Diabetes—Hypoglycemia/Hyperglycemia Reaction

Hypoglycemic Reaction (Insulin Shock)

A. Hypoglycemic reactions (insulin reactions) should be treated according to current nursing and medical recommendations.
B. Periodic communication should be maintained between the school nurse, the attending licensed healthcare provider, and the parent/guardian or relative caregiver of the students with diabetes to determine current condition and treatment regimen.
C. Students taking insulin may require care for hypoglycemic reactions resulting from:
    1. Not enough food or delayed meal
    2. Too much exercise
    3. Nervous tension
    4. Illness
    5. Too large a dose of insulin
D. Hypoglycemic reactions occur most frequently
    1. Just before meals
    2. After strenuous exercises
    3. During illness
E. Use of self-testing machine
    1. Student may use with permission from parent/guardian, relative caregiver, or licensed healthcare provider.
F. Procedures
    1. Give 15 grams of simple fast acting carbohydrates*:
        a. 4 ounces of fruit juice (not low-calorie or reduced sugar)
        b. 8 ounces of skim or low fat milk (I would remove this)
        c. 3-4 packets of table sugar
        d. 3- 4 glucose tablets
        e. 6 oz of regular soda (not low-calorie or reduced sugar)
        f. Raisins (small box or 2 tablespoons) (I would remove this)
        g. 1 tube of glucose gel (15 or 30 gm)
        h. Glucagon injection (if ordered by physician) (Can this be given with a physician order? What if the child is in a coma or going into one?)
    2. Observe student closely for improvement, check blood glucose in about 10-15 minutes.
    3. If student shows no improvement, repeat previous steps, or if becomes unconscious, immediately call 911 for transport to hospital. Follow procedure for shock:
        a. Keep warm
        b. Elevate feet
        c. Maintain patient airway
    4. Notify parent/guardian or relative caregiver, and physician and school administration.

    *If unsure of insulin shock or hyperglycemia, the carbohydrates *will not* worsen situation (condition); so if in doubt, give carbohydrate.

Hyperglycemic Reaction

A. Hyperglycemic reactions have a slow onset due to insufficient insulin, too little activity, or too much food. Emotional stress, illness, infection and injury can also be major factors. Sometimes a hyperglycemic reaction is due to aggressive treatment of a low blood sugar episode.
B. Procedures

1. Exercise is an excellent treatment. However, if the blood sugar is **greater than 300 mg/dl or ketones are present**, DO **NOT** RECOMMEND EXERCISE.
2. If insulin pump is in use, check for connectivity.
3. Check blood or urine for ketones.
4. Call parent/guardian, relative caregiver, or physician for treatment with insulin if no protocol has been established.
5. Give extra water and non-sugar-containing drinks (no fruit juices) if alert and oriented.
6. Allow unrestricted access liquids as described in #4 and restroom.
7. If insulin is administered, recheck blood sugar in 2 hours.
8. If incident occurs during exercise, modify physical activity plan.
9. Review daily routine, meal plan, exercise regime, insulin, history of recent trauma or illness.

C. Diabetic Ketoacidosis (DKA) is more common in newly diagnosed students, or in students wearing an insulin pump. It may be due to illness, poor control, lack of knowledge base, or mechanical problems with the pump.
   1. A student does not have to be in coma when DKA is present to be in trouble.
   2. Immediate medical treatment is necessary.
   3. Hospitalization is usually required for stabilization.

What to do in an Emergency

Hypoglycemia

Signs and symptoms

Mild to Moderate

- Excess sweating
- Faintness/weak
- Quickened heartbeat
- Clammy
- Trembling
- Sudden onset of headache
- Impaired vision
- Sudden onset of hunger
- Inability to concentrate
- Headache
- Pale
- Irritability
- Nervous
- Argumentative
- Confusion
- Sweaty
- Personality change
- Sleepy
- Behavior change
- Disoriented

Severe

- Convulsions
- Inability to eat or drink
- Unresponsive
- Coma
- Unconsciousness

Treatment for reactions

Mild to Moderate

- 4 oz. fruit juice
- 3-4 glucose tablets or table sugar packets
- 1 tube of glucose gel
- 6 oz. regular (sugared) soda

Severe

- Position student on side to prevent choking
- Don't attempt to give anything by mouth
- Follow physician's orders
- Activate EMS

Hyperglycemia

Signs and symptoms

- Blurry vision
- Increased thirst
- Increased urination
- Large amounts of glucose in blood or urine
- Headache
- Fatigue
- Dry Mouth

Treatment for reactions

- Check blood glucose level
- Provide extra water or non-sugar drink
- Modify physical activity
- If pump is worn, check for connectivity
- Check urine or blood for ketones
- Provide unrestricted bathroom access
- Administer supplemental insulin

Diabetic Ketoacidosis

Signs and symptoms

- Blood glucose >240 mg/dl and ketones in urine
- Fruity breath
- Generalized aches/weakness
- Nausea and vomiting
- Abdominal pains
- Heavy labored breathing
- Loss of appetite

Treatment to reactions

- Call licensed healthcare provider to determine need for more insulin, fluids, or hospitalization

	Hypoglycemia	Diabetic Acidosis
Cause:	Delay in eating or not eating enough food Excess insulin Nervous/emotional stress Excess exercise Being ill, particularly with gastrointestinal illness	Very little or no insulin Vomiting Febrile illness Mechanical insulin pump failure or delivery issue
Onset:	Rapid	Quickly if cause is due to interruption in insulin pump delivery
Symptoms:	Pallor-excessive perspiration, hunger, headache, blurry vision, irritability, inability to concentrate, inattentiveness, drowsiness, poor coordination, nausea, trembling, abdominal pain	Increased thirst and urination Loss of appetite Nausea, vomiting May have fruity breath
Observations:	Pale, moist skin, full rapid pulse, dilated pupils, rising blood pressure	Red, dry skin, soft eyeballs, Deep and rapid breathing, Falling blood pressure
Treatment:	Give 15 grams of carbohydrate for example: 4-6 ounces fruit juice 6 ounces regular soda 4 glucose tablets 1 tube glucose gel Glucagon (if ordered by physician)	Needs insulin and fluid. Should not be in school.

(If in doubt about reaction, it is safest to treat as a hypoglycemic episode.)

General Advice (Juvenile Diabetes Research Foundation)

1. Watch student's class performance before lunch.
2. Don't assign student to last lunch period.
3. Don't assign physical exercise just before lunch.
4. If the student needs a mid-morning snack, help him/her be as inconspicuous as possible.
5. Teachers and nurses should keep sugar readily available.
6. Many diabetic students take extra sugar or nourishment before planned strenuous exercise. Help them to avoid reactions.

Reviewed 2011 by Diabetes Prevention and Control Program, Delaware Division of Public Health.