

Diabetes

Supplemental Slides

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Role of Insulin in the Body

- Insulin is produced by pancreatic beta cells
- When blood glucose rises the pancreas releases insulin

Actions of Insulin:

- Decreased glucose output from liver
- Stimulates liver to take up glucose and store it as glycogen
- Increased glucose uptake by cells
- Decreased breakdown of fat

Pathophysiology of Diabetes

- **Diabetes mellitus (DM)**
 - High blood glucose
 - Insulin not produced/working
- **Type 1 DM**
 - Complete lack of insulin
 - Autoimmune destruction of pancreatic beta cells, idiopathic
 - Requires lifelong insulin therapy
- **Type 2 DM**
 - Insulin not working
 - Reduced insulin production
 - Reduced insulin sensitivity in tissues
 - Progressive
 - May or may not require insulin therapy

Common Lab Values in Diabetes

- Hemoglobin A1C:
 - High glucose in your blood causes hemoglobin in red blood cells to become glycated
 - We can measure the levels of glycated red blood cells
 - This gives us information about the average glucose control over the past 2-3 months, tells us how our diabetes treatment plan is working
- Fasting Plasma Glucose:
 - Blood glucose levels after a period (at least 8 hours) without eating
 - More definitive than a random blood glucose test
- 2-Hour Plasma Glucose:
 - AKA oral glucose tolerance test (OGTT)
 - A fasting glucose level is taken, then the patient is given 75g of glucose dissolved in water
 - Blood glucose is measured at 1 and 2 hours after the glucose dose
 - This gives us information about how fast the patient clears glucose

<http://www.diabetes.org/diabetes-basics/diagnosis/>

Diagnosis and Treatment Goals

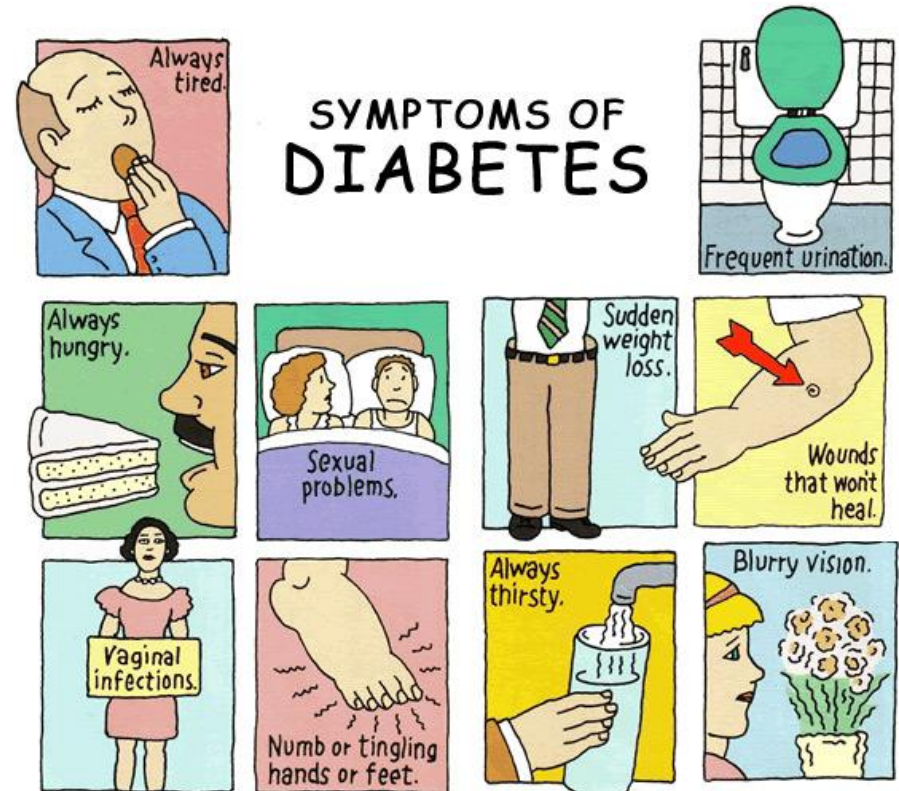
Lab Value/ Symptom	Diabetes	Goal
Hemoglobin A1C	$\geq 6.5\%$	$< 7\%$
Fasting Plasma Glucose	≥ 126 mg/dL	70-130 mg/dL
2-hour Plasma Glucose	≥ 200 mg/dL	< 180 mg/dL

Note: diabetes treatment goals should be individualized to each patient

Symptoms of Diabetes

- Frequent Urination (polyuria)
- Frequent thirsty (polydipsia)
- Frequent hunger (polyphagia)
- Fatigue
- Blurry vision
- Cuts/bruises that are slow to heal
- Weight loss (type 1)
- Tingling, pain, or numbness in the hands/feet (type 2)

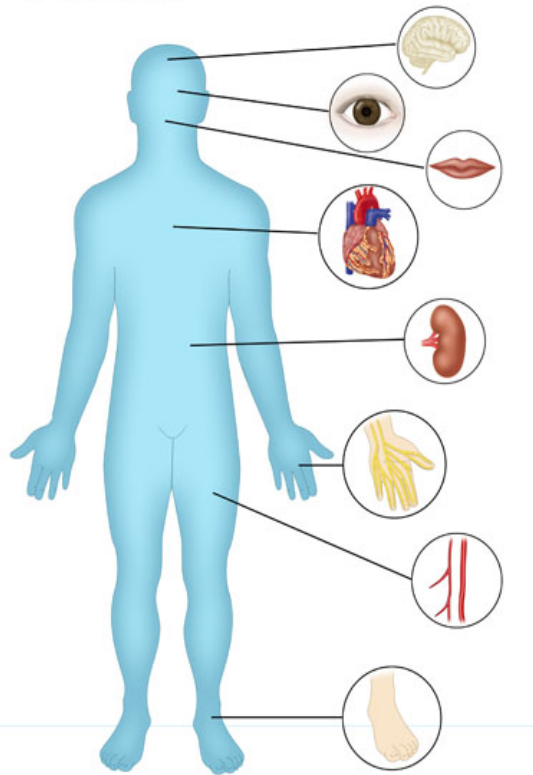
<http://www.diabetes.org/diabetes-basics/symptoms/>



<http://qsota.com/wp-content/uploads/2015/12/Symptoms-of-diabetes.jpg>

Complications from Diabetes

Diabetes Can Affect Various Parts of Your Body



Acute Complications:

- Diabetic keto acidosis
- Hypoglycemia
- Hyperglycemic hyperosmolar state (HHS)

These complications require immediate medical attention

Long-Term Complications:

- Increased risk of infection
- Dementia
- Microvascular
 - Retinopathy
 - Nephropathy
 - Neuropathy
- Macrovascular
 - Heart disease
 - Stroke