

Tuesday, 10:00 – 11:30, A2

## **Metabolic Syndrome: What's so big about "BIG"?**

**Patrice Conrad**

[pbconrad1@att.net](mailto:pbconrad1@att.net)

### Objectives:

1. Identify advances in clinical assessment and management of selected healthcare issues related to persons with developmental disabilities
2. Identify and emphasize attitudes that enhance the opportunities for persons with DD to achieve their optimal potential
3. Develop strategies to promote community inclusion in meeting the needs of persons with developmental disabilities.

### Notes:

**Metabolic Syndrome –  
What’s so BIG about big?**

By  
Patrice Conrad, MSN, RN, CDE  
& a little help from her friends!!

---

---

---

---

---

---

---

---

**What is Metabolic Syndrome  
anyway??**

- Abdominal obesity
- Hyperglycemia
- Dyslipidemia
- Hypertension

AKA - syndrome X, the insulin resistance syndrome, obesity dyslipidemia syndrome

---

---

---



---

---

---

---

---

 **Some folks call it  
the deadly quartet** 

- "Apple" versus "Pear" ShapeWaist Circumference:  
>40" for men, >35" for women
- Triglycerides 150 mg/dl or more
- HDL cholesterol <40 mg/dl for men and <50 mg/dl for women
- Blood Pressure 130/85 mmHg or higher
- Fasting Blood Glucose 110 mg/dl or more

• From [Patrice Conrad, RN, CDE](#), former About.com Guide  
• Updated November 04, 2008

---

---

---

---

---

---

---

---

**If I have metabolic syndrome, what health problems might develop?**

- Consistently high levels of insulin and glucose are linked to many harmful changes to the body, including:
- (1) Damage to the lining of coronary and other arteries, a key step toward the development of heart disease or stroke
- (2) Changes in the kidneys' ability to remove salt, leading to high blood pressure, heart disease and stroke

---

---

---

---

---

---

---

---

- (3) An increase in triglyceride levels, resulting in an increased risk of developing cardiovascular disease
- (4) An increased risk of blood clot formation, which can block arteries and cause heart attacks and strokes
- (5) A slowing of insulin production, which can signal the start of type 2 diabetes

---

---

---

---

---

---

---

---

**Complications of Diabetes**



---

---

---

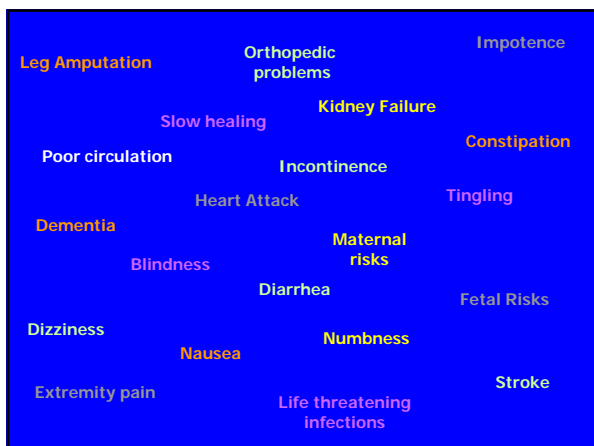
---

---

---

---

---



---

---

---

---

---

---

---

---

## Cardiovascular Complication

**Heart Disease and Stroke**

- People with diabetes are 2 to 4 times more likely to have heart disease (more than 77,000 deaths due to heart disease annually)
- About 75% of people with diabetes die from heart disease or stroke
- Heart disease death rates are also 2 to 4 times as high as adults without diabetes
- People with diabetes are 2 to 4 times more likely to suffer a stroke

---

---

---

---

---

---

---

---

## Medical Cost

24% cost increase per risk factor



D.M. Boudreau et al. August 2009, 7(4): 305-314.  
doi:10.1089/met.2008.0070

---

---

---

---

---

---

---

---

## Goals for Cardiovascular Health

- A1c below 7.0%
- Blood Pressure below 130/85 mmHg
- LDL under 100 mg/dl
- HDL under 45 mg/dl
- Triglycerides under 200 mg/dl

American Diabetes Association  
Clinical Practice Recommendations

---

---

---

---

---

---

---

---

## 2. Harmful Beliefs About Diabetes

- No big deal
  - “I feel fine, therefore I am fine”
- Hopelessness
  - “I am doomed”
- Perceived Importance
  - “I’ll start worrying about diabetes if and when something goes wrong.”

---

---

---

---

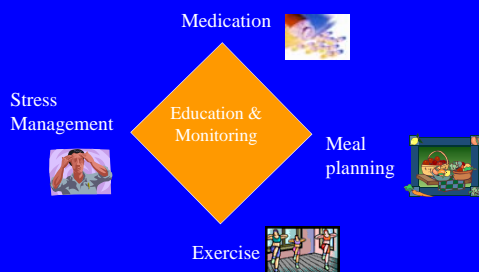
---

---

---

---

## The Treatment Plan



---

---

---

---

---

---

---

---

### To Lower CVD Risk

- Manage weight
- Increase physical activity
- Make lifestyle changes
- See MD
- Stop smoking
- pharmaceutical intervention



---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

### Nutrition: Balance of Carbohydrates, Fats, and Protein

- How can we keep good control while eating a variety of foods?
- Keeping a food diary to help glucose control
- Websites to help keep track



---

---

---

---

---

---

---

---

## What's in a label?

### Hershey's kisses

- Serving Size: 9 pieces (41.00 g)
- Total Calories 200
- Calories from Fat 100
- \* Total Fat 12 g  
18% Saturated Fat 7 g 35%
- Cholesterol 10 mg 3%
- Sodium 35 mg 1%
- Total Carbohydrate 25 g  
8%
- Dietary Fiber 1 g 4%
- Sugars 23 g
- Sugar Alcohols 0%
- Protein 3 g

### Sugar Free Hershey's kisses

- Serving Size: 5 pieces (40.00 g)
- Total Calories 160
- Calories from Fat 110
- \* Total Fat 13 g  
20% Saturated Fat 8 g 40%
- Cholesterol 10 mg 3%
- Sodium 15 mg 1%
- Total Carbohydrate 24 g 8%
- Dietary Fiber 3 g 12%
- Sugar Alcohols 0%
- Protein 1 g

---

---

---

---

---

---

---

---

---

---

## But what about . . .

- Adkins
- South Beach
- Grapefruit
- Low Fat
- Kitty litter . . .




---

---

---

---

---

---

---

---

---

---

## Making Carbs Count

- Basic CHO Counting  
-consistency and portion control
- Intermediate CHO Counting  
-interpreting blood glucose, food intake, and activity records
- Advanced CHO Counting  
-matching insulin to food intake  
individual insulin-to-CHO ratios

---

---

---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

### Exercise Therapy

- Is just as important as nutrition and medications!
- Goals: improve blood sugars; improve cardiovascular health; improve psychological well-being
- May decrease amount of or need for medications

---

---

---

---

---


---

---

---

### Low, Highs, and Exercise

- Longer and More Strenuous Exercise the More Likely the Blood Sugar Will Go Low
- Less Trained Individuals Will More Likely Go Low
- Strenuous and Anaerobic Exercise May Raise Glucose



---

---

---

---

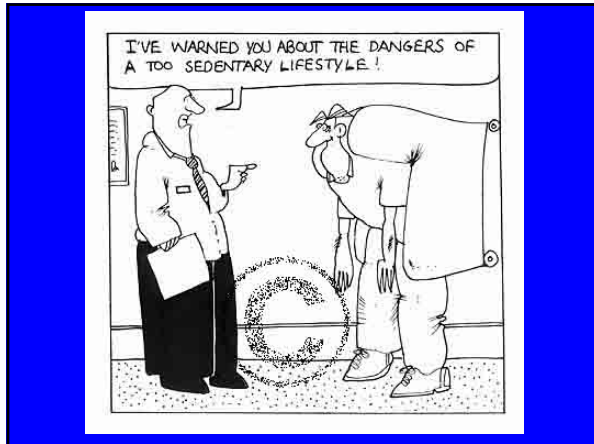
---

---

---

---





---

---

---

---

---

---

---

---

**Medications for Metabolic Syndrome**

- Aspirin.
- Medications to lower blood pressure.
- Medications to regulate cholesterol

---

---

---

---

---

---

---

---

**Medications for Diabetes**

**Sulfonylureas**

- Stimulate the pancreas to produce insulin and cause the body to respond better to the insulin it does produce.

---

---

---

---

---

---

---

---

## 2. Biguanides

- Metformin (Glucophage®)
  - Suppresses glucose production in the liver.
  - Increases the sensitivity of insulin receptors.
  - Can be used with diet and exercise or with other agents.
  - May also decrease cholesterol and triglycerides and does not promote weight gain.

---

---

---

---

---

---

---

---

## TZD

- Pioglitazone (Actos®)
  - Reduce insulin resistance by improving target cell response to insulin. Also decreases glucose output from the liver and increases glucose disposal in the muscle tissue.

---

---

---

---

---

---

---

---

## GLP1 analogs Byetta/Byduron & Victoza



- incretin mimetic and exhibits many of the same effects as human incretin hormone GLP-1.
- helps regulate glucose homeostasis through effects on multiple organs, including the pancreas, stomach, and liver.

---

---

---

---

---

---

---

---

### DPP-4 Inhibitors

- DPP-4. Blocking DPP-4 prolongs the effect of GLP-1, and hence enhances insulin secretion and the slowed emptying of the stomach.

---

---

---

---

---

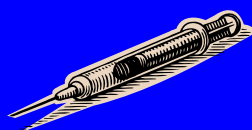
---

---

---

### Insulins

- Rapid Acting Analogs
- Basal insulins
- Pre-mixed insulin  
70/30, 75/25, 50/50



---

---

---

---

---

---

---

---

### SIMILIN

- Reduces gastric emptying
- Inhibits glucagon secretion
- Increases satiety
- Primary effect is on post-prandial hypoglycemia

---

---

---

---

---

---

---

---

### What's So Tough About Diabetes?

“Think how discouraging it is to fail at something you really wanted to do. Then consider what it must feel like to have diabetes and be failing at something you never, ever, wanted to do in the first place.”

J.W. Hoover, 1988

---

---

---

---

---

---

---

---

Any questions?



---

---

---

---

---

---

---

---