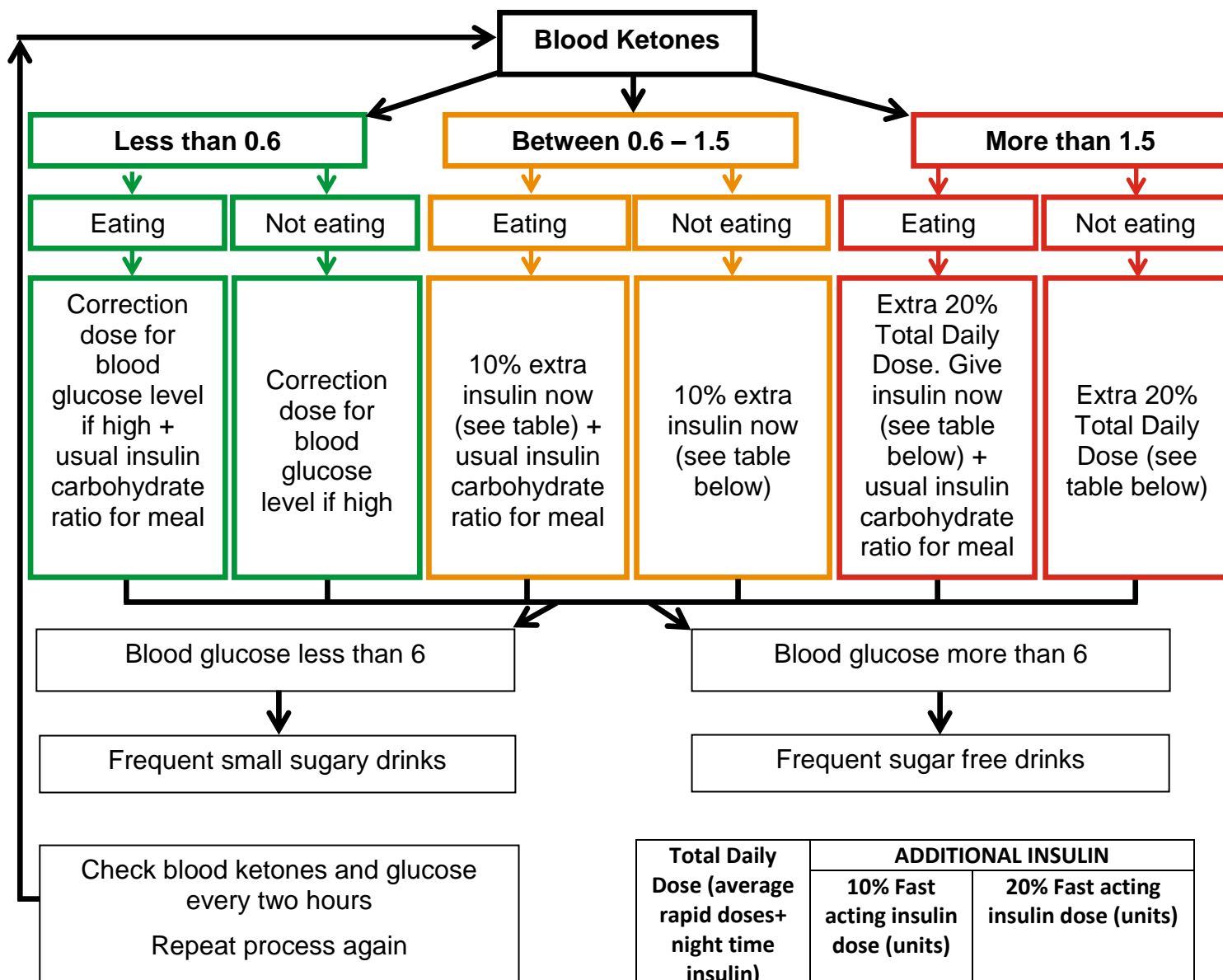


# Managing illness and/or ketones (sick day rules) for patients on basal bolus regime

Always give your slow releasing insulin, either lantus, levemir or degludec  
Always check for ketones if unwell irrespective of blood glucose level or if blood glucose level is 14 mmol/l or above.

**NB** – if blood glucose level is within a normal range but patient has high ketones, possibly starvation ketones need to eat/drink some carbs and follow plan below



Total Daily Dose (average rapid doses+ night time insulin)	ADDITIONAL INSULIN	
	10% Fast acting insulin dose (units)	20% Fast acting insulin dose (units)
10	1	2
20	2	4
30	3	6
40	4	8
50	5	10
60	6	10
70	7	10
80	8	10
90	9	10
100	10	10

Maximum ADDITIONAL rapid dose 10 units.  
Repeat after 2 hours if ketones still present.

### Contact team if:

- Increasingly unwell
- Rescue dose x3 has failed to correct
- Ketones more than 3 or vomiting persists
- Unable to maintain blood glucose above 4
- Worried for any reason or unsure as what to do

## **General advice for managing diabetes during illness**

When you are ill your body needs more energy to fight the infection. Glucose is released from your body stores to do this, so the blood glucose tends to go up even if you are not eating. This means that you need more insulin than usual when you are ill. If you do not give enough insulin then your body cannot use the extra glucose so it will start to break down fat for energy. When fat is broken down, this produces ketones.

### **Ketones are very dangerous!**

Ketones are acids which can make you feel very unwell and can make you vomit. They can also make you feel breathless. If you do not get rid of ketones, you can become extremely unwell and would need urgent hospital treatment (Diabetic Ketoacidosis – DKA)

Ketones can still be produced when you are ill even when your blood glucose is low.

Therefore:

Never stop your insulin even if you are not eating.

Always check for ketones & blood glucose if you are unwell regardless of your blood glucose level.

### **For patients on pump therapy**

The same principles of illness management apply to patients on insulin pumps. If blood glucose levels are high, standard checks of the pump should be made for occlusions, disconnection, battery failures etc.

Only give correction doses through the pump if blood ketone levels are less than 0.6mmol/l. If a correction dose via the pump has no effect in 1 hour, then repeat the correction dose with insulin pen.

If blood ketones are higher than 0.6mmol/l give additional fast acting insulin via an insulin pen using the table overleaf to calculate the amount of additional insulin that is needed depending on ketone level. Monitor blood glucose regularly as per table overleaf.

When blood glucose levels are rising in an unwell child/young person needing frequent additional insulin doses, think about using higher temporary basal rates. Up to 200% of normal basal rates may be needed in some patients. Please contact your diabetes team as needed for advice.

## Examples of calculating ADDITIONAL insulin doses

### Example 1

Child A is unwell and has a blood glucose of 18 and blood ketones 1.3  
She normally takes lantus 14 units and novorapid 1unit:10g carbs and 1unit:  
3mmol for correction (averages 19 units/day novorapid)

Total Daily Dose is her average of rapid insulin doses (mealtime and correction)  
plus background (long acting) insulin.

e.g. Total Daily Dose would be =  $19 + 14 = 33$  units

Child A's ketones are moderate- in amber range so she needs 10% of TDD

Using the table the ADDITIONAL insulin required is 3 units novorapid on top of the  
usual correction and insulin for carbs being consumed.

e.g. If she was taking 50g carbs at this time she would have:

Novorapid 3 units rescue + 5 units for carbs + 4 units correction = **12 units**

Recheck blood glucose and ketones over the next 1-2 hours and repeat this  
rescue treatment if ketones are still high.

### Example 2

Child B is unwell. His blood glucose is 22. His blood ketones are 1.8  
He normally takes Levemir 6 units and Novorapid 1unit:15g carbs and  
1unit:8mmol for correction (averages 7 units/day novorapid)

To work out his TDD we add his Levemir dose (6units) to his average doses of fast  
acting insulin =  $6 + 7 = 13$  units

Child B has high ketones and is in the red range.

He needs an ADDITIONAL 20% of TDD fast acting rescue insulin on top of his  
usual correction and any insulin for carbohydrates.

Using the table the ADDITIONAL insulin required is 2 units of novorapid on top of  
the usual correction and insulin for carbs being consumed.

If he was not eating or drinking any carbs at this time he would have

Novorapid 2units rescue + 2 units correction for high glucose = **4 units**

Recheck blood glucose and ketones over the next 1-2 hours and repeat this  
rescue treatment if still high ketones

## Tell us what you think of this leaflet

We hope that you found this leaflet helpful. If you would like to tell us what you think, please contact the children's diabetes nursing team, The York Hospital, Wigginton Road, York, YO31 8HE or telephone 01904 721317 .

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