HOW TO CALCULATE INSULIN CARBOHYDRATE & CORRECTION DOSES

1 CALCULATE 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 CALCULATE 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*

4 REMEMBER TO GIVE ANY **BASAL INSULIN** prescribed for this time

HOW TO CALCULATE INSULIN CARBOHYDRATE & CORRECTION DOSES

STEP 1: CALCULATING 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) that can be eaten for every 1 Unit of insulin taken. If appropriate before- and after-meal BG will be the same.
- Carbohydrate Dose (Units) is calculated by dividing the:
  - Carbohydrate amount eaten (grams) by the
  - Carbohydrate: Insulin Ratio (grams/Unit).

CARBOHYDRATE TO	CARBOHYDRATE: INSULIN RATIO (grams per Unit)										
	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

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

STEP 2: CALCULATING 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 needed by the prescribed Insulin Sensitivity (mmol/l per Unit).
- The Table below performs both of these calculations and displays the Correction Dose (Units).

CURRENT BLOOD GLU	INSULIN SENSITIVITY (mmol/l fall per Unit)							
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

▲ *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 the Blood Glucose row (12-12.9 mmol/l) meets the Insulin Sensitivity (2 mmol/l/Unit) column.*

STEP 3: CALCULATING 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