

# Diabetes update 2014

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# Diabetes mellitus

- Frequent sweet urination
- How it happens
  - Insulin versus
    - Glucagon
    - Epinephrine
    - Cortisol
    - Growth hormone

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# Diabetes causes

- Everyone has some degree of insulin deficiency
- Gradual loss of insulin over time
- Insulin resistance

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# Diabetes types

- Type 1
- Type 2
- MODY
- LADA
- Malnutrition associated diabetes

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# Diabetes beginnings

- Inheritance
- Twin studies
- Type 1 vs type 2

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# Diabetes contributors

- Obesity epidemic
- Diet change
- Decreased physical activity
- Poisons of the beta cell
  - Saturated fat
  - Amyloid

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# Diabetes risk factors

## Medications

- Steroids
- Diuretics
- Beta blockers
- Statins

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# Diabetes prevention

- Diet
- Exercise
  - Aerobic versus resistance
- Medication
  - Acarbose (Precose)
  - Glitazones: pioglitazone (Actos) and rosiglitazone (Avandia)
  - Metformin (Glucophage)

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# Diabetes treatment

- Diet
- Exercise
- Medication
- Supplements
  - Glucomannan
  - Cinnamon
  - Chromium
  - Fiber

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# Diabetes diet treatment

- There is no standardized diabetic diet
- Individual diets are designed for individual patients
- Attention to fat content, protein content, and carbohydrates

# Diabetes diet treatment

- An individualized dietary recommendation should help supply adequate vitamins and minerals, essential amino acids and essential fatty acids, and help regulate glucose control
- Dietary recommendations should include recommendations for weight loss if appropriate

# Diabetic diet: carbohydrates

- Carbohydrate = starch = sugar
- The only carbohydrates not turned directly into sugars are fiber (indigestible) and sugar alcohols (certain artificial sweeteners) – sorbitol, mannitol, lactulose, sucralose
- Fats and proteins also affect blood glucose levels, but not as much or as fast as carbohydrates

# Diabetes – carb counting

- Carbs are counted in convenient units (exchanges) of approximately 15 grams
- What foods are carbs?
  - White starches: pasta, rice, potatoes
  - Everything made from any type of flour
  - Fruits and fruit juices
  - Starchy veggies: white/brown beans, corn, peas
  - Milk
  - Sweet foods

# Diabetes diet don'ts

- Do us all a favor and stop drinking sugared sodas, sweet tea, and large amounts of fruit juice
- Avoid more than modest amounts of saturated fats
- Don't eat in front of the TV
- Don't eat in the car

# Diabetes and weight loss

- DIET
- Exercise
- Medications
- Surgery

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# Diabetes control

- What is hemoglobin A1c (HbA1c or just A1c)
- What is the target A1c
- What is the benefit of a lower A1c
- A1c 7% is glucose average 150
- Normal A1c is less than 6%
- Each 1% increase in A1c increases risk of diabetic complications by about HALF
- A1c of 10% means about ten times the risk of serious complications



# Diabetes glucose targets

- Normal glucose fasting is 70-100
- Excellent glucose control for diabetes is <110 before meals, <140 two hours after meals
- Gestational diabetes has stricter fasting and after meal goals

# Diabetes: risks of treatment

- HYPOGLYCEMIA

- Problem for both type 1 ( everyone) and for at least half of patients with type 2 diabetes
- Mismatch between insulin need and insulin supply
- Specific medications which raise risk are insulin and sulfonylureas: glipizide (Glucotrol), glimepiride (Amaryl), glyburide (Micronase or Diabeta), chlorpropamide (Diabinese), tolbutamide (Tolinase)
- Repaglinide (Prandin) and nateglinide (Starlix) also have some hypoglycemic risk

# Diabetes: risks of treatment

- Hypoglycemia
  - Glucose targets for treatment may need to be revised upwards for patients at high risk for severe hypoglycemia
- Weight gain
  - Associated with several medications, the most at fault are insulins and stimulators of insulin secretion (see last slide), and glitazones
  - More strict glucose control in general is associated with weight gain

# Diabetes reason to treat

- Complications
  - Retinopathy : leaking retinal vessels, bleeding retinas, retinal swelling, all potentially leading to blindness
  - Nephropathy: progressive kidney damage leading to high blood pressure, higher risk of cardiovascular disease, and kidney failure

# Diabetes reason to treat

- Neuropathy
- May be loss of sensation only, or painful – aching, burning, electric shocks, ice pick pain, cold, extreme sensitivity to touch (allodynia)
- Other types of neuropathy include autonomic, mononeuritis, diabetic amyotrophy

# Diabetes reasons to treat

- Increased risk of cardiovascular disease (heart attack, stroke, peripheral vascular disease)
- Combination treatment of cardiovascular risk factors (high blood pressure, high cholesterol, and diabetes) has been quite effective in reducing risk

# Glucose testing

- Most diabetics should do at least some home glucose testing
- Testing at a variety of times per day is highly desirable
- You should be able to give your doctor an estimate of your glucose average before each meal and at bedtime, and an estimate of how high your glucose rises after meals

# Glucose testing

- Patients with type 1 diabetes and type 2 diabetes with a complicated insulin treatment program should test multiple times per day
- All patients should bring written records of glucose values (log book) AND their glucose meter to EVERY office visit
- Patients with type 1 diabetes should bring records of insulin administered and a food log



# Diabetes controversies

- Medication risks
  - Bladder cancer
  - Pancreatitis
  - Pancreatic cancer
  - Thyroid cancer
  - Congestive heart failure
  - Kidney damage

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# Diabetes – other topics

- Pancreas transplant
  - Islet cell transplant
  - Bariatric surgery
  - Insulin pump therapy
  - Continuous glucose sensing
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- THANK YOU FOR YOUR INTEREST
  - BEST WISHES FOR YOUR GOOD HEALTH

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