

Diabetic Ketoacidosis (DKA) Prevention

DKA is a serious medical condition that can occur in anyone with type 1 diabetes and can lead to hospitalization, complications, disability, and death. Diabetic ketoacidosis (DKA) is more likely to occur during illness and times when blood sugars are running HIGH (over 300 mg/dl) or in patients with an elevated A1C over 9%. (1) Early detection can prevent hospitalization and save lives. A hospital stay for a patient with DKA is likely to result in a stay in the intensive care unit and the average cost of the stay is \$7142.

Signs and Symptoms of High Blood Sugars:

- Polydipsia (excessive thirst)
- Polyuria (frequent urination)
- Nocturnal enuresis (nighttime bed-wetting)
- Dehydration (sunken in eyes, dry skin, dry mucous membranes, dark urine)
- Weight loss
- Lethargy (abnormal lack of energy)
- Fatigue, poor concentration
- Blurred vision
- Candidiasis (yeast infections)



Symptoms of ketones or ketoacidosis

- Fruity breath (smells like acetone or alcohol)
- Vomiting, abdominal cramping or flu like symptoms
- Confusion
- Kussmaul breathing (rapid labored breathing or shortness of breath) – may feel hard to breath.

Children and teens may not recognize symptoms of DKA, particularly if their blood sugars usually run over 200 mg/dl. Patients with blood sugars frequently out of target will need supervision and assistance with their diabetes care to prevent DKA.

Always TEST KETONES anytime blood sugars are over 300 mg/dl or with symptoms of illness. Call the clinic (918) 619-4803 or medical (after hours if the clinic number is not answered) (918) 493-6000 if you have moderate to large ketones. Tell the person on the other line it is "URGENT". Do not leave a message!

Diabetic Ketoacidosis is caused by high blood ketones. Ketones usually accompany high blood sugars and result in thick, sticky, acidic blood. This needs to be treated with fluids to flush out excess blood sugar and ketones and frequent doses of insulin to lower blood sugars and turn off ketone production. CALL CLINIC (ALL HOURS including AFTER HOURS) WITH MODERATE TO LARGE KETONES. Vomiting, chest pain the trouble breathing are emergencies and need immediate medical attention.

Early Detection is Key to Treatment and Prevention of DKA

1. Eat regular meals (breakfast, lunch and dinner) and check blood sugars before meals.
2. Check ketones if blood sugars are over 300 mg/dl and on SICK days regardless of blood sugar.
3. If negative, trace, or small, check blood sugars and take an insulin correction every 3 hours.
4. If ketones are moderate or large, IMMEDIATELY call your diabetes center DAY or NIGHT.
5. DO NOT EXERCISE WITH MODERATE TO LARGE KETONES!

****If you have Moderate to Large Ketones**

- ✓ You will need to take a correction every 2 hours until ketones are trace or negative.
- ✓ Drink at least 8 ounces of fluid every hour while ketones and small - large.
- ✓ Nausea can accompany ketones, if unable to drink fluid adequately, take anti-nausea medication (Zofran/Ondasetron) then wait 45 minutes before you start to drink fluids.
- ✓ Stay on a regular meal pattern if possible, but moderate the amount of carbohydrate consumed (about 30-45 gms) of stomach friendly foods like yogurt, regular ginger ale or crackers every 3-4 hours; dose insulin for these carbohydrates!.
- ✓ If you are on a pump, corrections MUST be taken with a pen or syringe so long as ketones remain moderate to large. Call our office for a possible adjustment of the temporary basal rate and consider the possibility of a site change.
- ✓ Continue the above treatment until feeling well, blood sugars are in target range, AND ketones are trace or negative. Then return to your usual insulin dosing plan.
- ✓ Ketones are not an emergency but do need special attention. If otherwise feeling well, you may resume your normal activities including school or work so long as checks and corrections can be managed throughout the day every 2 hours.

It is parents and teachers who see children/teens daily that will be able to detect changes in behavioral patterns and symptoms of HIGH blood sugars and ketones.

Remember, call the diabetes center with the first signs of illness or with moderate to large ketones (918) 619-4803 or medical (after hours if the clinic number is not answered) (918) 493-6000. Tell the person on the other line it is URGENT. Do not leave a message.