



Diabetes Care Tasks at School: What Key Personnel Need to Know

DIABETES BASICS

PREVALENCE of DIABETES



- **Data from the 2011 National Diabetes Fact Sheet & CDC (released Jan. 26, 2011)**
- **Total prevalence of diabetes**
- **Total:** 25.8 million children and adults in the United States—8.3% of the population—have diabetes.
- **Undiagnosed:** 7 million
- **Pre-Diabetes:** 79 million
- Diabetes is a leading cause of kidney failure, new cases of adult blindness, heart disease, stroke, non-traumatic lower limb amputation, and death.
- At some point, you will most likely know someone who has diabetes and therefore, will find the following information helpful.

H.P.Becton Regional HS

1-800-DIABETES

www.diabetes.org



Care in the Schools: School Nurses and Others



A School nurse is most appropriate to:

- Coordinate diabetes care
- Supervise diabetes care
- Provide direct care (when available)
- Communicate about health concerns to parent/guardian and health care team

However, a school nurse is not always available.

Non-medical school staff can be trained to assist students:

- For both routine and emergency care
- Including glucagon administration

Goal: Optimal Student Health and Learning



All school staff members should have basic knowledge of diabetes and know who to contact for help.

Learning Objectives

Participants will be able to understand:

- *What is diabetes?*
- *Why care at school is required*
- *Basic components of diabetes care at school*
- *Short and long term consequences of diabetes*

Diabetes Basics

- **Diabetes is a disease where the body does not produce insulin or does not use insulin properly.**
- Insulin is a hormone normally made by the body. It helps glucose (sugar) enter cells where it can be used for energy.
- Without insulin, glucose remains in the blood stream and cannot be used for energy by cells.

Diabetes Management

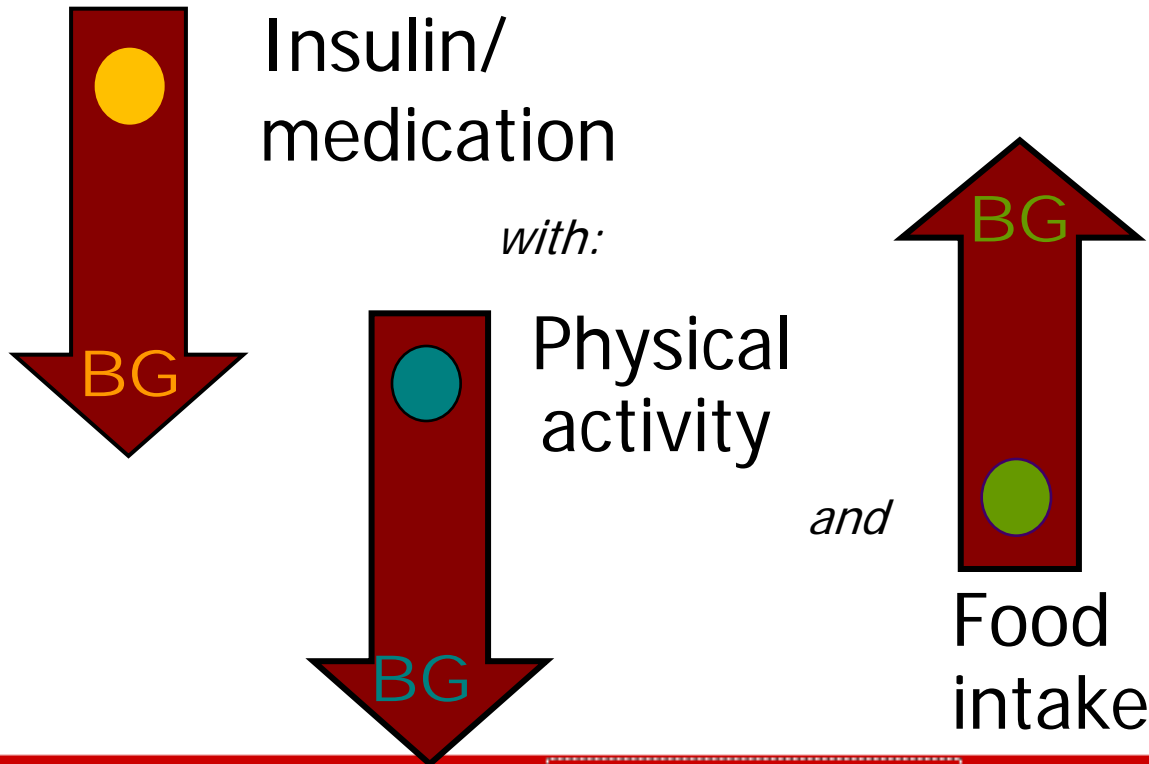
Routine Care:

- Many students will be able to handle all or almost all routine diabetes care by themselves
- Some students will need school staff to perform or assist with routine diabetes care

Emergency Care:

- ALL students with diabetes will need help in the event of an emergency situation

Diabetes Management Constant Juggling - 24/7



Federal Laws: Equal Access

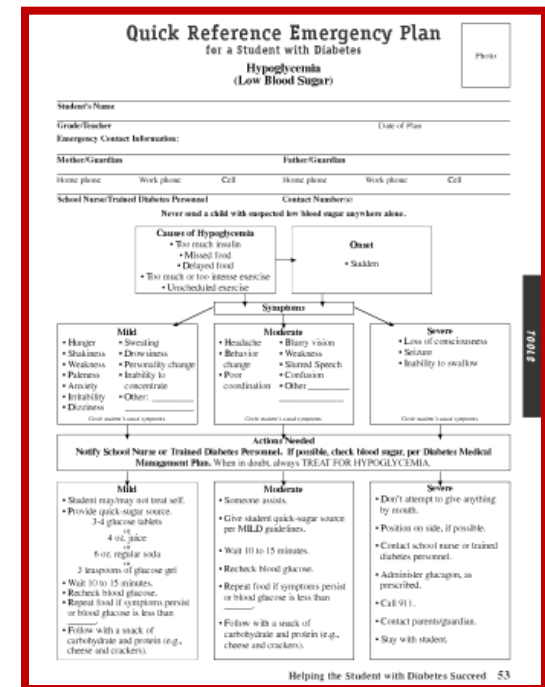
- **Section 504** - Section 504 of the Rehabilitation Act of 1973
- **ADA** - Americans with Disabilities Act
- **IDEA** - Individuals with Disabilities Education Act

Needs Addressed by 504 Plan/IEP

- Location and timing of blood glucose monitoring and insulin administration
- Identity of trained diabetes personnel
- Location of diabetes supplies
- Free access to water and restroom
- Nutritional needs, meals and snacks
- Full participation in all school-sponsored activities
- Access to blood glucose checks and treatment supplies during exams
- Alternative times for academic exams if student is experiencing hypoglycemia or hyperglycemia
- Absences without penalty for doctors' appointments and diabetes-related illness
- Maintenance of confidentiality and student's right to privacy

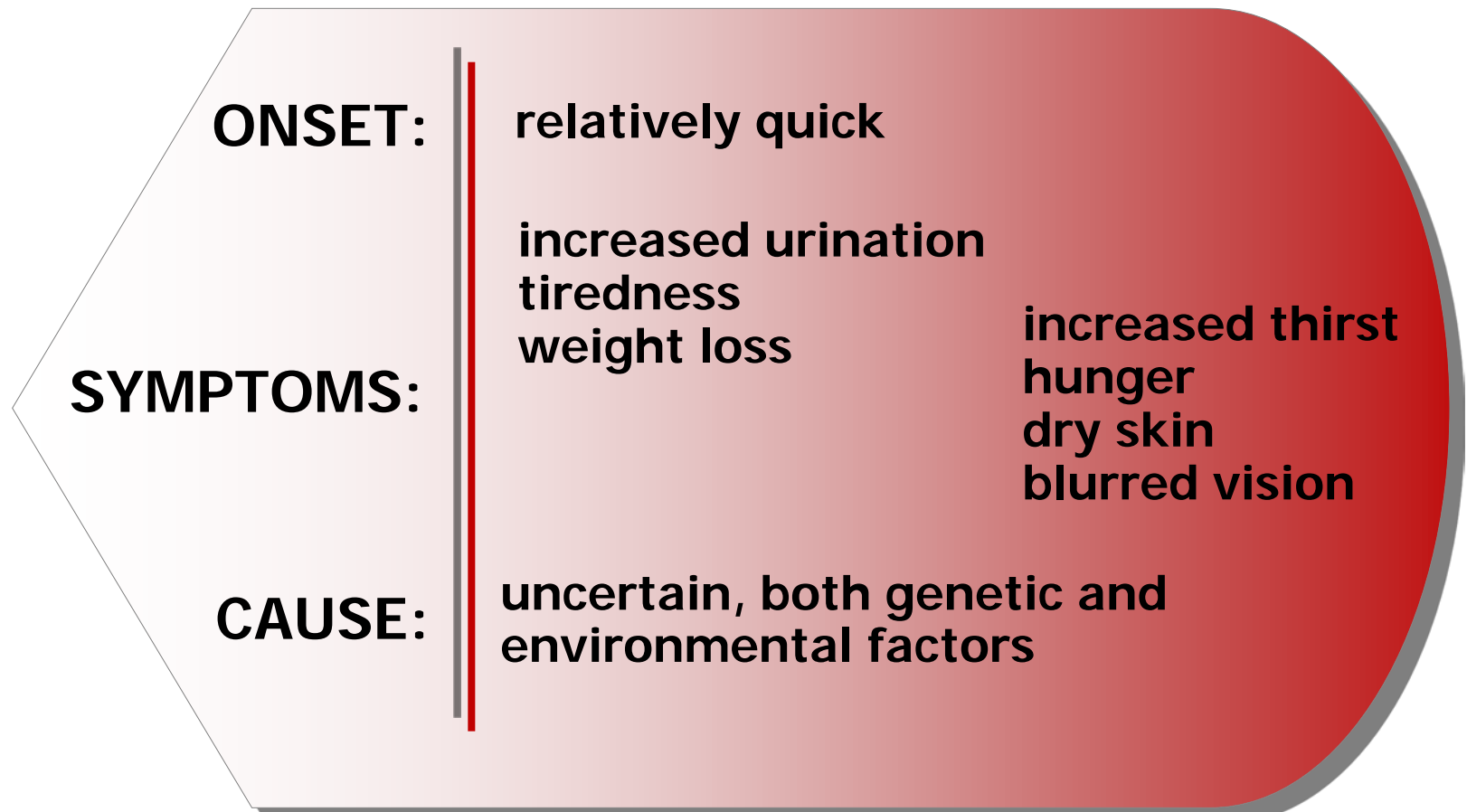
Quick Reference Emergency Plan

- Summarizes to how to recognize and treat hypoglycemia and hyperglycemia
- Based on information from DMMP (Diabetes Medical Management Plan)
- Distributed to all personnel who have responsibility for student with diabetes





Type 1 Diabetes



Type 1 Diabetes

- Autoimmune disorder
- Insulin-producing cells destroyed
- Daily insulin replacement necessary
- Age of onset: usually childhood, young adulthood
- Most common type of diabetes in children and adolescents



Type 2 Diabetes

ONSET:

variable timeframe for children

SYMPTOMS:

tired, thirsty, hunger, increased urination

- some children show no symptoms at diagnosis
- others are symptomatic with very high blood glucose levels

Type 2 Diabetes

Insulin resistance – first step

Age at onset:

- Most common in adults
- Increasingly common in youth
 - *overweight*
 - *inactivity*
 - *genes*
 - *ethnicity*

What is Insulin?

Insulin is a hormone that is necessary:

- *Moves glucose from blood into cells for energy*

Students with type 1 diabetes do not produce insulin

Without enough insulin, high blood glucose results:

- *Energy levels are low*
- *Dehydration*
- *Complications*

Insulin Delivery Methods

- Insulin Syringe
- Insulin Pen
- Insulin Pump or Pod
- Jet Injector

Any Time, Any Place Monitoring

For students who can self-check:

- Improved blood glucose control
- Safer for student
- Student gains independence
- Less stigma
- Less time out of class
- Assists decision making in response to result

When to Check?

DMMP specifies for an individual student

Regularly scheduled checks:

- Routine monitoring before meals and snacks
- Before, during and/or after physical activity

When to Check?

Per DMMP, extra checks may be necessary:

- Hypoglycemia or hyperglycemia symptoms
- Change in diabetes management
- Periods of stress or illness
- Prior to academic tests
- Early or delayed release from school
- CGM (continuous glucose monitoring) alarms

Activity & Diabetes



Everyone benefits from physical activity.

Students with diabetes should fully participate.

In general, activity lowers blood glucose levels.

If there is insufficient insulin, physical activity can raise blood glucose.

- Student may need to make adjustments to insulin/medications and food intake, per DMMP
- A quick-acting source of glucose, glucose meter, and water should always be available
- PE teachers and coaches must be familiar with symptoms of both high and low blood glucose

Activity & Blood Glucose Monitoring

Check before, during, and after physical activity per DMMP:

- Especially when trying a new activity or sport
- If blood glucose starts to fall, student should stop and have a snack or quick-acting source of sugar
- Students with pumps may disconnect or adjust the basal rate downward temporarily, prior to physical activity

Diabetes is Managed, But it Does Not Go Away.



GOAL:

Maintain target
blood glucose

HYPoglycemia = LOW Glucose (sugar)

Onset:

- *sudden, must be treated immediately*
- *may progress to unconsciousness if not treated*
- *can result in brain damage or death*

DMMP should specify signs and action steps at each level of severity:

- *mild*
- *moderate*
- *severe*

Hypoglycemia: Risks & Complications

- Early recognition and intervention can prevent an emergency
- Greatest immediate danger
- Not always preventable
- Impairs cognitive and motor functioning

Hypoglycemia: Possible Causes

- Too much insulin
- Too little food or delayed meal or snack
- Extra/unanticipated physical activity
- Illness
- Medications
- Stress



Hypoglycemia:

Possible Signs & Symptoms

Mild Symptoms

- | | |
|-------------------------------------|------------------|
| Hunger | Sleepiness |
| Shakiness | Changed behavior |
| Weakness | Sweating |
| Paleness | Anxiety |
| Blurry vision | Dilated pupils |
| Increase heart rate or palpitations | |

Moderate to Severe Symptoms

- | | |
|---------------------------|----------------------|
| Yawning | Confusion |
| Irritability/frustration | Restlessness |
| Extreme tiredness/fatigue | Dazed appearance |
| Inability to swallow | Unconsciousness/coma |
| Sudden crying | Seizures |

Mild/Moderate Hypoglycemia: Actions

Intervene promptly; follow DMMP:

- Student checks blood glucose if meter is available.
- If no meter is available, treat immediately, on the spot.
- **NEVER send a student with suspected low blood glucose anywhere alone**
- When in doubt, always treat. If untreated may progress to more serious events.
- Consider "Rule of 15"

“Rule of 15”

General guidelines, follow DMMP for each student:

- Have student eat or drink fast acting carbs (15g)
- Blood glucose check 10-15 minutes after treatment
- Repeat treatment if blood glucose level remains low or if symptoms persist
- If symptoms continue, call parent/guardian per DMMP

Quick Acting Glucose for Mild/Moderate Hypoglycemia

Treatment for Lows: 15 g Carbohydrate

- 4 oz. fruit juice
- 15 g. glucose tablets (3-4 tablets)
- 1 tube of glucose gel
- 4-6 small hard candies
- 1-2 tablespoons of honey
- 6 oz. regular (not diet) soda (about half a can)
- 3 tsp. table sugar
- One-half tube of cake mate

Severe Hypoglycemia Symptoms

- Convulsions (seizures)
- Loss of consciousness
- Inability to swallow

Severe Hypoglycemia: Action

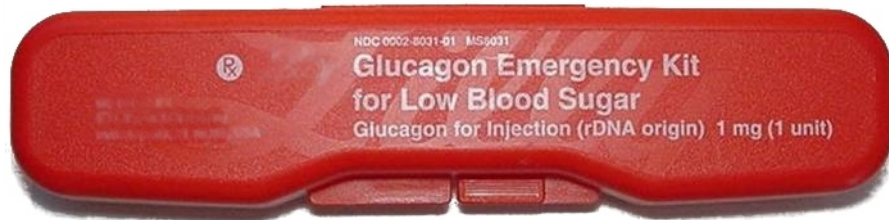
Rare, but life threatening, if not treated promptly:

- Place student on his or her side
- Lift chin to keep airway open
- If a delegate; inject glucagon, per student's DMMP
- Never give food or put anything in student's mouth
- Call 911, call nurse if available, then parent/guardian
- Student should respond in 10 to 20 minutes
- Remain with the student until help arrives

What Is Glucagon?

- Naturally occurring hormone made in the pancreas
- A life-saving, injectable hormone, Glucagon/GlucaGen that raises blood glucose level by stimulating the liver to release stored glucose
- Treatment for severe hypoglycemia
- Life-saving, cannot harm a student – cannot overdose

Glucagon or GlucaGen Kit Storage



- Place: As designated in Health Care Plan accessible to school personnel
- Store at room temperature
- Expiration date: Monitor
- After mixing, dispose of any unused portion within one hour

Hypoglycemia: Prevention

- Consult with parent/guardian or school nurse when snack, meal or physical activity times must be changed (as with school trips).
- Monitor blood glucose variations on gym days. An extra snack may be required ½ hour before gym or during prolonged vigorous physical activity per DMMP.
- A student should never be unattended when a low blood glucose is suspected. Maintain adult supervision.

Information for Teachers

- Students with hyperglycemia or hypoglycemia often do not concentrate well.
- Students should have adequate time for taking medication, checking blood glucose, and eating.
- During academic testing, provide accommodations as per 504 plan or IEP
 - ***Students may check blood glucose before/ during testing, per plan***
 - ***Access to food/drink and restroom***
 - ***If a serious high or low blood glucose episode occurs, students should be excused with an opportunity for retake***

HYPERGlycemia = HIGH Glucose (Sugar)

Onset:

- Usually slow to develop to severe levels
- More rapid with pump failure/malfunction, illness, infection
- Can mimic flu-like symptoms
- Greatest danger: may lead to diabetic ketoacidosis (DKA) if not treated

DMMP will specify signs and action steps at each level of severity:

- Mild
- Moderate
- Severe



Hyperglycemia: Possible Signs & Symptoms

Severe Symptoms

- | | |
|-------------------|-------------|
| Labored breathing | Confusion |
| Profound weakness | Unconscious |

Moderate Symptoms

- | | |
|----------------|----------|
| Dry mouth | Vomiting |
| Stomach cramps | Nausea |

Mild Symptoms

- | | |
|-----------------------|--------------------|
| Lack of concentration | Thirst |
| Frequent urination | Flushing of skin |
| Sweet, fruity breath | Blurred vision |
| Weight loss | Increased hunger |
| Stomach pains | Fatigue/sleepiness |

Hyperglycemia: Risks & Complications

- Hyperglycemia, which if untreated can lead to DKA and potentially to coma and/or death (mainly in type 1)
- Interferes with a student's ability to learn and participate
- Serious long-term complications develop when glucose levels remain above target range over time or are recurring

Hyperglycemia: What to do

Goal: *lower the blood glucose to target range.*

Action steps: following DMMP if nurse unavailable

- Student verifies with blood glucose check
- Student checks ketones
- Allow free use of bathroom and access to water
- Student administers insulin
- Recheck blood glucose
- Call parent/guardian
- Note any patterns, communicate with school nurse and/or parent/guardian

Hyperglycemia: Possible Causes

- Late, missed or too little insulin
- Food intake exceeds insulin coverage
- Decreased physical activity
- Expired or improperly stored insulin
- Illness, injury
- Stress
- Other hormones or medications
- Hormone fluctuations, including menstrual periods
- Any combination of the above

Make the Right Choice an Easy Choice

Eliminate barriers to diabetes management:

- Become familiar with and following students' written plans
- Eliminate barriers to:
 - snacking
 - blood glucose checks
 - access to water and bathrooms
 - insulin administration
- Avoid “good or bad” judgments based on individual blood glucose readings
- Communicate with parent/guardian and school nurse



Beyond the Routine: Field Trips

- Notify school nurse as soon as trip is scheduled to allow for consultation with parent/guardian about food and/or insulin adjustments. Have student:
- Bring plenty of quick-acting sugar sources to treat hypoglycemia
- Bring lunch as appropriate
- Bring diabetes equipment and supplies, including glucagon, if specified in DMMP
- Bring list of emergency contacts, copy of emergency care plan

Where to Get More Information

American Diabetes Association

1-800- DIABETES

www.diabetes.org

National Diabetes Education Program/NIH

www.ndep.nih.gov

Please [click here](#) for a brief quiz if you have a student with diabetes