University Hospitals Coventry and Warwickshire NHS Trust

Patient Information

Paediatric Diabetes

Paediatric Diabetes - Ketone testing

If you are ill

Always check your blood for ketones (they can make you sick)

Ketones are released when body fat is broken down to produce energy.

There may be a smell of ketones on the breath (similar to the smell of pear drops or nail varnish remover)

If ketones build up, your body will be unable work properly. This will lead to deep rapid breathing, and possibly unconsciousness. This is known as Diabetic Ketoacidosis or DKA (This is life threatening and requires **urgent** medical attention)

Frequently asked questions:

Why are my blood tests high?

Common reasons for blood tests to be high are

- Illness,
- stress,
- taking less insulin or
- missing insulin

What will happen if my tests remain high?

If left untreated, high blood glucose can make you feel unwell, dehydrated and may result in DKA (Diabetic Keto-acidosis), which is life threatening.

What can I do to bring down these high blood tests?

Use the table below to give extra doses of rapid acting insulin (Humalog or NovoRapid). You may be on a blood glucose meter which advises you on correction doses. Follow the guidelines on this meter if you have one, otherwise:

Suggested dose of extra NovoRapid in Units

Age	BG 12 - 15	BG 15 - 18	BG Over 18	BG Over 14mmol/L check ketones
Under 7	1	2	3	
7 - 12	2	3	4	
Over 12	3	4	5	

These suggestions are for guidance only. Record your results and experiences so that you can refer to them in the future. These guidelines may help avoid becoming very poorly and admission to hospital.

When should I check my blood ketones?

If your blood glucose is more than 14mmol/L, you will need to check for blood ketones. The only meter that can process this test is the Freestyle Neo meter. If you do not have this meter, please ask your Diabetes Specialist Nurse, who will provide you with the meter and information on testing strips, which can be obtained on prescription from your G.P.

What should I do next?

You should monitor your blood glucose hourly, and you can repeat the rapid insulin every 2 hours until your blood tests are below 14mmol/L.

Preventing DKA

What is DKA (Diabetic Keto-acidosis)?

DKA is a serious complication of diabetes and is life threatening. It results from either having less insulin than is required or from missing insulin.

What are the symptoms of DKA?

- Increased thirst
- Passing more urine
- Feeling sick or vomiting
- Feeling tired
- Dryness in mouth and lips
- Drowsiness
- Breathing fast
- Severe tummy pain

How do I know it is DKA and not a tummy bug?

With DKA both your blood glucose and ketones will be quite high. With a tummy bug your blood glucose will be normal or low, blood ketones will be negative or minimally raised. So, measuring blood ketones at home will help determine whether it is DKA or an infection.

What are ketones?

Ketones are produced in the liver when there is a lack of insulin, and your body cannot use glucose to make energy. Your body breaks down fat to ketones which are used as energy.

What does having raised ketones mean?

The presence of ketones is an early sign of DKA. Early detection of ketones is therefore important in the management of diabetes.

What are other causes of raised ketones?

Ketones are also produced during starvation (fasting) or strenuous exercise. In both these situations blood glucose is low and not raised.

At what level are ketones said to be raised?

Blood ketones more than 1mmol/l are considered raised. Below is a rough guide to ketone levels:

Blood ketone reading	Suggested action
Less than 0.6mmol/L	This is in the normal range. Seek advice before making changes to your regimen.
0.6 – 1.5mmol/L	When accompanied by blood glucose higher than 14mmol/L, medical assistance may be required. Contact your Diabetes Nurse Specialist for advice
Over 1.5mmol/L	When accompanied by blood glucose higher than 14mmol/L, there may be a risk of DKA. Contact your Diabetes Nurse Specialist immediately.

The Freestyle Neo meter measures blood ketones. It gives a quick and true picture of seriousness of DKA.

How are blood ketones different from checking urine ketones?

Urine ketones take 4 – 6 hours to be detected and do not reflect the true situation of what is happening in your blood. Now you can measure ketones in the blood instead of measuring ketones in your urine.

However, if you do not have a blood ketone testing kit, urine ketones should be measured to help management.

When should I think of contacting the hospital?

Contact the hospital if:

- Vomiting is persistent (over 4 hours) especially in children under 5 years old.
- Blood glucose continues to go up even after fast insulin has been taken twice over the last 4 hours.
- Blood or urine ketones are heavy or persistent or rising.
- Patient is becoming exhausted, confused, is breathing fast, has tummy pain or is dehydrated.
- You are concerned.

Please contact your diabetes nurse on 024 7696 7230 if you feel that you need help.

The Trust has access to interpreting and translation services. If you need this information in another language or format, we will do our best to meet your needs. Please contact the Department on 024 7696 7230.

The Trust operates a smoke free policy.

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