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## Information for Behavioral Health Providers in Primary Care

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# Diabetes Mellitus

### Diabetes Mellitus

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- Defined by too much glucose (sugar) in the blood
- Normal: fasting glucose levels between 70 – 100 mg/dL
- Pre-diabetes: fasting levels between 100 – 126 mg/dL
- Diabetes: typically diagnosed when fasting levels  $\geq$  126 mg/dL

#### **Type I Diabetes (formerly called juvenile or insulin dependent diabetes)**

- Occurs when the body makes too little or no insulin
- All type I diabetics need insulin injections
- 10% of diabetics (> 9million in US) have type I diabetes

#### **Type II Diabetes (formerly called adult onset or non-insulin dependent diabetes)**

- Occurs when the body's cells become resistant to insulin or when pancreas doesn't make enough insulin or when the liver produces too much glucose
- 90% of diabetics have type II
- Lifestyle factors are a major contributor
- Overweight/sedentary lifestyle significantly increase risk of developing type II diabetes

### Symptoms of Diabetes

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- Urinating more often, especially at night
- Increased thirst, excess hunger or fatigue
- Slow healing sores or wounds
- Excess weight loss
- Blurred vision
- Dry itchy skin
- Loss of feeling in feet or tingling in feet

### Complications from Diabetes

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- Increased risk of heart disease and stroke due to poor circulation
- Kidney disease (nephropathy) from excess work by the kidneys to filter excess sugar out of the blood. After many years, the filtering mechanism is damaged allowing excess secretion of protein into the urine.
- Eye problems and blindness

## Diabetes Mellitus (Continued)

- Neuropathy (new-ROP-uh-thee) or nerve damage
- Foot complications from nerve damage or from poor blood flow
- Skin complications
- Gastroparesis occurs when stomach takes too long to empty its contents caused by damaged stomach nerves
- Gum disease and tooth loss
- Depression

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## Terms to Know

### **Blood Glucose**

- Glucose is sugar in the blood
- The body makes glucose from food. The liver also makes glucose.

### **Insulin**

- Insulin is a hormone made by the pancreas.
- Insulin helps get the glucose into the body's cells.
- If the body doesn't make enough insulin or if the insulin works improperly, glucose doesn't get into the body's cells. When insulin doesn't get into the body's cells, the level of glucose in the blood gets too high. This is damaging to the body.

### **Hyperglycemia**

- An abnormally large amount of glucose (sugar) in the blood
- Caused by eating excess food or sugary liquids, not exercising, not enough diabetes meds
- Patient usually unaware of symptoms

### **Hypoglycemia**

- An abnormally small (< 70 mg/dl) amount of glucose (sugar) in the blood
- Symptoms include weakness, confusion, shakiness, headache, sweating, anxiety, irritability, hunger, rapid heartbeat, lightheadedness

### **Hemoglobin A1c (HbA1c or A1c)**

- HbA1c is a measure of how much glucose is attached to the red blood cells. Once glucose attaches to a red blood cell it remains there for the life of the cell, about 3 months. Therefore, A1c is a good indicator of average blood sugar levels over the previous 3 months.
- An A1c  $\leq$  7% is the goal for most people with diabetes
- An A1c  $>$  8% indicates a need for better diabetic control

### **Ketoacidosis** (key-toe-ass-i-DOE-sis)

- When very high blood sugars cause the body to produce ketones, a dangerous product of disordered metabolism that poison the body.
- Ketones can also be detected in the urine using a simple test strip
- Many experts advise testing urine for ketones when blood glucose is  $>$  240 mg/dl

## Medication Classes

### Oral

- **Sulfonylureas:** stimulate pancreas to release more insulin
- **Meglitinides:** stimulate pancreas to release more insulin, but more rapidly after eating than sulfonylureas
- **Biguanides:** keep liver from releasing too much glucose, increase muscle's sensitivity to insulin and improve some levels of blood fat
- **Alpha-glucosidase inhibitors:** slow the digestion of complex carbohydrates
- **Thiazolidinediones:** increase muscle's sensitivity to insulin and improve some levels of blood fat

### Injection

- **Insulin:** replaces insulin made in pancreas at meals. Insulin can't be taken orally because it is a protein which the GI system would break down, preventing the insulin from entering blood stream. Thus, it must be injected.

### Glucagon

- an emergency medication injected to raise the blood sugar level in case of severe insulin reaction or severe hypoglycemic episode resulting in unconsciousness
- Glucagon comes in a kit and needs to be mixed prior to injection