7	8	9	10	12	14	16	18	20	22	24
	5-9	2.5	2	1·5	1	1	1	1	0·5	0·5	0·5	0·5	0·5	-	-	-	-	-	-	-
	10-14	5	4	3	2·5	2·5	2	2	1·5	1	1	1	1	0·5	0·5	0·5	0·5	0·5	-	-
	15-19	7.5	6	5	4	3·5	3	3	2·5	2	1·5	1·5	1·5	1	1	0·5	0·5	0·5	0·5	0·5
	20-24	10	8	6·5	5·5	5	4	4	3	2·5	2·5	2	2	1·5	1	1	1	1	0·5	0·5
	25-29	12	10	8	7	6	5·5	5	4	3·5	3	2·5	2·5	2	1·5	1·5	1	1	1	1
	30-34	15	12	10	8·5	7·5	6·5	6	5	4	3·5	3	3	2·5	2	1·5	1·5	1·5	1	1
	35-39	17	14	11	10	8.5	7·5	7	5·5	5	4	3·5	3·5	2·5	2·5	2	1·5	1·5	1·5	1
	40-44	20	16	13	11	10	8·5	8	6·5	5·5	5	4	4	3	2·5	2·5	2	2	1·5	1·5
	45-49	22	18	15	12	11	10	9	7·5	6	5·5	5	4·5	3·5	3	2·5	2·5	2	2	1·5
	50-54	25	20	16	14	12	11	10	8	7	6	5·5	5	4	3·5	3	2·5	2·5	2	2
	55-59	27	22	18	15	13	12	11	9	7·5	6·5	6	5·5	4·5	3·5	3	3	2·5	2·5	2
	60-69	30	24	20	17	15	13	12	10	8·5	7·5	6·5	6	5	4	3·5	3	3	2·5	2·5
	70-79	35	28	23	20	17	16	14	11	10	8·5	7·5	7	5·5	5	4	3·5	3·5	3	2·5
	80-89	40	32	26	22	20	18	16	13	11	10	8·5	8	6·5	5·5	5	4	4	3·5	3
	90-99	45	36	30	25	22	20	18	15	12	11	10	9	7·5	6	5·5	5	4·5	4	3·5
	100+	50	40	33	28	25	22	20	16	14	12	11	10	8	7	6	5·5	5	4·5	4

2 TABLE 2: INSULIN CORRECTION DOSE (USING *INSULIN SENSITIVITY*)

	INSULIN SENSITIVITY (mmol/l fall per Unit) with Target Blood Glucose 6 mmol/l																
CURRENT BLOOD GLUCOSE (mmol/l)	IS =	1	1·2	1·5	1·7	2	2·5	3	3·5	4	5	6	7	8	10	12	15	20
	7-7·9	1	0·5	0·5	0·5	0·5	-	-	-	-	-	-	-	-	-	-	-	-
	8-8·9	2	1·5	1	1	1	0·5	0·5	0.5	0·5	-	-	-	-	-	-	-	-
	9-9·9	3	2·5	2	1·5	1·5	1	1	0.5	0·5	0·5	0·5	-	-	-	-	-	-
	10-10·9	4	3	2·5	2	2	1·5	1	1	1	0·5	0·5	0·5	0·5	-	-	-	-
	11-11·9	5	4	3	2·5	2·5	2	1·5	1	1	1	0·5	0·5	0·5	0·5	-	-	-
	12-12·9	6	5	4	3·5	3	2	2	1.5	1·5	1	1	0·5	0·5	0·5	-	-	-
	13-13·9	7	5·5	4·5	4	3·5	2·5	2	2	1·5	1	1	1	0·5	0·5	0·5	-	-
	14-14·9	8	6·5	5	4·5	4	3	2·5	2	2	1·5	1	1	1	0·5	0·5	0·5	-
	15-15·9	9	7·5	6	5	4·5	3·5	3	2.5	2	1·5	1·5	1	1	0·5	0·5	0·5	-
	16-16·9	10	8	6·5	5·5	5	4	3	2.5	2·5	2	1·5	1	1	1	0·5	0·5	0·5
	17-17·9	11	9	7	6	5·5	4	3·5	3	2·5	2	1·5	1·5	1	1	0·5	0·5	0·5
	18-18·9	12	10	8	7	6	4·5	4	3	3	2	2	1·5	1·5	1	1	0·5	0·5
	19-19·9	13	11	8·5	7·5	6·5	5	4	3.5	3	2·5	2	1·5	1·5	1	1	0·5	0·5
	20+	14	11	9	8	7	5·5	4·5	4	3·5	2·5	2	2	1·5	1	1	0·5	0·5

3

ADD CARBOHYDRATE + CORRECTION DOSE & give as *Single Injection* of fast-acting analogue insulin (e.g., FiAsp, Novorapid or Humalog)

4

REMEMBER TO GIVE ANY **BASAL INSULIN** prescribed for this time using slow-acting analogue insulin (e.g., Tresiba or Levemir).

HOW TO CALCULATE INSULIN CARBOHYDRATE & CORRECTION DOSES

STEP 1: USE TABLE 1 TO CALCULATE INSULIN CARBOHYDRATE DOSES

- **Carbohydrate Dose** is the amount of fast-acting insulin that should keep a Blood Glucose (BG) taken 2 hours *after* a meal the same as it was immediately *before* eating.
- **Carbohydrate: Insulin Ratio** ("Carb Ratio") is the Carbohydrate amount (grams) eaten for every 1 Unit of insulin taken and, if appropriate, keeps after-meal BG the same as the before-meal BG.
- Carbohydrate Dose (Units) is calculated by dividing the:
  - Carbohydrate amount eaten (grams) by the
  - Carbohydrate: Insulin Ratio (grams/Unit) prescribed:

* NB: To calculate insulin for more than 100 grams of carbohydrate using Table 1, first calculate the dose for 100 grams, and then add this to the dose for any remaining carbohydrate to give the total Carb Dose.

CARBOHYDRATE: INSULIN RATIO (grams per Unit)											
CARBOHYDRATE TO	2	2·5	3	3·5	4	4·5	5	6	7	8	9
5-9	2.5	2	1·5	1	1	1	1	0·5	0·5	0·5	0·5
10-14	5	4	3	2·5	2·5	2	2	1·5	1	1	1
15-19	7.5	6	5	4	3·5	3	3	2·5	2	1·5	1·5
20-24	10	8	6·5	5·5	5	4	4	3	2·5	2·5	2
25-29	12	10	8	7	6	5·5	5	4	3·5	3	2·5
30-34	15	12	10	8·5	7·5	6·5	6	5	4	3·5	3
35-39	17	14	11	10	8.5	7·5	7	5·5	5	4	3·5
40-44	20	16	13	11	10	8·5	8	6·5	5·5	5	4

Carb: Insulin Ratio is expressed as "grams per Unit"

▲ *If eating 30 grams of Carbohydrate, and the prescribed Carb: Insulin Ratio is 5 grams/Unit, the Carbohydrate Dose (6 Units) is found where current Carbohydrate amount (30-34 grams) row meets the Carb: Insulin Ratio (5 grams per Unit) column.*

STEP 2: USE TABLE 2 TO CALCULATE INSULIN CORRECTION DOSES

- Correction Dose is the amount of fast-acting insulin that lowers a high Blood Glucose to the Target Blood Glucose (e.g. 6 mmol/l).
- Insulin Sensitivity gives how far Blood Glucose (BG) falls for every extra 1 Unit of insulin given.
- Correction Dose (Units) is calculated in 2 parts:
  1. Find BG Fall needed by subtracting Target BG (6 mmol/l) from current High BG &
  2. Divide BG Fall (mmol/l) needed by the prescribed Insulin Sensitivity (mmol/l per Unit).
- The Table below performs both of these calculations and displays the Correction Dose (Units).

INSULIN SENSITIVITY (mmol/l fall per Unit)								
CURRENT BLOOD GLU	IS =	1	1·2	1·5	1·7	2	2·5	3	4
	7-7·9	1	0·5	0·5	0·5	0·5	-	-	-
	8-8·9	2	1·5	1	1	1	0·5	0·5	0·5
	9-9·9	3	2·5	2	1·5	1·5	1	1	0·5
	10-10·9	4	3	2·5	2	2	1·5	1	1
	11-11·9	5	4	3	2·5	2·5	2	1·5	1
	12-12·9	6	5	4	3·5	3	2	2	1·5
	13-13·9	7	5·5	4·5	4	3·5	2·5	2	1·5
	14-14·9	8	6·5	5	4·5	4	3	2·5	2

Insulin Sensitivity is expressed as "mmol/l per Unit"

▲ *If Blood Glucose is 12.5 mmol/l and prescribed Insulin Sensitivity is 2 mmol/l/Unit, the Correction Dose (3 Units) is calculated to return the high BG to the Target BG and is found where current Blood Glucose (12-12.9 mmol/l) row meets the Insulin Sensitivity (2 mmol/l/Unit) column.*

STEP 3: CALCULATE TOTAL INJECTED DOSE OF FAST-ACTING INSULIN

- **Total Injected Dose** of fast-acting insulin = **Carbohydrate Dose** + **Correction Dose**
- Record each dose separately in the Prescription Chart but give only one, combined injection.

STEP 4: REMEMBER TO GIVE ANY BASAL INSULIN DOSE due at the same time.