

# How to Measure Either Glucose or Ketones Using the Nova Max<sup>®</sup> Plus<sup>™</sup> Meter

Also  
Measures  
Ketones

*nova* Max<sup>®</sup> PLUS<sup>™</sup>  
Blood Glucose  
Monitoring System  
Advanced Technology



- Insert either a glucose or ketone strip and the meter automatically recognizes the strip being used.
- No coding is needed.



- Lance and measure.
- Thin, 33 gauge lancet makes testing virtually pain free for glucose or blood ketone testing.



- Glucose results in 5 seconds.
- Ketone results in 10 seconds.

*nova* Max<sup>®</sup>  
Test Strip requires

0.3  $\mu$ L

Other Test Strips require

10  $\mu$ L

4  $\mu$ L

2  $\mu$ L

1  $\mu$ L



No Coding Needed

Fast 5-Second Glucose Results

Glucose Testing on Finger or Arm

Glucose and Ketone Testing In One Meter

Tiny Blood Sample

Thin 33G Lancet



*nova*  
Diabetes Care

1-800-681-7390

www.novacares.com

No. 228 4/6/2011

## For Patients with Diabetes

Important information  
about  
Blood Ketones  
and  
DKA  
(Diabetic Ketoacidosis)

# What are Ketones and Diabetic Ketoacidosis (DKA)?

Ketones are an alternative fuel used by the body. They are produced when blood glucose levels are high.

Large accumulations of ketones in the blood can cause diabetic ketoacidosis (DKA), a dangerous condition that requires immediate medical attention.

DKA is the most common cause of death in children with diabetes.<sup>1</sup>

For a person with diabetes, ketones are often the result of low insulin conditions. Without adequate insulin, glucose cannot be used as a fuel by the body. To compensate for low glucose availability as a fuel, the body converts fat into ketones for use as an alternative fuel. During prolonged periods of low insulin conditions, large amounts of ketones can accumulate in the blood and spill into the urine.

## Why Measure Ketones?

- Elevated blood ketones are an early warning of the possible development of DKA. This warning allows time to solve the problem before it becomes serious.
- The annual incidence rate for DKA in the US is estimated at 4 to 8 episodes per 1000 patients hospitalized with diabetes <sup>2</sup> with a mortality rate of 2% to 10%.<sup>3</sup>
- It is estimated that 50% of the hospital admissions for DKA could be prevented with improved outpatient treatment and better adherence to self-care.<sup>4</sup>
- Complications of diabetes may be preventable with frequent monitoring of glycemia and ketosis along with timely supplemental insulin.<sup>4</sup>

# Signs of Diabetic Ketoacidosis (DKA)

- Increased thirst
- Increased urination
- Dry Mouth
- Labored breathing
- Fruity breath
- Nausea/vomiting
- Stomach pain
- Loss of appetite
- Fatigue
- Dry, flushed skin



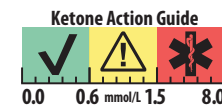
- Dehydration
- Confusion
- Coma
- Death

## Advantages of Testing for Blood Ketones not Urine Ketones

- Ketones can show up in the blood far earlier than in urine, so blood ketone testing can give an earlier warning of impending DKA.
- Urine may have been in the bladder for hours and not reflect current blood ketone levels.
- You may not be able to provide a urine sample due to dehydration.

# When to Test for Ketones?

- According to the American Diabetes Association, blood ketone testing should be performed on sick days and whenever glucose exceeds 250 mg/dL.<sup>5</sup>
- At the first sign of illness, such as onset of flu, a cold, a sore throat, vomiting, diarrhea, or general malaise<sup>6</sup>.
- During periods of stress<sup>6</sup>.
- When blood glucose is greater than 250 mg/dl and planning on exercising<sup>6</sup>.
- For insulin pump users, whenever blood glucose is elevated for more than a couple of hours, or the patient is ill or nauseous/vomiting<sup>6</sup>.
- For pregnant women, each morning before breakfast and whenever blood glucose is elevated<sup>7</sup>.



### ✓ Below 0.6 mmol/L

Readings below 0.6 mmol/L are in the normal range, and no action is needed.

### ⚠ 0.6 to 1.5 mmol/L

Readings between 0.6 and 1.5 mmol/L indicate the development of a problem that may require medical assistance. Call your healthcare team.

### \* Above 1.5 mmol/L

Readings above 1.5 mmol/L in the presence of hyperglycemia indicates high risk of DKA. Contact your healthcare team immediately for advice.

**Diabetic ketoacidosis can be life threatening and is the most common cause of death in children with type 1 diabetes.<sup>3</sup>**

**The ADA and many healthcare teams strongly recommend testing your blood for ketones if your glucose is persistently above 250 mg/dL<sup>5</sup> or if you have other symptoms of ketoacidosis.**

1. Casteels K et al. Rev Endocr Metab Disord 2003;4(2):159-166  
2. Wallace TM et al. Diabet Med 2005;23(3):278-284  
3. Yehia B et al. Hospital Physicians 2008;35:21-26  
4. Laffel LM et al. Diabet Med 2005;23(3):278-284  
5. America Diabetes Association, Tests of Glycemia in Diabetes, Diabetes Care, 27:S91-03, 2004  
6. Crane ML. Manag Care 2004; 13(54):11-14  
7. Guo Rx et al. J Obstet Gynecol Res 2008; 34(3): 324-330