

# Teacher Workshop Curriculum



## UNDERSTANDING AND LEARNING ABOUT STUDENT HEALTH

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## UNDERSTANDING AND LEARNING ABOUT STUDENTS' HEALTH



### *Teacher Workshop Curriculum Outline:*

***Goal:** To increase teachers' comfort with common topics of adolescent health and improve the interaction between the school and the School Based Health Clinic (SBHC.)*

#### **Workshop Three: Diabetes—*Too Much Sugar is Not a Good Thing***

- Definitions of Type I vs. Type II Diabetes
- Demographics of Diabetes in Washington Heights
- Diabetic Emergencies—What To Look For
- Treatment of diabetes—How Can Teachers Help?



## Lesson Plan—Diabetes



### *Too Much Sugar is Not a Good Thing*

**Goal:** To understand Type 1 and Type 2 Diabetes, the differences between the two types, and how to recognize and deal with diabetic emergencies.

**Introduction:** Brief introduction of yourself and teachers. Briefly review lesson plan outline. (5 minutes)

**Experiences with Diabetes:** Have teachers break into small groups and discuss what experiences they have had with family members/friends having Diabetes. (5 minutes)

--Key points

- \*Diabetes is a very common disease and the majority of people's lives have likely been affected in some way by the disease.
- \*Most of the experiences have likely been with adults; unfortunately the "adult onset" type is now becoming a childhood disease as well.

**Type 1 vs. Type 2 Diabetes: What's the Difference?** (10 minutes) (Review definition of each type, why difference is important. Handout: *What is Diabetes?*)

--Key points:

- \*Type I Diabetes is an autoimmune disorder resulting in destruction of pancreas
- \*Type II Diabetes usually is associated with family history, being overweight, and lack of regular exercise.
- \* Type II Diabetes was once almost exclusively an adult disease, but is now affecting an increasing number of teenagers

**How Does Diabetes Affect Our Students:** (5 minutes)—Review demographics of Diabetes. Handout: *How Does Diabetes Affect Our Students?*

--Key points

- \* Diabetes markedly increasing in prevalence.
- \*Rising childhood obesity playing large role in the increasing prevalence.
- \*New York City is especially affected by these statistics.

**Diabetic Emergencies: When Should I be Worried?** (10 minutes). (Review the two types of diabetic emergencies and common signs/symptoms of each.) Handout: *Diabetic Emergencies: When Should I be Worried and What Can I Do?*

--Key points

- \*Diabetic emergencies are caused by either too much sugar or too little sugar
- \*Review key symptoms for each type of emergency
- \*Severe hypoglycemia or hyperglycemia requires immediate treatment

**Diabetes in the Classroom: How Can Teachers Help?** (5 minutes) Handouts: *Diabetes in the Classroom: How Can Teachers Help* and from [http://ndep.nig.gov/diabetes/pubs/Youth\\_Tips\\_Eat.pdf](http://ndep.nig.gov/diabetes/pubs/Youth_Tips_Eat.pdf)

--Key points

- \*Be aware of students that have Diabetes
- \*Know how to recognize and first steps in diabetic emergencies
- \*Education about long-term consequences is important
- \*Nutrition education important in prevention of Type 2 Diabetes

**Questions** (5 minutes)



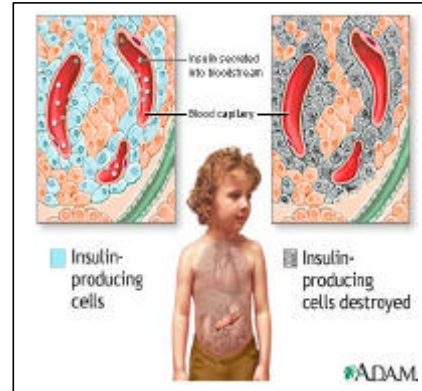
## Diabetes: Type 1 vs. Type 2



*Diabetes Mellitus is a chronic condition caused by the inability of the pancreas to produce insulin and/or the body to use insulin appropriately. This leads to high levels of sugar in the blood.*

### Type I Diabetes:

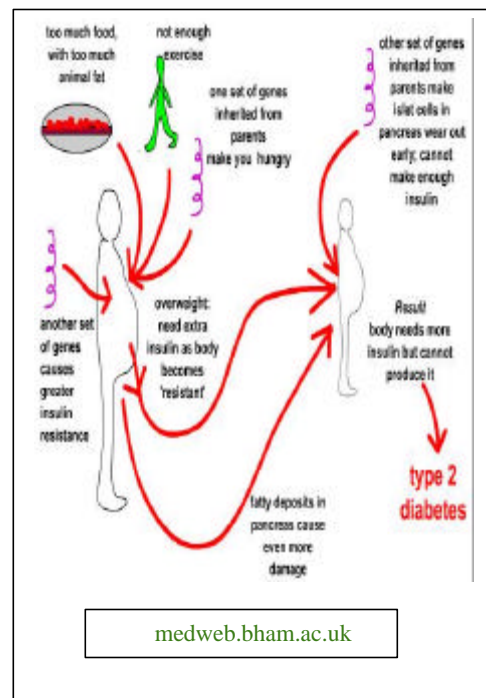
- Also called **Insulin Dependent Diabetes Mellitus** (or Juvenile Onset Diabetes)
- Most common type of diabetes in children
- Autoimmune disorder in which the immune system attacks and destroys the part of the pancreas that makes insulin.
- Symptoms include increased thirst, increased urination, increased hunger, weight loss, fatigue, abdominal pain.
- Requires daily insulin injections to control blood sugar.
- Can't be prevented (autoimmune disorder.)



[http://www.isletsofhope.com/diabetes/information/genes\\_diagnosis\\_transmission\\_1](http://www.isletsofhope.com/diabetes/information/genes_diagnosis_transmission_1)

### Type 2 Diabetes

- Caused by failure of the body to respond to insulin and/or not produce enough insulin
- Used to be called *Adult Onset Diabetes*. However, there is now increasing prevalence of type 2 diabetes in children.
- Exact cause not known, but risk factors include family history, being overweight, lack of regular exercise, race/ethnicity.
- Does not usually cause symptoms early on in disease. With very high blood sugar levels, can see similar symptoms to those of type 1 diabetes (increased thirst, increased urination, increased hunger, weight loss, abdominal pain.)
- Can be controlled/prevented by improved nutrition, weight loss, and increased exercise.
- May also need oral medication or, in severe circumstances, insulin injections.



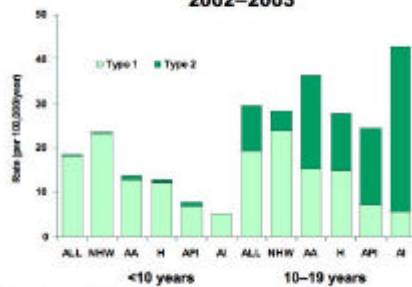


## How Does Diabetes Affect Our Students?



- Diabetes is one of the most common chronic diseases of school-aged children.
- Approximately 186,300 people under age 20 had diabetes in 2007 (0.2%).<sup>1</sup>
- While this might seem like a small number, the prevalence of diabetes in children is dramatically increasing, most markedly among minority populations.
- In New York City, the rate is rising much more rapidly than in the U.S. population as a whole.
- The diagnosis of type 2 diabetes is increasing more than that of type 1.

Rate of new cases of type 1 and type 2 diabetes among youth aged <20 years, by race/ethnicity, 2002-2003

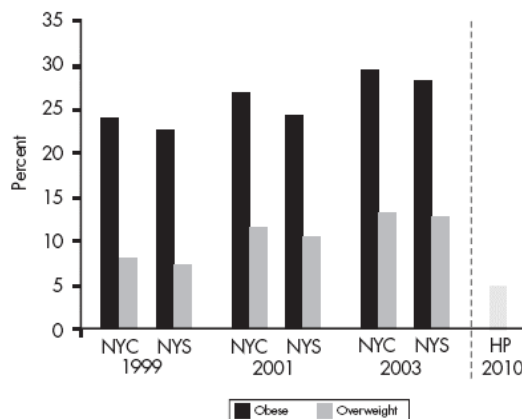


ODD, National Diabetes Fact Sheet, 2007.  
Source: SEARCH for Diabetes in Youth Study  
NH=Non-Hispanic whites; AA=Non-Hispanic African American; H=Hispanic; API=Asian/Pacific Islander; AI=American Indian

### Why is the Rate of Diabetes Increasing?

- The rate of obesity more than doubled between 1980 and 2000 among children 6-11 years old and tripled for adolescents 12-19 years old.<sup>2</sup>
- Almost 30% of high school students in New York City are overweight.
- Pediatric obesity is strongly associated with type 2 diabetes.

Trends in overweight and obesity among high school students in New York City and New York State, 1999-2003<sup>3</sup>



Source: Youth Risk Behavior Surveillance System (YRBSS) - 1999, 2001, and 2003

<sup>1</sup> [http://ndep.nih.gov/diabetes/youth/youth\\_FS.htm#Statistics](http://ndep.nih.gov/diabetes/youth/youth_FS.htm#Statistics)

<sup>2</sup> [http://www.childrenshealthfund.org/publications/pubs/Urban-Health\\_SR\\_04.pdf](http://www.childrenshealthfund.org/publications/pubs/Urban-Health_SR_04.pdf)

<sup>3</sup> [http://www.health.state.ny.us/prevention/obesity/strategic\\_plan/major\\_threat.htm](http://www.health.state.ny.us/prevention/obesity/strategic_plan/major_threat.htm)



# Diabetic Emergencies<sup>4</sup>



*When should I be Worried and What Can I Do?*

Diabetic emergencies are caused by an **imbalance** between the amount of sugar and the amount of insulin in the blood.

## **I: Low blood sugar (hypoglycemia)--NEEDS SUGAR**

Causes include

- Receiving too much insulin
- Not eating/drinking enough
- Large amount of exercise

Symptoms include:

- |               |   |
|---------------|---|
| Headache      | Feeling weak  |
| Feeling Dizzy | Sweating  |
| Blurry vision | Drowsiness  |
| Confusion     | Seizures/Loss of Consciousness (in <b>severe</b> circumstances) |

## **II. High blood sugar (hyperglycemia)--NEEDS INSULIN**

Causes include:

- Not taking insulin
- Excessive food intake
- Less exercise than normal
- Illness or Infection

Symptoms include

- |                      |  |
|----------------------|--|
| Nausea/Vomiting      | Deep/Rapid breathing                                 |
| Feeling very thirsty | Fruity smelling breath                               |
| Increased urination  | Loss of consciousness/coma (in severe circumstances) |

	<b>Insulin Shock/Low Blood Sugar (needs sugar)</b>	<b>Diabetic Coma/High Blood Sugar (needs insulin)</b>
<b>Pulse</b>	Strong and rapid	weak and rapid
<b>Breathing</b>	Shallow	deep and sighing
<b>Skin</b>	Pale and sweating	flushed, dry and warm
<b>Breath odor</b>	Odorless	like musty apple or nail polish
<b>LOC (loss of consciousness)</b>	faintness to unconsciousness developing quickly	gradual onset of unconsciousness
<b>Other signs and symptoms</b>	headache trembling Hunger	unsteady walk Nausea

<http://tcm.health-info.org/Common%20Diseases/diabetes/diabetic-emergencies.htm>

FOR MORE INFORMATION SEE

<http://www.diabetes.org/uedocuments/TipstoHelpTeachersKeepKidsSafeatSchool0807.ppt>

<sup>4</sup> <http://diabetes.about.com/od/symptomsdiagnosis/a/emergencycare.htm>



# Diabetes in the Classroom



## *How Can Teachers Help?*

I. Be aware of any students with Diabetes, especially those who require insulin

II. Recognize Diabetic Emergencies:

### **Low Blood Sugar (Hypoglycemia)**

- Give sugar
- “Quick fix” foods include glucose tablets (if student has on him/her,) 4 oz fruit juice or regular soda, 1 cup milk, 2 tsps sugar
- If teacher has student with Diabetes in class, may want to keep “quick fix” foods readily available
- Fat decreases the movement of glucose into the bloodstream, so sweet foods with a lot of fat (candy bars, cookies, etc.) are not ideal. (However, they should be used if the only food available).

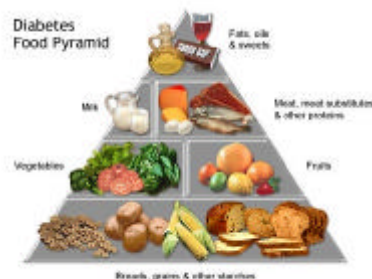
### **High Blood Sugar (Hyperglycemia)**

- If student is displaying signs of hyperglycemia, should immediately have blood sugar tested (student should be accompanied to school based health center).
- Often, there is the need for immediate insulin and intravenous fluids via health care provider

III: Discuss diabetes with your students (without identifying which students have the disease)

- Students with diabetes can participate in ALL activities
- Long-term complications of diabetes (IF POORLY CONTROLLED) include:
  - Heart disease
  - Kidney disease
  - Amputations
  - Blindness
  - Strokes
  - Impotence
- Importance of good nutrition
  - Especially with rising prevalence of type 2 diabetes in adolescents, important to emphasize healthy diet and exercise
  - Adolescents have difficulty with forward thinking and thinking about consequences, but every little bit helps.
  - For more information on nutrition, tips for the classroom, see the following handouts from

[http://ndep.nih.gov/diabetes/pubs/Youth\\_Tips\\_Eat.pdf](http://ndep.nih.gov/diabetes/pubs/Youth_Tips_Eat.pdf)



#ADAM

# Be healthy, happy, and active!

## Why eat healthy foods?

Healthy foods give you energy to live, learn, and be active. They help you to:

- Grow at a healthy rate and stay active.
- Keep your blood glucose (GLOO-kos), also called blood sugar, in balance—not too high and not too low.
- Lose weight slowly, if needed, under your doctor's care.



## Do teens with diabetes need to eat special foods?

No, they do not. Meals that are healthy for teens with diabetes are great for everyone—you, your family, and your friends.

## How does food affect my body?

Food is the fuel that our bodies use for energy. The three main sources of fuel are carbohydrates (CAR-boh-HY-drates), protein, and fat. The body changes these fuels into glucose for energy or stores them as fat. Eating a balance of foods that contain carbohydrates (carbs for short), protein, and fat every day will help keep your blood glucose close to normal. It may also keep your weight where you and your doctor want it to be.



drink water

**Protein** helps build strong muscles and bones. Foods with protein do not make blood glucose go up like carbs do. **Having protein in your meal can help you feel less hungry.**

Foods that are a good source of protein include:

- Meat and poultry without skin or extra fat.
- Fish, low-fat cheese, and eggs.
- Natural peanut butter and soy products like tofu.

be active

**Fats** are a good source of fuel for the body and help you grow. Fat does not make blood glucose go up but too much fat can make you gain weight. Some fats are better for you than others.

Choose the types of **fats that keep your heart healthy:**

- Small portions of low-fat salad dressing, mayonnaise, and margarine.
- Small amounts of nuts, olives, and olive oil.
- A slice of avocado.

Choose these high fat foods less often. They are **not healthy for your heart:**

- Butter, stick margarine, and regular mayonnaise.
- Fried foods like potato chips and french fries.
- Meats with fat on them, bacon, deli meats, and hot dogs.
- Cakes, cookies, pies, and other desserts.

**Carbs** are a great source of energy for our bodies. Many foods contain carbs. Some are better for you than others. If you eat too many carbs at one time, your blood glucose may get too high. **Learn to eat the right amount at meals and snack times to keep your blood glucose in balance.**

**Choose carbs** that have lots of fiber:

- Whole grain foods—whole wheat bread and crackers, oatmeal, brown rice, and cereals.
- Lentils and dried peas or beans such as kidney, black, white, split, or black-eyed. These foods are also a good source of protein.
- Fresh fruits and vegetables from every color of the rainbow—red, orange, yellow, white, green, blue, and purple.
- Other good sources of carbs include non- or low-fat dairy foods, soy milk, pasta, potatoes, corn, squash, and yams.



**Choose these carbs less often:**

- white bread
- white rice
- sweetened fruit drinks
- regular soda
- sweets and desserts

Handouts from National Diabetes Educational Program  
([www.yourdiabetesinfo.org](http://www.yourdiabetesinfo.org))  
[http://ndep.nih.gov/diabetes/pubs/Youth\\_Tips\\_Eat.pdf](http://ndep.nih.gov/diabetes/pubs/Youth_Tips_Eat.pdf)



**What should I eat?** "Your Healthy Food Guide" gives ideas about what kinds of foods are good for you. Remember, this is only a guide. Ask your doctor or dietitian about making a meal plan just for you.

### Your Healthy Food Guide

#### Vegetables



Choose dark green and orange vegetables as often as you can.

**Aim for 2 1/2 to 3 cups a day.** Here are choices that equal 1 cup:

- 1 cup cut up raw or cooked or vegetables
- 2 cups leafy salad greens
- 1 cup vegetable juice

#### Fruits



Choose fresh whole fruits as often as you can.

**Aim for 1 1/2 to 2 cups a day.** Here are choices that equal 1 cup:

- 1 cup cut up raw or cooked fruit
- 1 cup fruit juice
- 1/2 cup dried fruit

#### Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts



**Aim for 5 to 6 ounces a day.** Here are choices that equal 1 ounce:

- 1 ounce lean meat, fish, or chicken
- 1 egg
- 1 tablespoon peanut butter
- 1/2 ounce nuts
- 1/4 cup cooked dry peas or beans such as kidney, white, split, or blackeye
- 1/4 cup tofu

#### Milk, Yogurt, and Cheese



**Aim for 3 cups a day.** Here are choices that equal 1 cup:

- 1 cup nonfat or low-fat milk or yogurt
- 1 1/2 ounces cheese

#### Breads, Cereals, Rice, and Pasta



Choose whole grain foods for at least 3 of your 6 choices.

**Aim for 6 to 7 ounces a day.** Here are choices that equal 1 ounce:

- 1/2 cup of cooked cereal
- 1/2 cup cooked rice or pasta
- 1 cup ready-to-eat cereal
- 1 slice of whole grain bread
- 1/2 small bagel or 1 small muffin

#### Heart-healthy Fats



##### One serving is

- 1 teaspoon vegetable, olive, or canola oil
- 1 teaspoon tub margarine
- 5 large olives or 1/4 avocado
- 1 tablespoon low-fat mayonnaise
- 2 tablespoons low-fat salad dressing

##### How much should you eat?

You get most of the fat your body needs from other foods you eat—so choose only a few extra servings of these heart-healthy fats each day.

Source: USDA ([www.usda.gov](http://www.usda.gov))

#### Regular Soda, Candy, Cookies, and Desserts



If you choose to eat these foods, have a very small amount and not every day.

#### What about sugar, sweets, and desserts? Am I allowed to eat them again?

Most people like the taste of sweet foods. Small amounts of foods that contain sugar can be part of a healthy meal plan.

Desserts such as cakes, muffins, pies, cookies, and ice cream contain a lot of fat as well as sugar. If you choose to eat any of these sweet foods, just have a small amount at the end of a healthy meal. Have a piece of fruit if you are still hungry.

Avoid regular soda, sweetened fruit drinks, and sports drinks as they are all high in sugar. Drink water instead.

#### How much should I eat?

The amount of food you need to eat each day varies with your age, sex, height, and activity level. The amounts in "Your Healthy Food Guide" are right for girls age 11 to 17 or boys age 11 to 14 who get 30 to 60 minutes of physical activity each day. If you are a boy older than 14, or if you want to enter your own height or activity level, visit [www.mypyramid.gov](http://www.mypyramid.gov).

Ask your doctor or dietitian about making a meal plan just for you, especially if you need to lose weight. Being active and eating smaller amounts of food and fewer sweet or fatty foods can help you lose weight in a healthy way. You will keep your heart healthy, too.

It is best to spread your food out over the day. Eat breakfast, lunch, dinner, and a snack—check out your options with your doctor or dietitian. You will have a good supply of energy and you will not get too hungry.

**eat smart**



For fun, take the "Portion Distortion Quiz" at <http://hp2010.nhlbi.nih.net/portion>. You will learn how today's serving sizes compare to portions 20 years ago. You will also see how much physical activity you need to do to burn up the extra calories in today's food portions.

Handouts from National Diabetes Educational Program

([www.yourdiabetesinfo.org](http://www.yourdiabetesinfo.org))

[http://ndep.nih.gov/diabetes/pubs/Youth\\_Tips\\_Eat.pdf](http://ndep.nih.gov/diabetes/pubs/Youth_Tips_Eat.pdf)



[www.YourDiabetesInfo.org](http://www.YourDiabetesInfo.org)

The U.S. Department of Health and Human Services' National Diabetes Educational Program is a part of the U.S. Department of Health and Human Services' National Diabetes Youth Center. For more information, visit [www.YourDiabetesInfo.org](http://www.YourDiabetesInfo.org) or 1-800-458-5232.

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