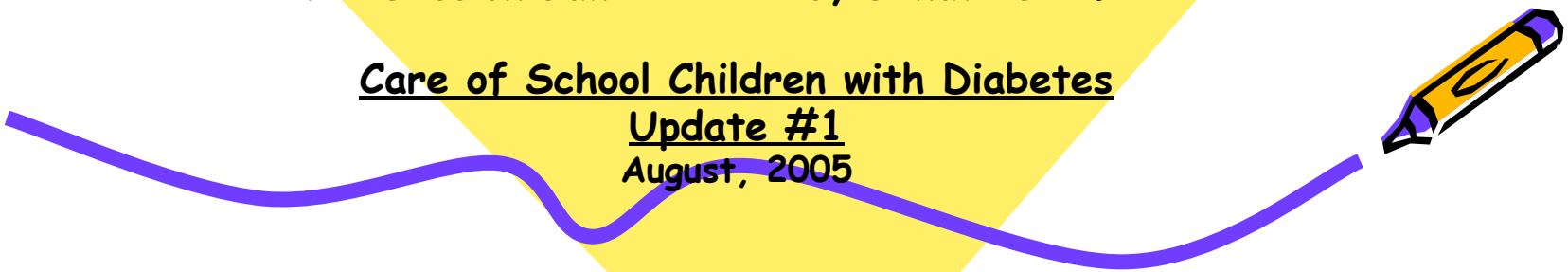
DATA Program

Diabetes Awareness, Training, and Action

Training Curriculum
North Carolina Public School System
NC Session Law 2002-103, Senate Bill 911

Care of School Children with Diabetes
Update #1
August, 2005



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Collaborating Organizations:

NC Department of Health and Human Services

NC Department of Public Instruction

Special Thanks to the School Nurse Consultants

NC Diabetes Advisory Council

American Diabetes Association

The Diabetes Care Center of Wake Forest University Baptist Medical Center

Wake Area Health Education Center

Introduction

Thank you for being a participant in the DATA Program!! Your participation demonstrates your interest in <u>all</u> students being successful in school.

You may already have an interest in diabetes and this program will help you learn more.

Not only are we seeing an increase in Type 1 diabetes but there is an alarming increase of Type 2 diabetes in our young population. We are very proud that the state of North Carolina is among the eleven states who have legislation to assure these young people a positive and supportive school experience.

Introduction continued…

When a student with diabetes is part of the school system, the school staff automatically becomes a part of the student's health care team.

A student with diabetes can have special challenges for which teachers and staff must be prepared.

This program is designed to train school personnel who are available every day at school in basic and emergency diabetes care. Other personnel need to know some basic diabetes care to allow the student to have a successful day at school.

DATA (Diabetes Awareness, Training and Action) Program

Master Training

By: State partners and Certified Diabetes Educators
Target of Training: Two from Each LEA; One from each Charter School
From LEA: 504 Coordinator responsible for assuring implementation of general training plan
And One RN or other Health Professional responsible for intensive training

General Training for 504 Contacts

By: 504 Coordinator Master Trainer
Target: 504 Contact Person or Other Person from each school in the LEA
who becomes the trainer responsible for providing general training to all staff in his/her school

Intensive Training

By: RN Master Trainer or Certified Diabetes Educator
Target: Diabetes Care Manager (DCM) providing care management in each school in the LEA
Two per school

General Training of All School Staff

By: 504 Contact or Other Person
Target: All school personnel within the specific school

Part 1

Overview of SB 911

Care of School Children With Diabetes

Part 1: Overview of SB 911: Care of School Children with Diabetes

- Federal & State Support and History of the Law:

  Diabetes is considered a disability and is covered under the following Federal Acts:

  - Section 504 of the Rehabilitation Act of 1973
  - Individuals with Disabilities Education Act of 1991
  - Americans with Disabilities Act

Overview of SB 911 continued…

- State Board of Education Policy # 04A107 Special Health Care Services (1995)
  - Shall make available a registered nurse for assessment, care planning, and on-going evaluation of students with special health care service needs in the school setting…

Overview of SB 911 continued…

- The bill passed unanimously in the House and Senate in August, 2002 and on September 5, 2002, the bill was signed into law by Governor Easley.

Overview of SB 911 continued…

- Implications for NC Schools
  - Guidelines adopted in every school in the state must meet or exceed American Diabetes Association recommendations.

Overview of SB 911 continued…

- Section 1 of SB 911
  - Procedures for the development of a diabetes care plan if requested by parent
  - Procedures for the regular review
  - Included should be:
    - **Responsibilities and staff development for teachers and other school personnel**
    - **Development of an emergency care plan**
    - **Identification of allowable actions to be taken**
    - **Extent of student's participation in diabetes care**

Overview of SB 911 continued…

- Section 2 of SB 911
  - Local Boards of Education must ensure that guidelines are implemented in schools in which students are enrolled.
  - Local Boards of Education will make available necessary information and staff development in order to support care plan requirements for students with diabetes.

Overview of SB 911 continued…

- Section 3 of SB 911
  - The NC State Board of Education delivered a progress report in September, 2003.
- Section 4 of SB 911
  - The guidelines were implemented by the beginning of the 2003-2004 school year.
  - Guidelines were updated August, 2005.

Overview of SB 911 continued…

- Please refer to your copy of the ADA Standards.
  - An Individual Health Plan (IHP) should be developed by the parent/guardian, the student's diabetes care team, and the school nurse.
  - At least 2 school personnel in each school should be trained in diabetes care and emergencies. (Diabetes Care Managers/DCM)

Overview of SB 911 continued…

- Children should have immediate access to diabetes supplies and diabetes treatments as defined in the IHP.
- Roles and responsibilities of the parents/guardians and the schools are defined.
- DCM roles are also defined.

G.S. 115C-375.3
April 28, 2005

- House Bill 496 states that local boards of education shall ensure that guidelines for the development and implementation of individual diabetes care plans are followed. Local boards are to make available necessary information and staff development in order to support and assist students with diabetes in accordance with their individual diabetes care plans.

Forms to Facilitate Implementation of the Law

- Diabetes Care Plan Request
- Diabetes Care Plan
- Responsibilities of Parent & School
- Quick Reference Plan

Role of the Master Trainer

(One RN and One 504 Coordinator from each LEA)

- Participate in regional intensive training sessions.
- Set up general information sessions for 504 Contact Person or other person from each LEA.
- Set up the intensive training session for the DCMs from each school in the LEA.
- Coordinate continuing education for the DCMs.

Communication- Role of Nurse

- With student, parent & school staff
- SB-911 Diabetes School Act
- Provide forms
- Provide training
- Act as a resource
- Continuing Education for diabetes management

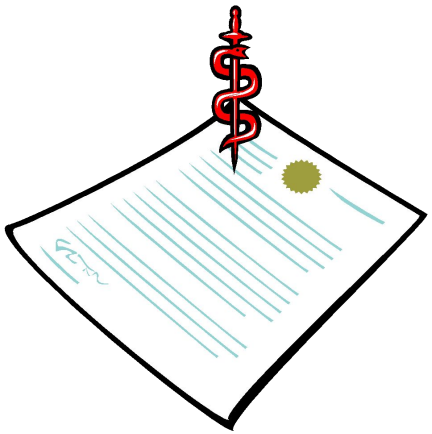
Communication

- With student and parent before school year begins
- By phone, meeting at the library, by mail
- Ask questions about self care
- Get to know the student

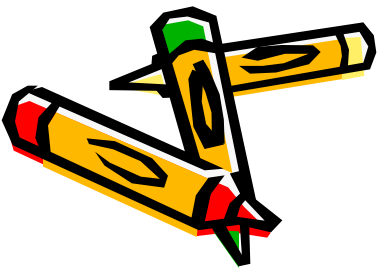
Communicate: Self Care

- Procedures done at school
- Equipment kept at school
- Diabetes care recommendations may change during the school year
- Whom to tell about having diabetes
- Determine student's level of maturity
- Diet issues:
  - Meals
  - Snacks
  - Emergency snacks

Communicate: Parent Responsibilities



- Phone numbers
  - Home, work, cell, pager
- Supplies
- Snacks
- School absences
- Care Plan request
- Care Plan
- Student's self-care capabilities
- Medication forms
- Diet form
- Student photo
- Medic alert ID



Customize: Parent Request Form

- No MD signature required
- Request for Care Plan to be implemented
- Consent for release of information
- Trained staff in place
- Require annual review

Communicate: Parent Responsibilities

- Student, parent or 9-1-1 may have to assume responsibility for diabetes care until the Care Plan is signed and returned.
- A new Care Plan is needed annually.
- Communicate on regular basis with school staff and bus driver either verbally or written.

Role of the DCM
Diabetes Care Managers in Each School

- Participate in the Intensive training session.
- Obtain certificates of course completion and maintain documentation as proof of completion.
- Participate in IHP conferences.
- Have ready access to the student's IHP.
- Be readily reached in case of a diabetes emergency.

DCM Roles continued…

- Communicate with teachers/substitute teachers/student/parents/health care team as indicated or as necessary.
- Assist the student with diabetes care as indicated in the IHP.
- Be available to go with the student on field trips or to school-sponsored extracurricular activities as indicated.
- Attend continuing education sessions as needed.

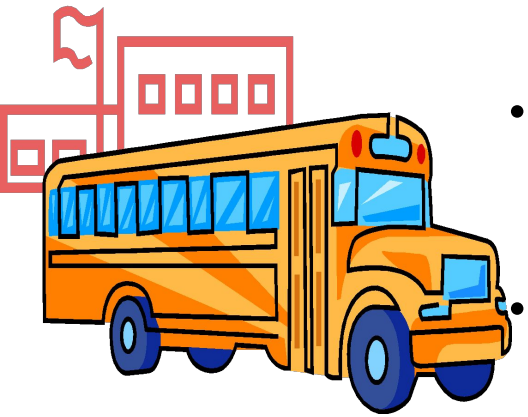
Role of the 504 Contact in Each School

- Attend general information session instructed by the 504 Coordinator Master Trainer for the LEA.
- Provide a general information session for all personnel within his/her school.
- Develop communication and emergency protocol with the school administration and the DCMs.
- Attend review sessions when organized by the 504 Coordinator for their LEA.

Guidelines for PE Teacher and Coach

- Encourage exercise and participation in sports and physical activities for students with diabetes.
- Treat the student with diabetes the same as other students except to meet medical needs.
- Encourage the student to have blood glucose equipment and treatment for low blood sugar available.
- Understand and be aware that hypoglycemia can occur during and after physical activity.
- Recognize any changes in student's behaviors which could be a symptom of a low blood sugar.

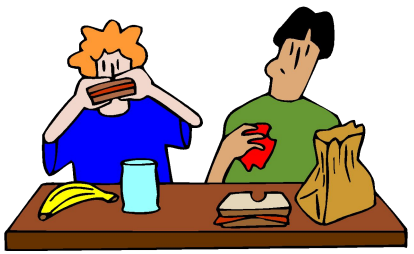
Guidelines for Bus Drivers



- At the beginning of the school year, identify any students on the bus who have diabetes. Be familiar with their DCP.
- Be prepared to recognize and respond to the signs and symptoms of a low blood sugar.
- Parents should consider giving bus driver their daytime contact numbers.
- Student may carry monitor, insulin, glucagon and snacks on bus.
- The student, teacher & parent should communicate with bus driver.
- Bus driver may consider carrying extra snacks in case of bus breakdown, traffic jam, etc.

Actions for Food Service Staff or Lunchroom Monitor

- Provide a lunch menu and lunch schedule in advance to parents along with nutrition information including grams of carbohydrate and fat.
- Be aware of your students diabetes meal plans and snack plans.
- Treat the student with diabetes the same as other students except to respond to medical needs.



Understand that hypoglycemia can occur before lunch.

Role of School Administration

- Work with the LEA Master Trainers to identify at least 2 school personnel to serve as the school's DCMs.
- Provide support for DCMs to attend the intensive training session.
- Identify new DCMs as turnover occurs.

Role of School Administration continued…

- Notify the Master Trainers for the school when such turnovers occur during the school year so individual training can be planned.
- Set up communication and emergency protocols for access to DCMs.
- Support the general information sessions for staff and all school support personnel.

Liability Concerns and Issues for DCMs

- How do I prevent liability situations from occurring?
  - Be very familiar with the student's IHP and refer to it often.
  - If the student needs assistance with administering insulin, make sure the most recent dosage schedule is available for your use.

Liability Concerns and Issues

- Remember, a vial of insulin kept at room temperature is discarded 30 days after opening. An insulin pen is discarded 15 days after it is first opened even if insulin remains.
- Check expirations dates on insulin and glucagon to make sure they are in date.
- Triple check yourself when drawing up a dose of insulin. Double check the student's dose if he/she is drawing up the insulin.

Liability Concerns and Issues continued…

- What happens if there is an occurrence?
  - Most incidents occur when we are in a rush. Think carefully about what you are doing and if the situation doesn't make sense, question it!
  - If an incorrect dosage is given, document the procedure you take to keep the child safe.

Liability Concerns and Issues continued…

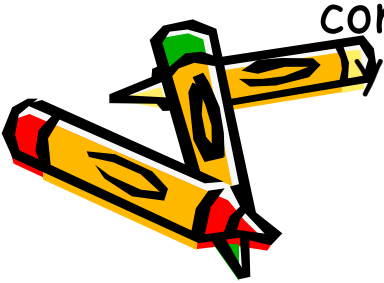
- If you give <u>too much</u> insulin
  - Notify the student's health care team to let them know. They may have special instructions for this situation.
  - Test blood sugar more frequently or according to the Individual Diabetes Care Plan for the rest of the school day.
  - Notify the parent/guardian of the procedure you have taken.
  - Make sure the child has extra food/juice to consume.
  - Alert the teacher.

Liability Concerns and Issues continued…

- If you give <u>too little</u> insulin, an additional shot can be given to make up the missed amount if you discover the mistake quickly. Document your actions.
- If the child refuses the extra shot, document the occurrence and notify the parent .
- Generally there is not much you can do if insulin leaks at the site. Blood sugars may run a little higher that day.
- If insulin leaks are a common problem, take a little more time with the injection and count 10 seconds before withdrawing the needle.

Liability Concerns and Issues continued…

- But how am I protected from litigation?
  - The State of NC now has SB911 in place with directives for adoption by all public schools in the state.
  - Many State Agencies have organized this training program.
  - You are now going through the training and will receive a certificate of completion once the training has satisfactorily been completed.
  - You will maintain up to date knowledge through continuing education.
  - You will have resources to call upon if questions or problems arise.



Liability Concerns and Issues continued…

- Do I have any other protections?
  - NC General Statute 90-21.14 adopted in 1975:
    - Provides immunity for rescuers.
    - Provides immunity for acquirers and enablers.
    - Encourages/requires CPR & AED training.

  This is the "Good Samaritan Law"

Liability Concerns and Issues continued…

- So what needs to happen in my school?
  - You as DCM, should be known by administration and staff throughout the school. Communication is essential.
  - You should make sure an emergency communication protocol is set up and is followed.
  - You should have easy access to the child's IHP and be included in any IHP conferences or revisions.
    - You should be notified when special events or conferences occur for the child in order to include this in your schedule.

Liability Concerns and Issues continued…

- So what about sharps, blood, carrying medication around the school?
  - Self-monitoring of blood sugar should be supported.
  - The lancet should not be removed from the lancing device.
  - Insulin pumps cannot be removed except to quick release in certain instances.
  - Students injecting insulin with pens or syringes should be provided a safe place for injecting.

Continued

- Glucose Tabs are not medication.
- Some students with diabetes should be monitored at all times for safety of all involved.
- Other discipline problems should not interfere with the self-management rights of the student with diabetes.

- Questions ??

Part 2: Diabetes Overview

Diabetes Defined:

"Diabetes Mellitus is a group of metabolic diseases characterized by hyperglycemia (high blood sugar) resulting from defects in insulin secretion, insulin action, or both." (Diabetes Care, Supplement 1, 26:1, January, 2003, p. S5)

Diabetes Overview continued…

- Insulin is a hormone produced in the beta or islet cells of the pancreas.
- In order for glucose or sugar to be used as energy, it must be transported by insulin.
- Glucose is necessary to keep the cells in the body healthy.

Diabetes Overview continued…

Type 1:

*Has been called Juvenile-Onset or Insulin Dependent Diabetes in the past.

*Results from the autoimmune destruction of the beta or islet cells of the pancreas which produce the hormone, insulin.

*Insulin is required for glucose metabolism (using blood sugar for fuel in the cells).

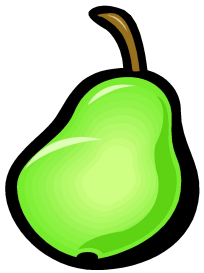
*A person cannot live without insulin.

Diabetes Overview continued…

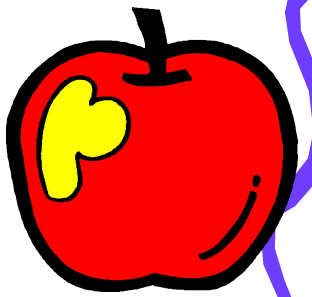
Type 2:

* Has been called Adult-Onset or Non-Insulin-Dependent Diabetes.
* Characterized by insulin resistance that develops into relative insulin deficiency.
* Central abdominal obesity is directly related to insulin resistance.
* Type 2 diabetes is a fast-growing epidemic in our young population.
* Type 2 diabetes is related to family history of diabetes, weight gain, and sedentary lifestyle.

Diabetes Overview continued…



- Insulin resistance means that insulin is produced, but the body is not using it correctly.
- This resistance causes the blood sugar to rise; thus, type 2 diabetes develops.
- Insulin resistance is also related to the shape of the body.
- An apple-shaped body is more resistant than a pear-shaped body.



Diabetes Overview continued…

- Reasons for Control:

  Diabetes is

  - the 7th leading cause of death in the United States.
  - the major cause of blindness, nontraumatic amputations, and kidney failure leading to dialysis and the need for a kidney transplant.
  - a major cause of heart attacks and strokes.
  - a possible cause of lack of normal growth and development if not controlled prior to puberty.

Diabetes Overview continued…

- The goal of effective diabetes management is to control blood glucose levels by keeping them within a target range that is determined for each child.
- Effective diabetes management is needed to prevent the immediate dangers of blood glucose levels that are too high or too low.
- The key to optimal blood glucose control is to carefully balance food, exercise, and insulin or medication.

Diabetes Overview continued…

- Diabetes management means monitoring or checking blood glucose levels throughout the day.
- Planning for events outside the usual school day is very important.
- Dealing with the emotional and social aspects of living with diabetes is a key element to effective management.

Diabetes Overview continued…

The Good News:
The "Diabetes Control
And Complications Trial"
(DCCT) of 1993, clearly
demonstrated that good diabetes
control with blood glucose readings
close to normal, prevents and
postpones diabetes complications.
The results of this study changed
the direction of diabetes treatment
to more aggressive care for most
everyone with diabetes.

Treatment Foundations:

Type 1 diabetes:

- Occurs in approximately 1:400 children (10% of the diabetes population.)
- Often presents as an acute illness and results in diabetic ketoacidosis (DKA) due to lack of insulin.
- Requires insulin either by injection into subcutaneous tissue or by IV. Other routes of insulin delivery are under development.

Treatment Foundations:

- Currently, most students are taking insulin by syringe, pen device, or insulin pump.

- The insulin pump is a type of injection using a very small catheter under the skin.

Treatment Foundations:

- The amount of insulin taken has to be balanced with food intake (specifically carbohydrates) and physical activity.

- The outcome of all this is measured by self-monitoring of blood sugar and keeping a written log or computer program.

- Ketone testing is also necessary when the blood sugar is very high or if the child complains of a stomach ache.

Treatment Foundations:

Type 2 diabetes:

- Most often occurs in the adult population.
- Accounts for 90% of the diabetes population in the world.
- Is a rising epidemic in the young obese person.
- Can be present for months or years before diagnosis.
- Has as a goal to develop and maintain a healthy lifestyle involving physical activity and weight loss.
- Usually improves with weight loss which decreases insulin resistance.
- May require medication if diet and exercise don't improve blood sugars.

Necessary Tools for Diabetes Management

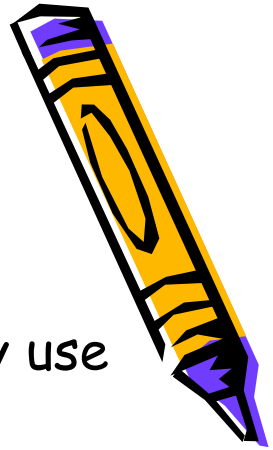
- Self-Monitoring of Blood Sugar:
  - Is important for anyone with diabetes.
  - Currently is done by placing a very small drop of blood on a test strip in a blood glucose meter.
  - Takes from 5-45 seconds, depending on the meter.
  - Should be recorded in the child's log book.

Necessary Tools continued…

Blood Sugar Monitoring

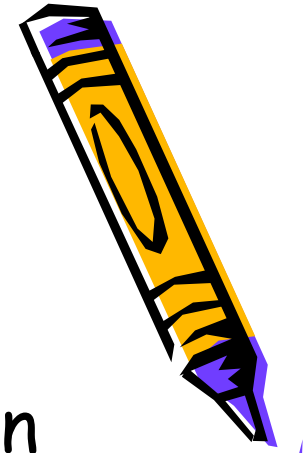
- If you need to assist a child with blood sugar monitoring, please follow these steps:
  - Make sure the child's hands are warm, clean, and dry. (Hand washing is fine, alcohol to prep the finger is not necessary.)
  - Use exam gloves to cover your hands. (Universal Precautions.)
  - Set up the meter with the test strip. (Most meters today turn on when you place the strip in.)
  - Make sure the meter is coded for the test strip used.
  - Insert the lancet into the lancing device and pull trigger back to cock.

Blood Sugar Monitoring continued…



- Prick the fleshy part on the side of the fingertip (may use any finger.)
- Gently squeeze to get a small drop of blood and add to the test strip.
- The meter will automatically begin counting down and then read the sample.
- If you did not get enough blood on the strip, often the meter will read "Error" and you will need to repeat the test.
- Carefully remove the lancet and place in a sharps container.
- Please note: One lancet can be used for the entire day as long as no one other than the student uses it or it becomes otherwise contaminated..

Blood Sugar Monitoring continued…



- If the school has a meter that is kept in the office for various students to use, the following must be addressed:
  - How often are control tests done to verify accuracy?
  - Single-Use Only lancets must be available.
  - Who takes care of replacing the sharps container when needed?
  - Who is assigned to clean the meter and check supplies?
  - The meter must be approved for multi-person use.

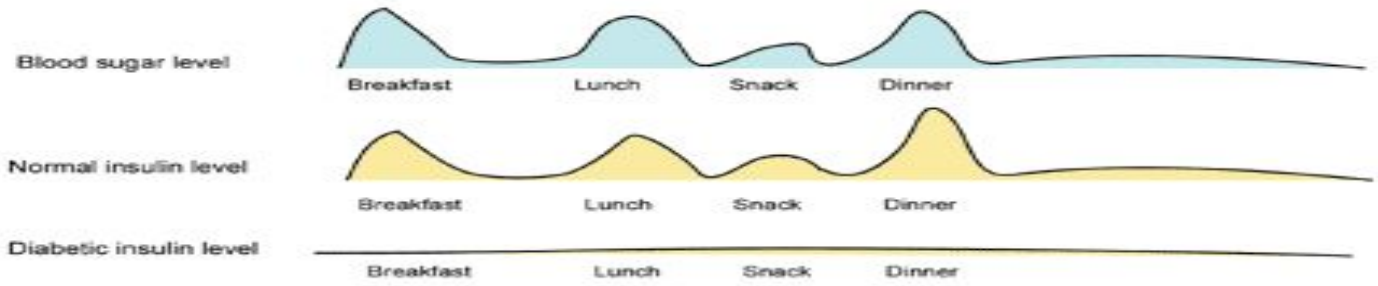
Necessary Tools continued…

- **Carbohydrate Counting and the Meal Plan**
  - Students with Type 1 diabetes may practice carb counting in order to balance insulin with food and activity.
  - Students with Type 2 diabetes may focus on weight management.
  - Every person with diabetes should undergo Medical Nutrition Therapy (MNT) with a Registered Dietitian or receive Diabetes Self Management Education (DSME) with a Certified Diabetes Educator (CDE).

"Learn to Make Healthy Food Choices"

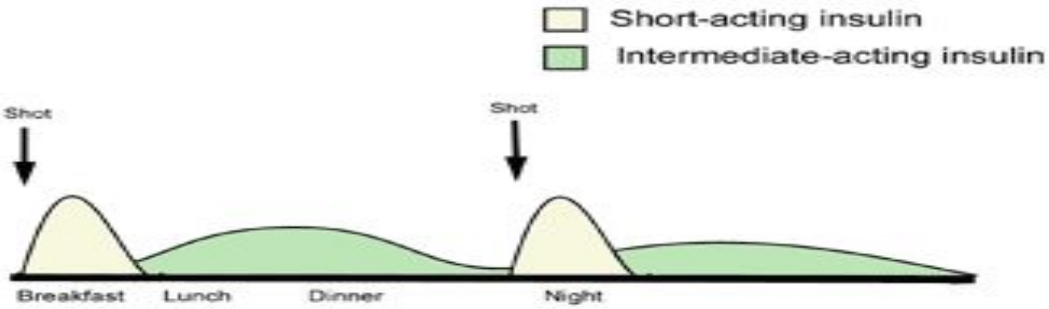
Diabetes and Insulin

Throughout the day your blood sugar level goes up and down like a roller coaster everytime you eat. Your body should make just the right amount of insulin to help turn the food you eat into energy. A person with diabetes does not make insulin and needs to take insulin at the right times to help the body use the sugar for energy.



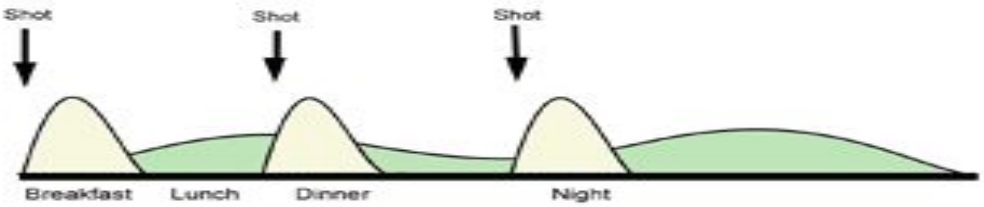
Taking Insulin Twice a Day

You may need to take insulin twice a day. One common way is to take one shot in the morning that contains a mix of a short-acting and intermediate-acting insulin. Then, take a similar shot again at dinner time.



Taking Insulin Three Times a Day

For even better control, some people take three shots per day. You can adjust the time of your shots to fit your lifestyle and eating patterns.

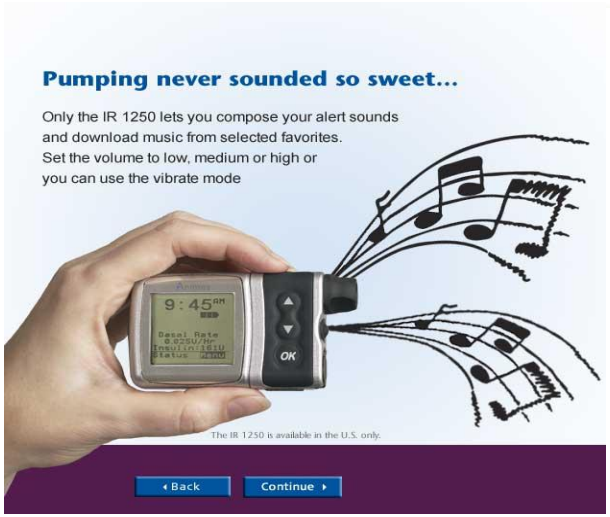


Insulin Action and Administration

- Most students take at least two injections of insulin a day.
- Some students are on intensive insulin therapy or wear the insulin pump.
- A combination of different insulins is most often used.
- It is important to remember that insulins have different "peak" times. These are times when insulin is working hardest to lower blood sugar.

What is an insulin pump?

- A battery operated device about the size of a pager



Insulin Action

- Insulin types are categorized as rapid-acting, fast-acting, intermediate-acting, long-acting or basal.

- Each type has a different onset, peak and duration.

Insulin Action

Insulin Administration

- After carefully drawing up the correct amount of insulin, cleanse the injection site with an alcohol swab and wait for it to dry.
- For most students, a short-needle syringe is used.
- Insulin should be administered in subcutaneous (or fatty) tissue under the skin. This tissue is approximately the depth of the short needle when injected at a ninety degree angle.

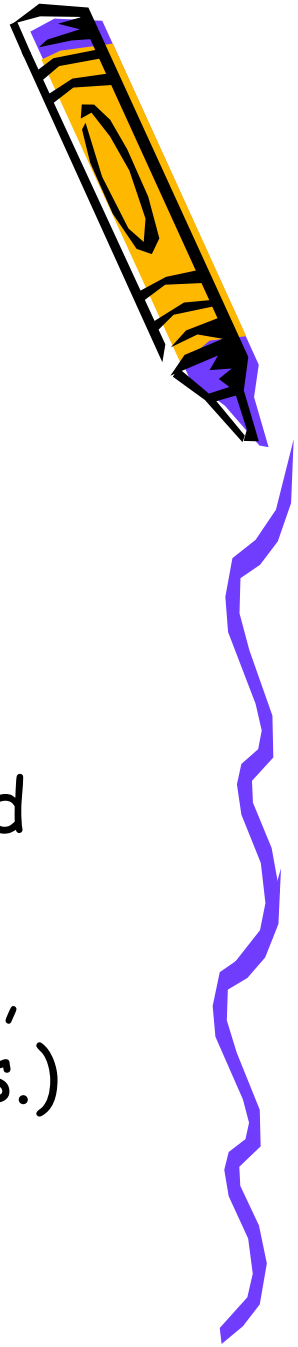
Insulin Administration-Continued

- After pushing the plunger on the syringe, count slowly to five and remove the needle.
- Do not massage the area of the injection.
- If the needle on the syringe is one of the longer needles, the angle of insertion should be approximately 45 degrees.
- Injection sites are the outer area of the upper arm, abdomen, outer aspect of the thigh, or upper outer quadrant of the buttock.

Carb Counting, Insulin to Carb Ratios

- Many students are now using an algorithm instead of a sliding scale for an elevated blood sugar.
- For example, a student with a blood sugar of 347 may have a correction algorithm of BG-120/55. To determine the correct amount for administration using this formula, subtract 120 (the target blood sugar) from 347 (BG) and divide the product by 55 (insulin sensitivity—one unit will lower the blood sugar by this amount). 347-120 = 227 ÷ 55 = 4.1 units of insulin to correct the blood sugar to the target of 120.

Insulin to Carb Ratio



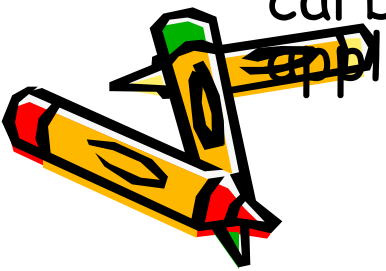
- In an effort to match insulin to carbohydrate eaten, an insulin to carb ratio is developed.
- Example: Haley is planning to have 57 grams of carb at lunch. Her established ratio is one unit of insulin for every 8 grams. 57 ÷ 8 = 7.1 (If given by syringe, this amount would be rounded to 7 units.)

Combining the Two

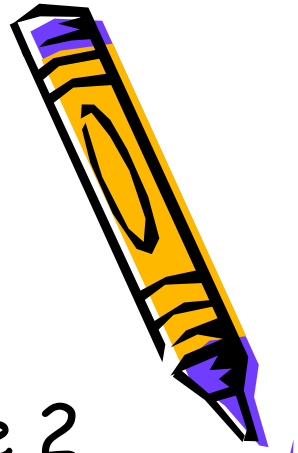
- In order to correctly determine the amount of insulin needed before a meal, it is necessary to add the amount to cover the carbs to the amount to return the blood glucose to target. In our examples just given, the two amounts (4.1 units and 7 units) would be added for a total injection amount of 11 units of insulin.

Insulin to Carb Ratios and the Insulin Pump

- Most insulin pumps today are far more sophisticated than those of only three to four years ago.
- Pumps are able to calculate the amount of insulin needed by the student when the blood glucose and grams of carb are programmed into the pump.
- The ratios and correction algorithm are pre-programmed into the pump so that calculations are done by a mini computer contained in the pump. Counting grams of carbohydrate is very important for successful application of pump therapy.
    - Dosages are capable of being given in micro amounts.



Oral Meds for Kids With Type 2 Diabetes



- The preferred method of treating Type 2 diabetes in young people is exercise and weight management.
- Most often, Type 2 diabetes requires the child to eat a certain amount of carbohydrate at each meal.
- Oral medications would be an option if Type 2 diabetes is not controlled with the measures mentioned above.

Oral Meds

- The most frequently used medication for increasing insulin sensitivity in Type 2 diabetes in kids is metformin or Glucophage™.
- Metformin works by preventing the liver from releasing glucose into the system and does not cause low blood sugars or promote weight gain.

Oral Meds

- It is important to note that some kids with Type 2 diabetes may at times require insulin. This does not indicate worsening of their diabetes.
- Taking insulin does not mean this student has Type 1 diabetes.

- The regimen will vary according to the needs of the child.

Part 3
Acute Complications of Diabetes

- Hyperglycemia (High Blood Sugar)

- Hypoglycemia (Low Blood Sugar)

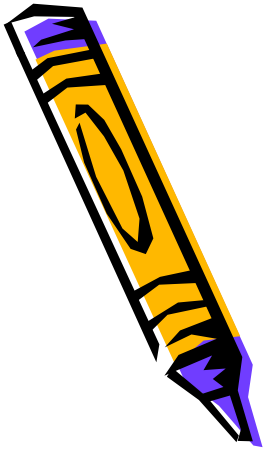
High Blood Sugar

"Hyperglycemia"

Hyperglycemia

- High blood glucose (hyperglycemia) occurs when the body gets too little insulin, too much food, or too little exercise.
- Hyperglycemia may also occur when a child has an illness such as a cold.
- Hyperglycemia may occur when a child is under extreme stress.

Definition: High Blood Sugar



- Target Blood Sugar
  - <6 years: 100-160 mg/dL pre-meal and bedtime
  - 6-12 years: 80-160 mg/dL pre-meal and bedtime
  - >12 years: 80-140 mg/dL pre-meal; <160 mg/dL 2 hours after start of meal

Definition: High Blood Sugar

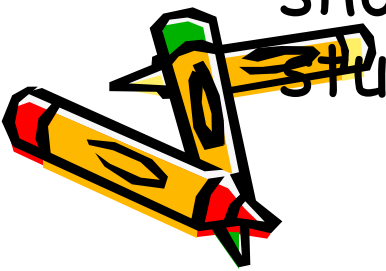
- Most health professionals view a blood sugar greater than 240 as "hyperglycemia."

Signs & Symptoms of Hyperglycemia

- Frequent Urination
- Extreme Hunger
- Extreme Fatigue
- Unusual Thirst
- Irritability
- Blurred Vision

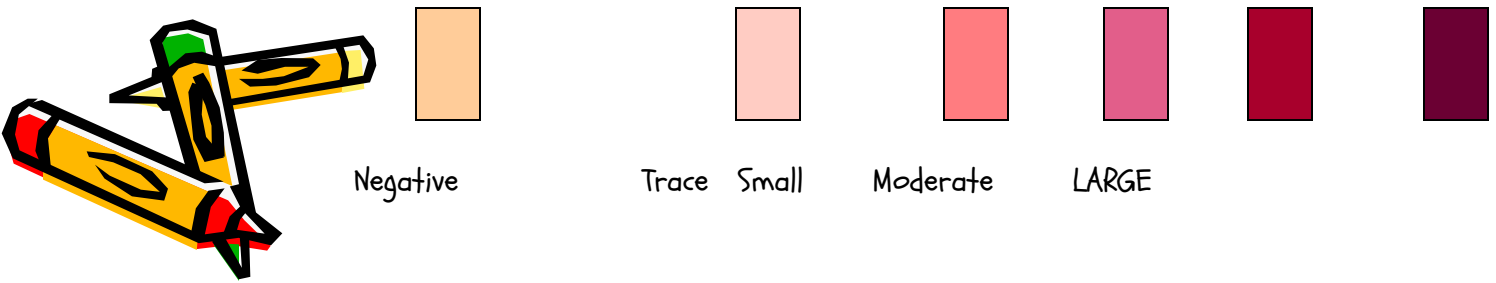
High Blood Sugar "Hyperglycemia"

- For the school age child, a blood sugar greater than 240 mg/dL requires an additional check half an hour later. Two consecutive blood sugars greater than 240 mg/dL requires ketone testing.
- A single blood sugar greater than 300 mg/dL requires ketone testing.
- Insulin injections for high blood sugar should be given according to the student's IHP or Diabetes Care Plan.



Ketostix®

- Directions must be followed exactly.
  - Dip reagent end of strip in FRESH urine and remove immediately.
  - Draw the edge of strip against rim to remove excess urine.
  - **Exactly 15 seconds later,** compare to color chart.



If a student's ketone level is greater than "trace" but less than "large", refer to that student's IHP for information on steps to take to prevent Diabetic Ketoacidosis. This plan usually requires administration of insulin and drinking lots of water.

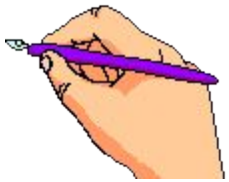
In the event of moderate to large ketones, treat as an emergency situation according to the student's THP

- In all cases of high blood sugar, if the student is able, he should drink calorie-free, caffeine-free liquids such as water.
- If the student is unable to drink liquids because of nausea or vomiting, you should seek medical attention immediately according to the student's IHP.

Diabetic Ketoacidosis-DKA

If untreated over a period of time, high blood sugar can cause a serious condition called "diabetic ketoacidosis" (DKA.)

DKA is characterized by nausea, vomiting, and a high level of ketones in the blood and urine.



Diabetic Ketoacidosis

- For students using insulin infusion pumps, lack of insulin supply may lead to DKA more rapidly.
- Insulin infusion pumps use only rapid acting insulin.
- Lack of insulin causes the breakdown of body fat for energy which releases "ketones" into the bloodstream.

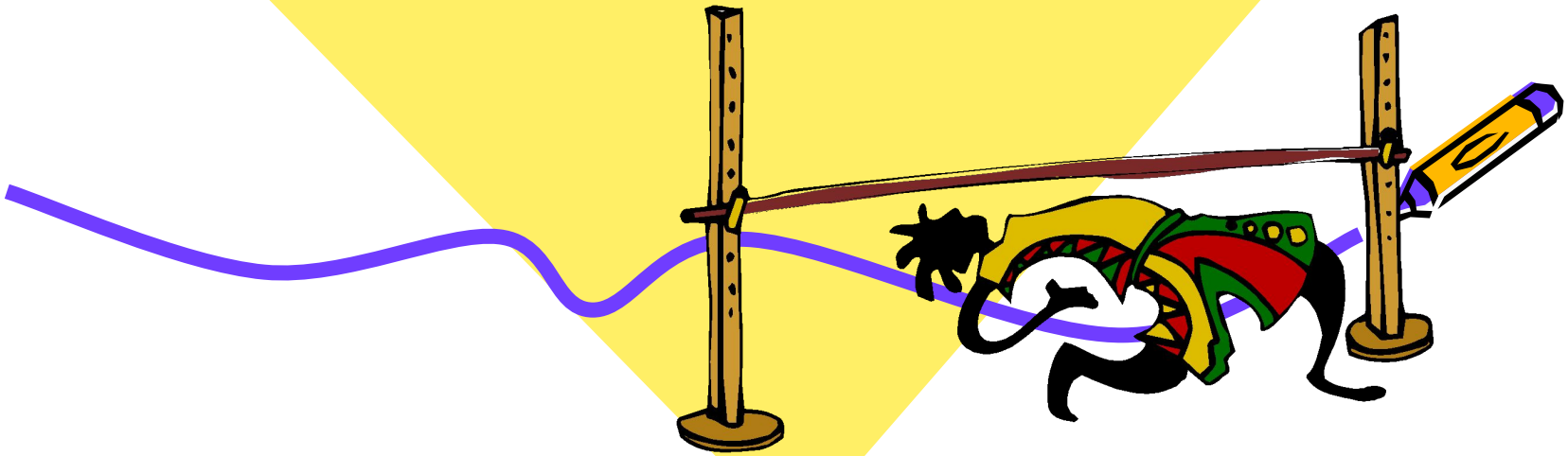
Diabetic Ketoacidosis

- Ketones in the bloodstream cause the pH of the blood and body fluids to be lower and more acidic.
- **DKA** can be life-threatening and thus requires **immediate medical attention.**
- IV fluids and an insulin drip along with hospital admission are necessary in severe cases of DKA.

Any Questions???

Low Blood Sugar

"Hypoglycemia"



What Is Hypoglycemia or Low Blood Sugar?

- Sometimes called an insulin reaction
- Occurs when blood sugar is below the target range (under 70-80)
- Can be caused by too much insulin, unplanned increased activity, eating too few carbohydrates
- Happens when the body does not have enough sugar in the blood

Lows happen when insulin and blood sugar are out of balance.

- People without diabetes do not usually get hypoglycemia.
- When we have enough insulin our body stops releasing insulin automatically.
- But, people with diabetes have to figure out how much insulin their bodies will need.

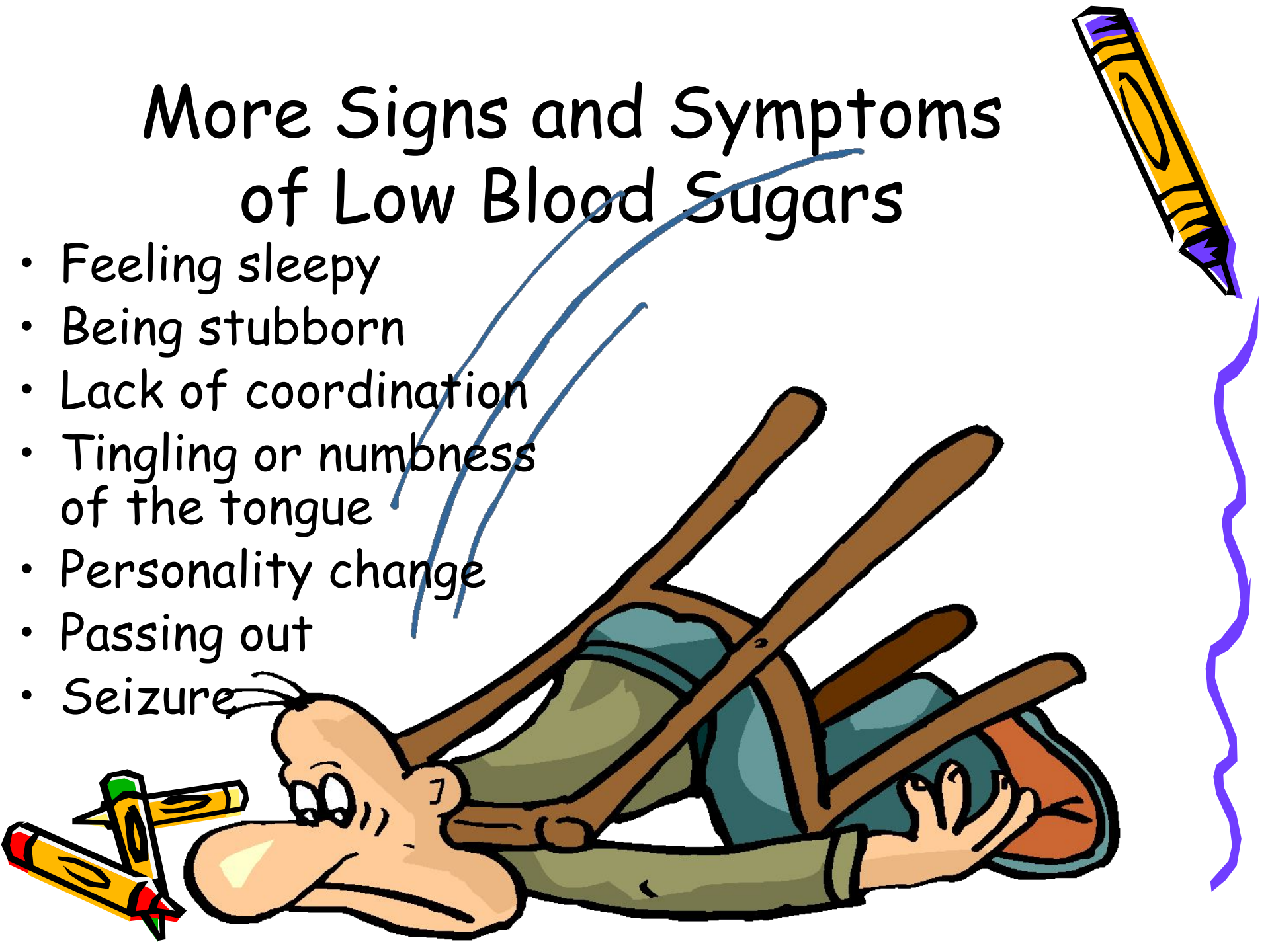
- Low blood glucose levels, which can be life-threatening, present the greatest immediate danger to people with diabetes.

Signs and Symptoms of Low Blood Sugar

Hunger
Shakiness
Dizziness
Sweatiness
Fast heartbeat
Drowsiness
Feeling irritable, sad or angry
Nervousness
Pallor

More Signs and Symptoms of Low Blood Sugars

- Feeling sleepy
- Being stubborn
- Lack of coordination
- Tingling or numbness of the tongue
- Personality change
- Passing out
- Seizure

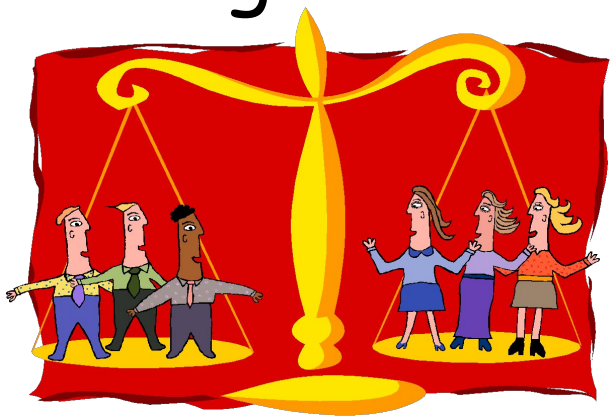


Recognizing Low Blood Sugar

- It is important to recognize a low blood sugar as soon as possible so that it does not progress to a severe reaction.
- Early signs are caused by the release of the hormone epinephrine.
- Our bodies make this hormone when we are excited or stressed.

Frequent Causes of Low Blood Sugar

- Meals that are late or missed
- Extra exercise or activity
- An insulin dose which is too high
- Unplanned changes in school schedule



What To Do When Hypoglycemia Occurs

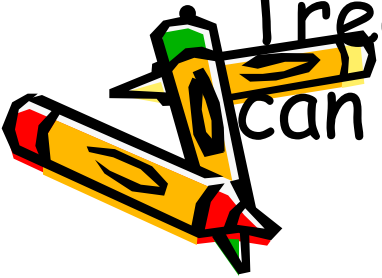
- If possible always do a blood sugar check first.
- If meter is unavailable and the child feels sick, treat as a low.
- Eat or drink about 15 grams of fast-acting carbohydrate.
- Wait 15 minutes and test blood sugar.
- If blood sugar remains lower than 70 or below target for individual child, treat again.

Hypoglycemia Busters

- 2-4 glucose tablets
- 4 ounces of apple or orange juice
- 4-6 ounces of regular soda
- 2 tablespoons of raisins
- 3-4 teaspoons of sugar or syrup
- 1 cup of low fat milk
- 1 tube of cake gel

Catch Low Blood Sugar Early

- **Be alert** for any symptoms and times when a low blood sugar is likely to occur.
- Test blood sugar if there is any doubt.
- Fast acting carbohydrate or sugar should always be available.
- Treat low blood sugar promptly or it can turn into severe hypoglycemia.



Treating Severe Hypoglycemia

When severe hypoglycemia occurs, not enough sugar is in the brain.

The student may lose consciousness and/or have convulsions.

At this time the student will need the assistance of someone else.

What Happens when the Child is Unconscious?

1. Drinking soda or eating glucose tablets is not possible and would be dangerous when the child is unconscious .
2. Glucagon injection may then be necessary.
3. Glucagon is a substance or hormone that makes the liver release sugar into the blood stream.

Using Glucagon

Glucagon should be administered promptly if the person is unable to swallow, loses consciousness or becomes combative. Call 9-1-1.

Glucagon can be stored at room temperature.

Glucagon comes in a bottle and needs to be mixed with a diluting solution immediately before using.

Glucagon is injected into the front of the thigh or upper arm muscle.

In order for school staff to use Glucagon, orders for its use must be included on the child's IHP or Diabetes Care Plan.

Any Questions??