

# Hyperglycemia Protocol for Insulin Pumps

## High Blood Glucose Level

### No Ketones

Take correction dose with pump.  
Check if site and pump OK.  
Recheck blood sugar in 1 hour.

Blood glucose is decreasing.

Recheck before the next meal.  
Take insulin as usual.

Contact doctor if blood glucose is still elevated. Take insulin as recommended.

## High Blood Glucose Level

### With Ketones

Take insulin by syringe using correction factor.

Change infusion set and set.  
Check pump.

Drink a glass of water every hour.

Recheck blood glucose and ketones every 2 hours.

Contact doctor if blood glucose is still elevated. Take insulin as recommended. Follow DKA protocol.

No change in blood glucose.

Take insulin by syringe.

Change infusion set and site.

Recheck blood glucose in 1 hour.

# Guidelines For Managing Hyperglycemia

(High Blood Sugar)

## High Blood Glucose (Hyperglycemia)

ONSET	- Gradual (hours to days)
USUAL CAUSES	- Illness, infection surgery, injury - Stress: emotional or physical - Too little insulin - Increased food - Exercise
SIGNS AND SYMPTOMS	- Thirst - Excessive urination - Fatigue - Abdominal pain, nausea, vomiting - Blurred vision - Change in appetite - Dry/itchy skin - Slow healing cuts - Hard to breathe, acetone breath
TREATMENT	- Drink 8 oz (or more) of sugar-free fluid/hour - Antibiotics for infection - Reduce stress - Reduce excess intake of foods - Increase diabetes medication
PREVENT BY	- Consistency in adhering to meal plan, insulin/oral agent use and exercise - Use stress reduction strategy - Check blood glucose more frequently - Report rising blood glucose to doctor

**REMEMBER**  
**Insulin should always be taken!**  
**Drink plenty of extra sugar-free fluids**  
**Check blood glucose and urine ketones before every meal and/or every 4 hours around the clock.**

# Guidelines for Managing Ketoacidosis DKA

If a moderate/large amount of ketones register on the test strip, ketoacidosis is present and treatment is required immediately.

Blood glucose levels (mmol/L)	Ketone bodies in urine*	Symptoms**	Suggested actions
13 -15	- or +	+	Check blood glucose every 6 hours. Drink 250ml of water every hour. Take 10% extra rapid insulin or use your sliding scale or correction factor.
15 - 20	++ or +++	++or +++	Check blood glucose every 4 hours. Drink 250 ml of water every hour. Take 10-20% extra rapid insulin every 4 hours. Go to the hospital if there is no improvement.
>20	-or+++ or++++	++++	Go to the hospital.

+ = traces: 0.5mmol/L  
++ = small: 1.5mmol/L  
+++ = moderate: 4.0mmol/L  
++++ = large: 8.0-16.0mmol/L

+ = excessive thirst & urination  
++ = diarrhea & nausea  
+++ = nausea, vomiting and diarrhea  
++++ = nausea, vomiting, diarrhea, with/without ketone bodies

## Hypoglycemia

**(low blood sugar < 4.0 mmol/L)**

### What are symptoms of hypoglycemia?

Shaky/trembling, sweating, dizziness, sudden hunger, confusion, irritability.

When you have any of these symptoms **always** test your blood sugar. If you cannot test, assume your blood sugar is low.

### What should I do if I have hypoglycemia?

1. Treat with one of these **quick sugars** (15 gm CHO):
  - 4 Dextrose tablets
  - 3/4 cup regular pop or fruit juice
  - 1 tablespoon of honey
  - 3 packets of sugar
  - 2 packages "Rockets<sup>TM</sup>"
2. Wait 15 minutes and check your blood sugar again. If it remains low then treat again with one of the quick sugars listed above.
3. If it is more than 1 hour before your next meal, have a small snack of 15 gm CHO and protein i.e. ½ sandwich or 6 crackers/ peanut butter.

**Remember! Always have quick sugar in your pocket, purse, vehicle, and at your bedside.**

## Severe Hypoglycemia

**(blood sugar < 2.8 mmol/L)**

### What is severe hypoglycemia?

Severe hypoglycemia is when somebody is unconscious or requires assistance to treat a low blood sugar (blood sugar < 2.8mmol/L)

### What are the symptoms of severe hypoglycemia?

Confusion, poor co-ordination, unusual behavior i.e. stubborn, angry, or unconscious.

### Treatment Requirement:

If the person is **conscious** treatment is :

1. 20 gm CHO of one of these quick sugars:
  - 5 Dextrose tablets
  - 1 cup fruit juice or regular pop
  - 3 packages "Rockets<sup>TM</sup>"
  - 4 teaspoons honey
2. Wait 15 minutes and check blood sugar again. If blood sugar remains low (<4 mmol/L) then treat again with 15 gm of quick sugar.
3. If it is more than 1 hour before your meal, have a snack of 15 gm CHO and protein i.e. ½ sandwich or cheese & 5 crackers.

If the person is **unconscious** call **911**. Be sure to ask the doctor about glucagon for dealing with this situation in the future.

## Carbohydrate and Insulin adjustments- A Guide for Exercise and Diabetes

Guidelines for CHO Intake Before and During Exercise		
Exercise	BG Level	+ CHO/Time
Low intensity/short duration (30 minutes)	<5.0 mmol >5.0 mmol	10-15g Not required
Moderate intensity/moderate duration (30-60 minutes)	<5.0 mmol 5.0-9.9 mmol 10-13.9 mmol	15g before + 15-30g during 10-15g Not required during, may need later
Moderate intensity/long duration (ie football, hockey, basketball, strenuous cycling) (1 hour+)	<5.0 mmol 5.0-10 mmol 10-13.9 mmol	30-45g (part as mixed low fat snack before) 30-45g/hour divided into 10-15g every 20-30min 15g/hour
High Intensity- short bursts of intense activity, usually can't be maintained more than 1 hour (ie competitive hockey, competitive rowing)	<5.0 mmol 5.0-10 mmol 10-13.9 mmol	50g (part as mixed low fat snack before) 45g/hour divided into 15g every 20-30min 15g/hour

**Do not exercise if blood sugar is >14 mmol with ketones or over 16.7 mmol**