

## **Diabetes and Nutrition Eating Right to Manage Blood Glucose Levels**

**Satellite Conference and Live Webcast  
Thursday, November 12, 2009  
2:00 - 4:00 p.m. Central Time**

Produced by the Alabama Department of Public Health  
Video Communications and Distance Learning Division

## **Faculty**

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## **Nutrition and Activity Goals**

- The same for most people, regardless of diabetes
  - Eat more fruits and vegetables
  - Get enough calcium from dairy or other sources to maintain bones
  - Limit fats and simple sugars eaten
  - Try to get 30-60 minutes of some kind of physical activity each day

## **Diabetes Adds the Focus of Achieving Optimal Blood Glucose Levels While Preventing Excessive Hypoglycemia**

## **Type 1 – IDDM Insulin Dependent Diabetes Mellitus**

- Accounts for 5-10% of diagnosed cases
- Dietary control has a little more focus on concern with sudden drop in BGL (hypoglycemia)

## **Recreational-Education Resource for Children with Type 1**

- Camp Seale Harris
  - Camp ASCCA
    - Summer camp for children with Type 1
    - Operates during month of June

## Recreational-Education Resource for Children with Type 1

- Local family support groups are organizing in Montgomery, Birmingham, Mobile, Huntsville
- Contact:  
[www.southeasterndiabetes.org](http://www.southeasterndiabetes.org)

## Southeastern Diabetes Education Services - Web Site

SDES NEWS FOR CHILDREN WITH DIABETES



- [Press Release Camp Sugar Falls Eban](#)
- Click [HERE](#) for 2009 Registration Form
- [Youth Volunteer Program: Ages 16-17 yrs](#)
- [Upcoming Events & Activities: SDES Camp and Program Dates!](#)

[Fun Stuff for Kids](#)  
[Camp Champions](#)  
[How Can I help??](#)  
[Online Camp Registration](#)

## Southeastern Diabetes Education Services - Web Site

- 2009 camp pictures



## Type 2 – NIDDM Non Insulin Dependent Diabetes Mellitus

- Accounts for 90-95% of cases
- Strong lifestyle component
  - Obesity, inactivity, high fat/calorie diet but genetics can play a part
- Increasing in overweight & obese children/adolescents

## How Is Diabetes Managed

- Diet
- Physical activity
- Medications as prescribed
- Each part has to work together with the individual's preferences, schedule and health status

## Diet Management Tools

- Exchange system
- Carbohydrate counting
- Food labels
- MyPyramid
- Other management tools

## Exchange System

- System that has been used to help diabetics plan balanced meals since 1940's
- Food is divided into six categories based on amount of carbohydrates, protein and fat
- Average serving sizes are based on calories and nutrient composition

## Exchange System

- System has been used with weight loss programs like Weight Watchers, 'Deal-A-Meal'
- Information can be found under 'Diabetic Guidelines'

## Exchange System

Food Exchange Group	Grams of CHO	Calories
*Foods with carbohydrates		
*Starch	15	80
*Fruit	15	60
*Milk (skim/low fat)	12	90-100
Meat (medium fat)		75
*Vegetables	5	25
Fat		45

## Carbohydrate Counting

- A newer method to manage food intake
- Emphasis is more on amount of carbohydrates consumed, less on calories
- Formula to calculate amount of insulin needed to cover grams of carbohydrates

## Using Carbohydrate Counting & Exchange System Together

- Elements of EXCHANGE SYSTEM can help to categorize food into groups to aid in estimate of carbohydrates consumed

## Carbohydrate Counting

	Examples	Grams Carbohydrates (CHO)
Meat	3 oz. baked chicken	
Starch	1/3 cup Rice	15 gm CHO
Starch	1/2 cup Lima Beans	15 gm CHO
Vegetable	1 sliced tomato	5 gm CHO
Starch	1 dinner roll	15 gm CHO
Milk	3/4 cup plain yogurt	12 gm CHO
Fruit	1/2 cup sliced strawberries	15 gm CHO
Fat	1 tsp butter/marg	
Total Grams Carbohydrates		77 gm CHO

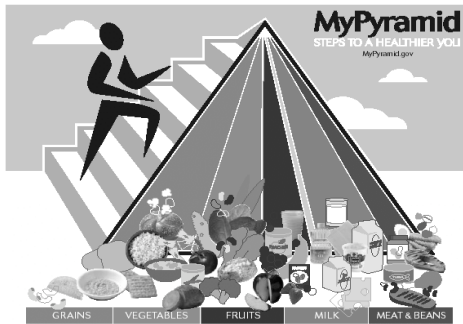
## If Recommendation Is

- 1 unit insulin/15 gm CHO  
–  $77 \div 15 = 5.1$  units insulin
- For 1 unit insulin/10 gm CHO  
–  $77 \div 10 = 7.7$  units insulin

## Food Labels Give Food Composition Information

REDUCED FAT MILK 2% Milkfat	NONFAT MILK
<b>Nutrition Facts</b> Serving Size 1 cup (236ml) Servings Per Container 1 <hr/> Amount Per Serving <b>Calories (120)</b> Calories from Fat 45 <hr/> <b>Total Fat</b> 5g 10% <b>Saturated Fat</b> 3g 15% <b>Trans Fat</b> 0g <b>Cholesterol</b> 20mg 7% <b>Sodium</b> 120mg 8% <b>Total Carbohydrate</b> 11g Dietary Fiber 0g Sugars 11g <b>Protein</b> 9g 17% Vitamin A 10% • Vitamin C 4% Calcium 30% • Iron 0% • Vitamin D 25% <small>*Percent Daily Values are based on a diet of 2,000 calories. Your daily values may be higher or lower depending on your calorie needs.</small>	<b>Nutrition Facts</b> Serving Size 1 cup (236ml) Servings Per Container 1 <hr/> Amount Per Serving <b>Calories (90)</b> Calories from Fat 0 <hr/> <b>Total Fat</b> 0g 0% <b>Saturated Fat</b> 0g 0% <b>Trans Fat</b> 0g <b>Cholesterol</b> Less than 5mg 0% <b>Sodium</b> 120mg 8% <b>Total Carbohydrate</b> 11g Dietary Fiber 0g Sugars 11g <b>Protein</b> 9g 17% Vitamin A 10% • Vitamin C 4% Calcium 30% • Iron 0% • Vitamin D 25% <small>*Percent Daily Values are based on a diet of 2,000 calories. Your daily values may be higher or lower depending on your calorie needs.</small>

## MyPyramid.gov



## To Access Food Pyramid

- Type in [www.mypyramid.gov](http://www.mypyramid.gov)
- Can click on “My Pyramid Plan” to get information on recommended calories, servings of food groups, etc.
- “Menu Planner” is interactive way to look at total intake for a day  
– Shows calories, carbohydrates, fat, etc.

## Other Diet Management Tools

- Portion control
- Limiting fast food meals
- Estimating fast food carbs



## Popcorn

20 Years Ago



5 cups  
270 Calories

Today



11 cups  
630 Calories

360  
Calorie difference!

## Limit Fast Food Meals



- Make good choices when eating out

## Typical McDonalds Meal

	Calories	Fat grams	Carb grams
Double Quarter Pounder with Cheese	740	42	40
Lg. French Fries	500	25	63
Chocolate Triple Shake (21 oz.)	770	18	134
<b>Total</b>	<b>2010</b>	<b>85</b>	<b>237</b>

## McDonalds Meal with Some Planning

	Calories	Fat grams	Carb grams
Side Salad/Low Fat Vinaigrette	60	3	8
Sm. Hamburger	250	9	31
Kiddie Cone	45	1	8
Dasini Water	0	0	0
<b>Total</b>	<b>355</b>	<b>13</b>	<b>47</b>

## Estimating Fast Food Carbs

### Fast Foods

The choices in the **Fast Foods** list are not specific fast food meals or items, but are estimates based on popular foods. You can get specific nutrition information for almost every fast food or restaurant chain. Ask the restaurant or check its website for nutrition information about your favorite fast foods.

#### Breakfast Sandwiches

Food	Serving Size	Count as
Egg, cheese, meat, English muffin	1 sandwich	2 carbohydrates + 2 medium-fat meats
Sausage biscuit sandwich	1 sandwich	2 carbohydrates + 2 high-fat meats + 3 1/2 fats

#### Main Dishes/Entrees

Food	Serving Size	Count as
Burrito (beef and beans)	1 (about 8 oz)	3 carbohydrates + 3 medium-fat meats + 3 fats
Chicken breast, breaded and fried	1 (about 5 oz)	1 carbohydrate + 4 medium-fat meats

## Importance of Specific Foods

Eating to Enhance  
Blood Glucose Control

## Are All Carbohydrates The Same?

Yes and No

## All Carbohydrates Are Broken Down To Glucose

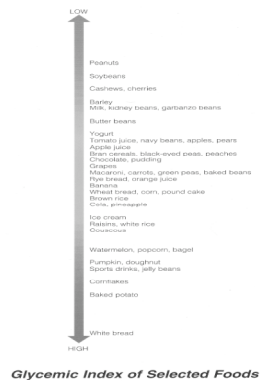
- The health and proper working of every cell in body depends to an extent on BGL
- Cells in our brain and nervous system are especially sensitive to blood glucose levels

## However

- With some foods the carbohydrates are broken down and released more quickly into the blood stream
- Generally the more processed the food and the higher it is in sugar, the more rapid the rise in BGL

## The Glycemic Response

- Some foods increase BGL and insulin concentrations higher when compared to a reference food
- Varies from person to person, even by time of day in same person
- Scale used to measure Glycemic Response is called the Glycemic Index (GI)



**To Help Maintain BGL,  
Individuals  
With Diabetes Should be  
Encouraged to Eat More  
Higher Fiber Grains**

### **Including More Fiber**

- Helps with weight loss –feeling of fullness cause one to eat less
- Keeps blood sugar level from going up so quickly
- Exercises the gut and helps maintain muscle tone
- Helps lower blood cholesterol levels

### **How Much Fiber Do We Need?**

- Recommendations are for 25-30 grams, or about one ounce daily
- At least 3 ounces a day of whole grains may help with weight management
  - Caution: When fiber is increased, fluids MUST be increased
  - If not, severe constipation or impaction can occur

### **Grains Are Divided Into Two Subgroups**

- Whole grains
  - Want to encourage intake
- Refined grains
  - Want to limit intake

### **Whole Grains**

- Examples
  - Bulgur (cracked wheat)
  - Oatmeal
  - Whole cornmeal
  - Brown rice
  - Whole-wheat flour

### **Refined Grains**

- Examples
  - Degermed cornmeal
  - White bread
  - White rice
  - White flour

**Including More Fruits & Vegetables Daily Also Promotes Better Outcomes for People With Diabetes**

### **Aim For More 'Whole' Fruits & Veggies**

- Generally, the closer to picked state, the more fiber
- Will usually cause slower rise in BGL
  - This can vary by individual
- Helps to create feeling of 'fullness' to limit caloric intake

### **Aim For More 'Whole' Fruits & Veggies**

- Food groups with lowest calories per serving
- Majority of vitamins and minerals needed by humans are present in fruits & vegetables

### **Frozen & Canned Also Good Choices**

- May have vitamins & minerals preserved better than fresh
- Can be more economical when certain produce is out of season
- Easier to chew
- Watch for how much sugar or salt is used in preserving

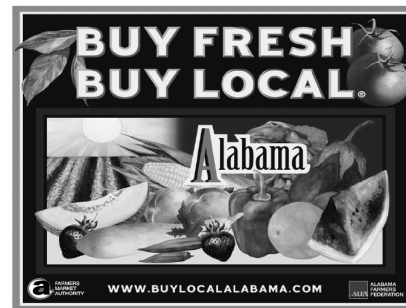
### **Fruits That Help With Coronary Artery Disease**

- Tomato Juice
  - 1 cup per day helps as a preventative to clot formation

### **Fruits That Help With Coronary Artery Disease**

- Kiwi
  - 18% reduction in platelet clumping when 2-3 per day were consumed
  - 15% reduction in blood triglycerides
  - Laxative properties

### **Shop Local Farmers' Markets**

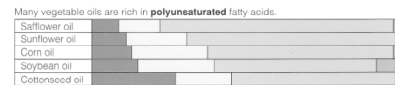
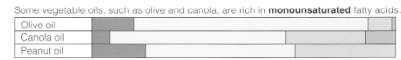
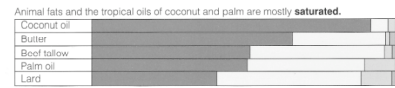




## Effects of Certain Fats on BGL



## Comparison of Dietary Fats



## Influence of Fat on BGL

- Insulin sensitivity
  - Saturated fatty acids (SFA) decrease insulin sensitivity
  - Monounsaturated fatty acids (MUFA) and Omega-6 polyunsaturated fatty acids (PUFA) appear to improve insulin sensitivity

## Influence of Fat on BGL

- Insulin sensitivity
  - Long chain of Omega-3 fatty acids don't seem to have an effect on insulin sensitivity

## More Ways Types of Fat Affect Health

- Inflammation
  - Pro-inflammatory
    - Foods high in SFA, Omega-6 fatty acids and trans-fatty acids
  - Anti-inflammatory
    - Foods high in Omega-3 fatty acids

## Fat Affects Health

- Lipid profile
  - LDL
    - Increase with SFA and trans fats
  - HDL
    - Decrease with too many PUFA and trans fats

## **Fat Affects Health**

- **Adiposity**
  - Trans fats may trigger redistribution of fat to abdominal area
  - Too much total fat gives excess calories

## **How Much & What Kind of Fats Should Be Eaten**

- **Include more monounsaturated fats**
  - Olive oil, canola oil, peanut oil, etc.
- **Reduce saturated fat**
  - Butter, lard, shortening

## **How Much & What Kind of Fats Should Be Eaten**

- **Limit trans fats to less than 1% of total calories (1g/1000 calories)**
- **For Omega 3 fatty acids**
  - Eat flaxseeds, walnuts, soybeans
  - Include 1-2 servings of fatty fish per week

## **How to Season Foods While Limiting Salt and Fats?**

## **Use Herbs & Spices to Season Foods**

- **Better yet, plant an herb garden**
- **Fresh herbs give wonderful flavor to foods**
- **Can start small with containers**
- **Encourages physical activity outdoors**

## **Questions?**

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