

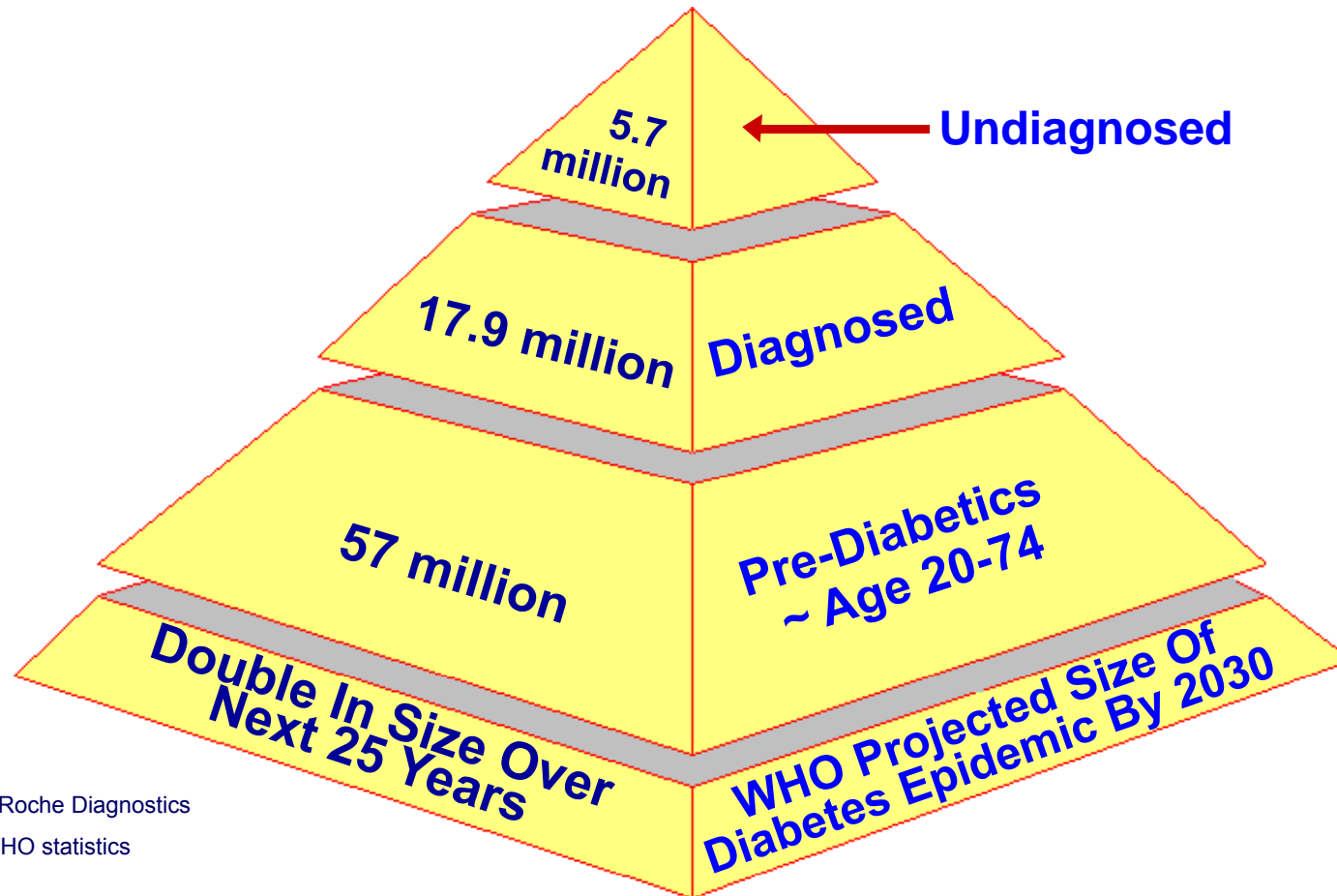


Diabetes 101

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Prevalence of Diabetes in the U.S.



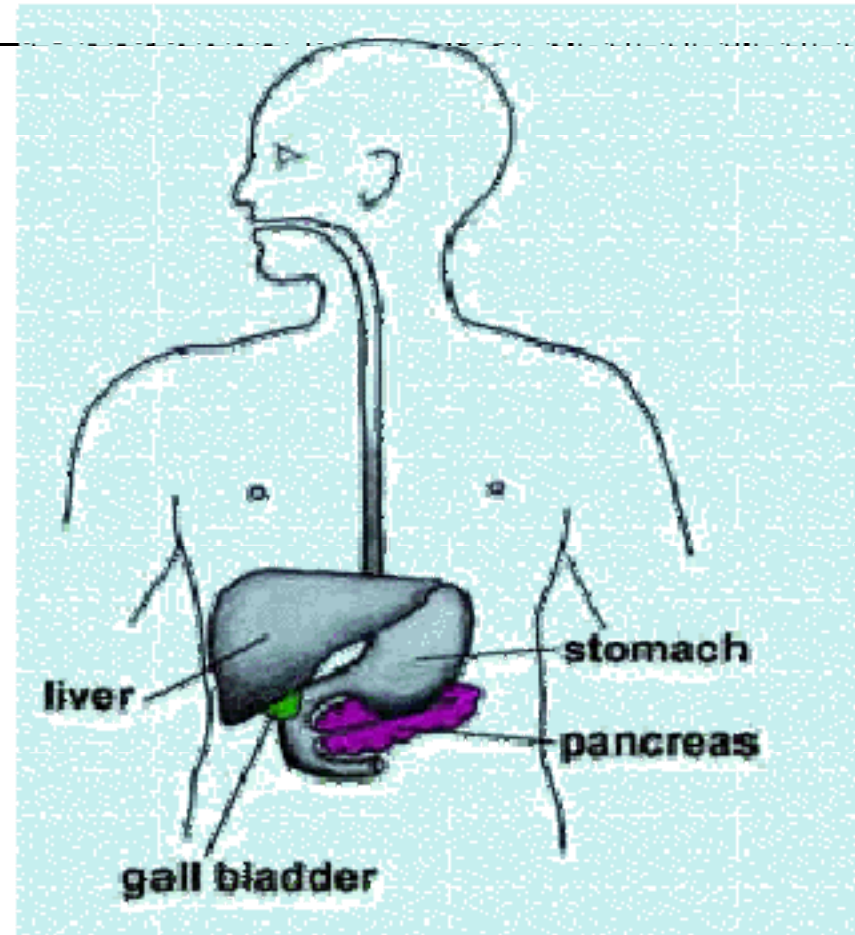
Slide provided by Roche Diagnostics

Sources: ADA , WHO statistics

Pancreas: How Does It Work?

-The main job of the pancreas is to make insulin. When food is eaten, it is broken down into glucose. This causes glucose levels in the blood to rise. When glucose levels increase in the blood, insulin is released from the pancreas into the blood. Insulin removes the glucose from the blood.

-Insulin works like a key to let the glucose into the cells of your body. Glucose is needed for the cells to do important work.

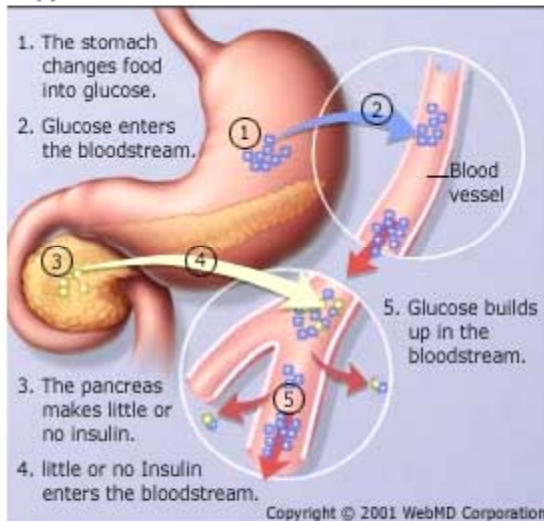


<http://ourworld.compuserve.com/homepages/LIMIT/pancreas.htm>

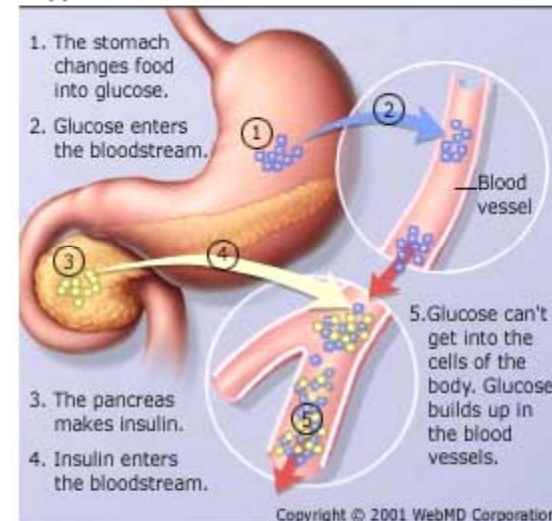
Pancreas and Diabetes

Diabetes occurs when the pancreas either does not make insulin or there is not enough insulin activity in the body. When a person has diabetes, glucose remains in the blood instead of going into the cells of the body. With Type 1 diabetes, this occurs because the pancreas produces little or no insulin. With Type 2 diabetes, the pancreas produces insulin, but the insulin is not effective and does not remove the glucose from the blood.

Type 1 Diabetes



Type 2 Diabetes





Symptoms of Diabetes

- Not everyone experiences symptoms
- Going to the bathroom/urinating often
- Thirst
- Hunger
- Blurred Vision
- Itching
- Confusion

Symptoms of Hyperglycemia

Extreme Thirst



Frequent Urination



Dry Skin



Hunger



Blurred Vision



Drowsiness



Decreased Healing





Types of Diabetes

- Type 1
 - Typically diagnosed before age 35
 - Rapid Weight Loss
 - Tiredness and fatigue
 - Presence of ketones in the urine
 - 5-10% of people with diabetes have Type 1



Types of Diabetes

- Type 2
 - Typically diagnosed after age 40
 - Usually overweight
 - Symptoms may not be present
 - Tingling or numbness in the hands or feet
 - Frequent skin, mouth, or bladder infections
 - 90-95% of people with diabetes have Type 2



Types of Diabetes

- Gestational Diabetes

- Occurs during pregnancy

- Pre-Diabetes

- Glucose levels are higher than normal but not high enough to be diagnosed with diabetes



Diagnosis of Diabetes

| | Fasting Blood Glucose | 2 hours Postprandial Blood Glucose |
|--------------------|--------------------------------------|---|
| Normal | 70 to 100 | <140 |
| Prediabetes | >100 to 125 | 140 to 199 |
| Diabetes | ≥126 | ≥200 |



How Do I Get Diabetes?

- You can't catch diabetes or get it from eating too many sweets
- Heredity plays a part with both Type 1 and Type 2
- With Type 2, the main cause is being overweight
- Some ethnic groups are at higher risks for developing Type 2 diabetes (i.e. African Americans, Native Americans, and Hispanic Americans)
- Type 1 diabetes may be caused from an immune response



Blood Glucose Monitoring

- Monitoring gives you important information so you know how well your meal plan, exercise, and medication is balanced
- Tells you if you are reaching your blood glucose goals
- Goals:

| | Normal | ADA Goal |
|------------------------------------|---------------|-----------------|
| Before meals (mg/dL) | 70 to 100 | 90 to 130 |
| At bedtime (mg/dL) | Less than 120 | 100 to 140 |
| Peak after meals (mg/dL) | 90 to 140 | Less than 180 |



Treatment

- Type 1
 - Always includes insulin
 - Insulin injections via syringe or pen
 - Insulin pump
 - Watching what you eat
 - Exercise



Insulin

- Insulin products differ by their onset of action (rapid, short, intermediate, and long), peak of action, and duration of action. Using insulin with different onsets and durations of action allows for tighter blood glucose control. “Tight” or “intensive” control means that your blood glucose levels are at or near normal, just as they would be if you did not have diabetes.



Insulin

- Common Insulin Products

- Rapid-acting insulin

- Insulin Aspart Solution – *NovoLog®*
- Insulin Lispro Solution – *Humalog®*
- Insulin Glulisine Injection – *Apidra™*

- Short-acting insulin

- Regular Insulin Injection – *Humulin® R* or *Novolin® R*

- Intermediate-acting insulin

- NPH (Isophane Insulin Suspension) – *Humulin® N* or *Novolin® N*

- Long-acting insulin

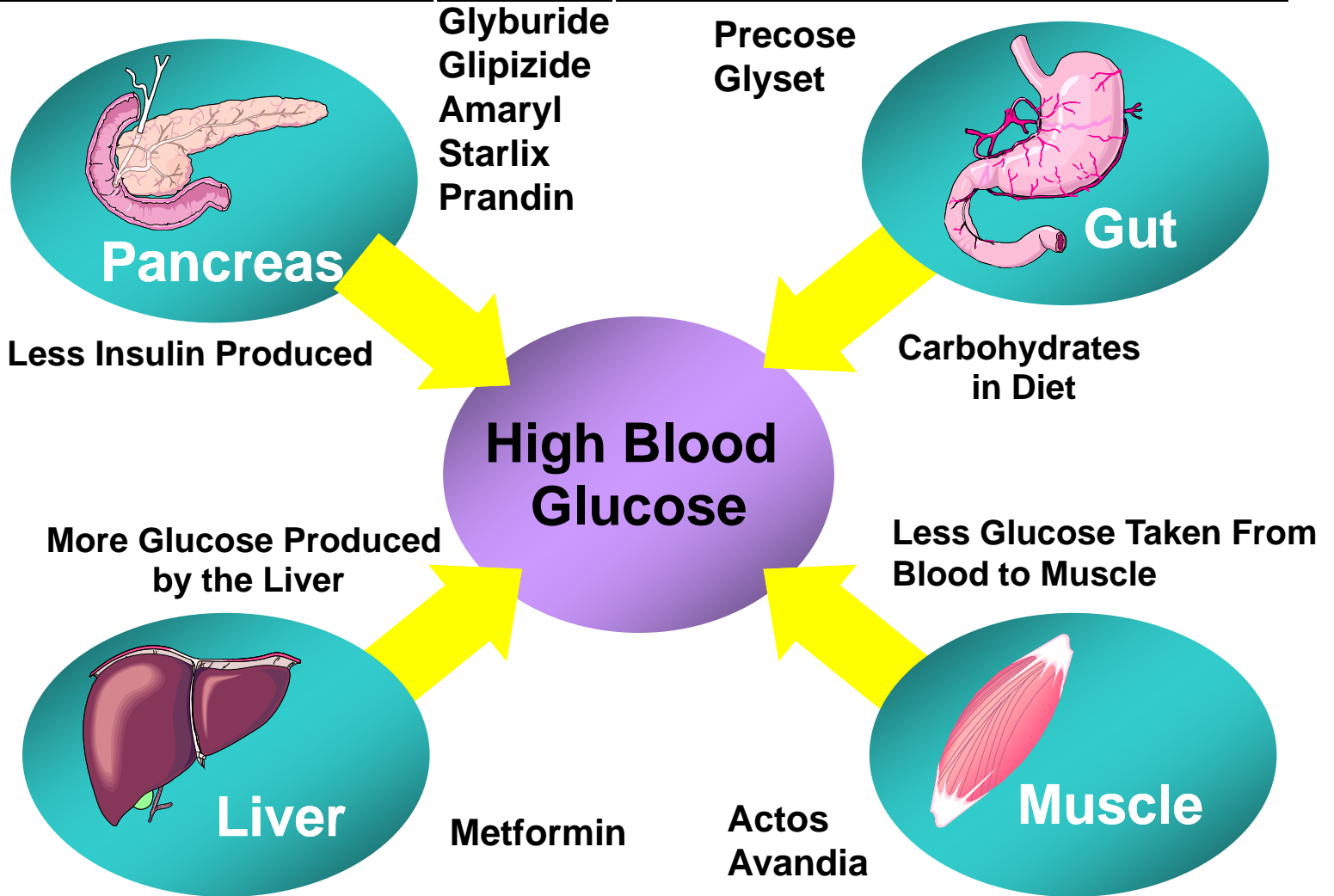
- Insulin Glargine Solution – *Lantus®*
- Insulin Detemir Solution - *Levemir®*



Treatment

- Type 2
 - Not enough insulin OR Insulin is not working properly
 - Weight Loss
 - This is the first option usually tried through eating healthy and exercising
 - Oral Medication
 - Oral Medications are usually added if weight loss alone does not control blood sugars
 - Insulin Injections
 - If the above two options are not controlling blood glucose, insulin injections are then added

Where Oral Medications Work





Short Term Complications

- Hypoglycemia

- When blood glucose level drops under 70mg/dL
- Has a fast onset and needs to be treated quickly

Symptoms of Hypoglycemia

Shaking



Fast Heartbeat



Sweating



Dizziness



Anxious



Hunger



Impaired Vision



Weakness



Headache



Irritable



These materials were adapted from http://www.keepingwellwithdiabetes.com/ed_comp_hypergly.jsp.



Treatment of Hypoglycemia

- Test blood glucose
- If blood glucose is between 50-70mg/dL, eat 15 grams of carbohydrates
- If blood glucose is less than 50mg/dL, eat 30 grams of carbohydrates
- Wait 10 minutes and then retest blood glucose
- Eat snack if blood glucose level is still below 70mg/dL
- IF PERSON IS UNCONSCIOUS, GLUCAGON MAY BE NECESSARY OR CALL 911



Long Term Complications

- Heart attack
- Stroke
- Impaired vision and blindness (retinopathy)
- Decreased circulation (peripheral vascular disease)
- Foot problems and amputations
- Nerve pain (neuropathy)
- Kidney disease (nephropathy)
- Frequent infections
- Sexual problems (impotence)
- Coronary heart disease
- High blood pressure
- Constipation or diarrhea
- Stomach bloating and nausea (gastroparesis)



Preventing Long Term Complications

- Keep your blood glucose at goal
- Quit smoking
- Keep your blood pressure at goal
- Keep your cholesterol at goal
- Eat a nutritious, low-fat diet
- Lose excess weight
- Be active
- Minimize stress
- Treat infections immediately
- Take a daily aspirin (if directed to do so)
- Have regular check-ups
- Take your medications as directed
- Limit alcohol intake



Summary

- There are four main types of diabetes: Type 1, Type 2, Gestational, and Prediabetes
- Blood glucose management is essential with all types
- Managing diabetes requires a balance between exercise, nutrition, and medication
- It is important to keep blood glucose levels close to target in order to prevent short and long term complications

Questions???

