

Halebee · Diabetes Prevention Program

Module 2

Understanding Diabetes

Types, Metabolism, Complications & Emergencies

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What You'll Learn in This Module

- The difference between prediabetes, Type 1, Type 2, and gestational diabetes
- How normal glucose metabolism works — and how diabetes disrupts it
- Common complications and comorbidities of diabetes
- Signs and symptoms of hypoglycemia and hyperglycemia
- How to recognize and respond to diabetic emergencies (DKA, HHS)
- How to build a sick day management plan



The 4 Types of Diabetes

Not all diabetes is the same

4 Main Types of Diabetes

PREDIABETES

Blood sugar higher than normal but not yet diabetic range. A1c 5.7–6.4%. Fully reversible.

TYPE 1 DIABETES

Autoimmune disease. Pancreas produces no insulin. Requires insulin therapy. Often rapid onset.

TYPE 2 DIABETES (T2DM)

Progressive insulin resistance + deficiency. Develops over years. Most common type.

GESTATIONAL DIABETES (GDM)

During pregnancy. Blood sugar returns to normal after birth — but raises future T2DM risk 35–60%.

How Your Body Manages Glucose

Metabolism 101

Normal Glucose Metabolism

- Glucose = the body's primary energy source
- The pancreas, liver, and gut work together to maintain glucose balance (homeostasis)
- Carbohydrates → glucose (fastest BG impact)
- Proteins → no direct BG impact
- Fats → no direct BG impact; stored as triglycerides
- Insulin (beta cells) lowers BG · Glucagon (alpha cells) raises BG



Glucose Homeostasis: The Balance System

BLOOD SUGAR TOO HIGH

- Pancreas beta cells release insulin
- Insulin moves glucose out of blood into cells
- Blood glucose drops back to range
- Never goes below ~60 mg/dL in a healthy body

BLOOD SUGAR TOO LOW

- Pancreas alpha cells release glucagon
- Glucagon signals the liver to release stored glucose
- Blood glucose rises back to range
- Never exceeds ~140 mg/dL in a healthy body

Diagnosis & Treatment

What to do once you know

Treating Prediabetes: Return to Homeostasis

- Goal: return blood glucose to normal range
- Step 1: Healthy diet — reduce fast carbs, increase fiber and protein
- Step 2: Physical activity — at least 150 min/week of moderate exercise
- Step 3: Lifestyle change education (DPP)
- Optional: Metformin may be added by your doctor
- Framework: AADE7 Self-Care Behaviors guides the approach



Treating Type 2 Diabetes

- Initial treatment: same as prediabetes (diet, activity, education)
- Long-term: manage A1c, blood pressure, and cholesterol
- Add a second oral medication if lifestyle changes aren't enough
- Progress to long-acting insulin if needed
- As T2DM advances, may require intensified insulin therapy
- All within the AADE7 framework — self-care is always central





Complications & Comorbidities

What chronic high glucose does to the body

Common Diabetes Complications

HEART & STROKE

Cardiovascular disease is the #1 cause of death in people with diabetes

KIDNEY (NEPHROPATHY)

Chronic high glucose damages kidney filtering units over time

EYES (RETINOPATHY)

Leading cause of blindness in working-age adults

NERVES (NEUROPATHY)

Numbness, tingling, and pain — especially in feet and hands

DKA & HHS

Life-threatening acute emergencies requiring immediate treatment

DSMES ROLE

Education reduces complication risk significantly — you are your own best defense

Recognizing & Treating Hypoglycemia

Low blood sugar: below 70 mg/dL

Hypoglycemia: Symptoms & Treatment

CLASSIC SYMPTOMS

- Shaky / trembling
- Sweaty
- Hungry
- Irritable or anxious
- Dizzy or lightheaded
- Fast heartbeat
- Headache

THE RULE OF 15

- Take 15g of fast-acting carbs
- → 4 oz juice or regular soda
- → 3–4 glucose tablets
- → 8 oz milk or 6–7 Lifesavers
- Wait 15 minutes
- Retest. Repeat if still below 70.
- Follow with a full meal or snack

Hyperglycemic Emergencies

DKA — DIABETIC KETOACIDOSIS

Mainly Type 1. Glucose + ketones + blood acid = DKA.
Causes: lack of insulin, illness, or emotional stress.
Emergency: hospitalization required.

HHS — HYPEROSMOLAR STATE

Mainly Type 2. Severe hyperglycemia, NO ketones, extreme dehydration, lethargy. 10–20% mortality rate.
Mostly older adults.

SICK DAY RULE

Check BG every 2–4 hours. Drink fluids. Keep records. Call provider if BGL >300, fever >100°F for 24h, vomiting >4h, or severe symptoms.

SICK DAY TOOLKIT

Glucose meter + strips, ketone strips, glucose tablets/gel, thermometer, provider phone numbers, written log pad.

✦ POP QUIZ

Which type of diabetes is an autoimmune disease where the body attacks itself?

A. Prediabetes

B. Type 1 Diabetes

C. Type 2 Diabetes

D. Gestational Diabetes

Type 1 diabetes is an autoimmune disease. The immune system destroys beta cells in the pancreas, stopping insulin production.

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✓ Correct

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✦ POP QUIZ

True or False? Type 2 Diabetes is not a progressive disease.

A. True

B. False

C.

D.

False. T2DM is a progressive, ongoing disease that develops over years and typically worsens without active management.

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True or False? Type 2 Diabetes is not a progressive disease.

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B. False

✓ Correct

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False. T2DM is a progressive, ongoing disease that develops over years and typically worsens without active management.

✦ POP QUIZ

CW has a blood glucose of 65 mg/dL. What should he do?

A. Nothing, there is no problem

B. Take 15g of carbohydrate and wait

C. Check his blood glucose again in 15 minutes only

D. Take 15g of carbs, wait 15 minutes, then recheck his blood glucose

The Rule of 15: treat with 15g fast carbs → wait 15 min → recheck. Always confirm recovery before resuming activity.

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Which is NOT a symptom of Hyperglycemic Hyperosmolar State (HHS)?

A. Hyperglycemic emergency

B. High ketone levels

C. Severe dehydration

D. Lethargy

HHS does NOT involve high ketones — that's what distinguishes it from DKA. HHS features extreme dehydration and altered consciousness.

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KEY TAKEAWAYS

What You've Learned in Module 2

- 1** The 4 types of diabetes differ in cause, onset, and treatment
- 2** Glucose homeostasis relies on insulin and glucagon working in balance
- 3** Hyperglycemia is the root cause of all major diabetes complications
- 4** The Rule of 15 is your first response to any low blood sugar episode
- 5** DKA and HHS are emergencies — know the symptoms and when to call for help