

MODULE

2

UNDERSTANDING DIABETES



I. WHAT IS DIABETES?

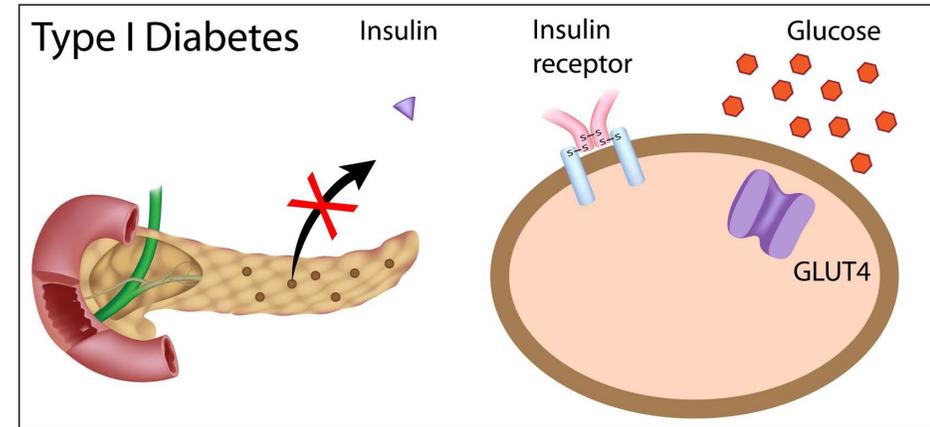
- A. Diabetes is a metabolic disorder.
- B. Diabetes is a chronic disease manifested by a persistent increase in blood sugar levels.
- C. We get glucose from the foods we eat.
- D. Glucose is the sugar in the blood. It is the main source of energy for the body.
- E. Circulatory system carries glucose to every cell in the body.
- F. For glucose to enter the cells, insulin should be present.
- G. With diabetes the body does not produce or use insulin effectively or in sufficient amounts.
- H. Insulin is produced by the pancreas. It helps the body to obtain energy from glucose.

II. HOW MANY TYPES OF DIABETES?

1. Type 1 Diabetes
2. Type 2 Diabetes
3. Gestational Diabetes
4. Others

A. Type 1 Diabetes

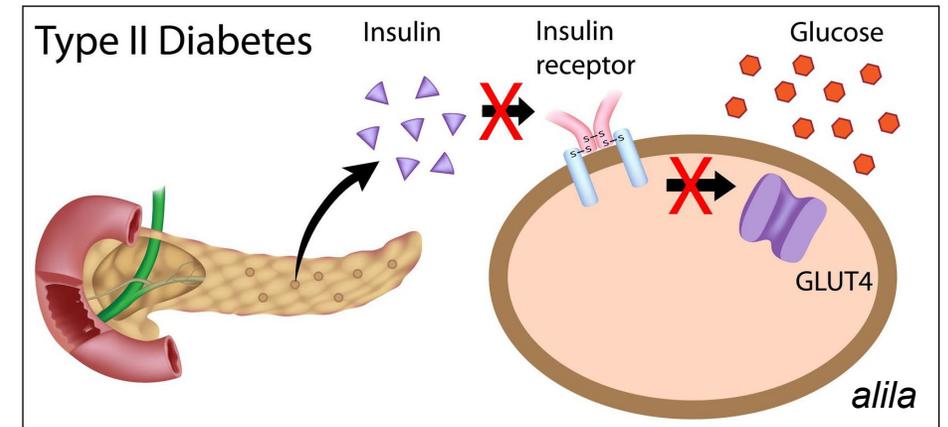
1. Makes up about 5% of all cases of diabetes.
2. The pancreas fails to produce insulin.
3. Damage to beta cells of the pancreas caused by an immune reaction.
4. Usually found among children or adolescents but can happen at any age.
5. Genes may play a protective role.



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B. Type 2 Diabetes

1. Makes up almost 95% of all cases of diabetes.
2. Usually appears after age 40.
3. Currently increasing among children and adolescents.
4. African Americans, Latinos, Native Americans, some Asian Americans and Pacific Islanders have higher risk of diabetes than Non-Hispanic Whites.
5. Overweight and obesity are main risk factors.
6. Pancreas produces insulin but cells do not use it well, so sugar cannot enter cells.
7. This is called **insulin resistance**.
8. Over time, the pancreas produces less insulin.



C. Gestational Diabetes

1. Up to 18% of pregnant women are diagnosed with gestational diabetes.
2. More frequent among African Americans, Latinas, Native Americans, and women with family history of diabetes.
3. Starts during pregnancy and terminates at the end of the pregnancy.
4. Obesity increases risk for gestational diabetes.
5. Likelihood of disease increases with age.
6. 35 to 60% chance of developing type 2 diabetes in 10-20 yrs.
7. Complications during pregnancy:
 - a. Large newborns (> 9 pounds)
 - b. Fetal death
 - c. Increased blood pressure (pre-eclampsia)



II. WHAT CAUSES DIABETES?

While the cause of diabetes is **not known**, various factors predispose to diabetes:

- A. Genetic factors
- B. Excess weight
- C. Sedentary lifestyle

III. SMOKING AND INSULIN RESISTANCE

- A. Smoking acutely impairs insulin action and leads to insulin resistance (Intern Med, 1993).
- B. Smoking is associated with larger upper body fat distribution (insulin resistance) (Diabetes Care 1999).
- C. In chronic smokers, the higher the number of cigarettes smoked, the higher the degree of insulin resistance (Diabetes Spectrum 2005).

IV. DIABETES SIGNS AND SYMPTOMS

A. Symptoms appear when levels of glucose are either very high or very low.

B. Many persons with diabetes and all those with pre-diabetes do not have symptoms.

C. Most common symptoms are:



Constant hunger



Excessive thirst



Frequent urination



Blurred vision



Weight loss



Fatigue or lack of energy



Tingling and itching



Wounds that heal slowly

V. DIAGNOSIS

A. Who Should Be Tested for Diabetes?

1. 45 or older
2. Overweight (BMI > 25 kg/m²) and have additional risk factors
3. Physical inactivity
4. Family history of diabetes (first degree)
5. Ethnic minorities (test every 3 years)
6. Women with history of gestational diabetes
7. High blood pressure (\geq 140/90) or on therapy for hypertension
8. History of cardiovascular disease
9. Cholesterol disease: \downarrow HDL < 35 mg/dl, or triglycerides >250 mg/dl
10. Pre-diabetes on previous testing (test yearly)

11. Women with polycystic ovarian syndrome

12. Other conditions such as acanthosis nigricans, severe obesity, etc.

B. Testing Best Practices

1. Community screenings
2. Always do risk assessment first
3. Should be part of a group of tests
 - a. Blood pressure
 - b. Cholesterol
 - c. BMI
4. Not a substitute for routine preventive care/screening

C. Testing: Criteria for Diabetes Diagnosis

	NORMAL	PRE-DIABETES	DIABETES
FASTING BLOOD GLUCOSE TEST (FBG) *	70 – 99 mg/dL	100 – 125 mg/dL	≥126 mg/dL
GLUCOSE TOLERANCE TEST (OGTT) **	< 140 mg/dL	140 – 199 mg/dL	≥200 mg/dL
A1C *	< 5.7%	5.7 – 6.4%	≥6.5%

* FBG blood test is done after 8 hours of fasting. FBG and A1C should be done twice, in different days.

** OGTT: ingest sugar, then blood tests are taken after 2 hours.



note

The diagnosis must be done by a physician.

This concludes Module 2: Understanding Diabetes. For more information on this topic, please see the curriculum.



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