NUTRITION · ENDOCRINE · DIABETES CARE

High vs. Low Carbohydrate Foods

Master carb identification for diabetes management, hypoglycemia treatment, the 15–15 rule, carb counting, and the diabetic plate method — every NCLEX nutrition question comes back to recognizing what's a carb.

Diabetes | Therapeutic Diet | Insulin Coverage | Hypoglycemia | Patient Teaching

1 Definition & Overview

WHAT CARBS ARE & WHY NURSES MUST KNOW THEM

What is a Carb?

The body's preferred energy source. Broken down into **glucose**, which raises blood sugar. 1 carb serving = **15 grams**.

Why It Matters

Carbs raise blood glucose more than protein or fat. **Diabetics** count carbs to match insulin doses. Hypoglycemia is treated with **fast carbs**.

The 3 Categories

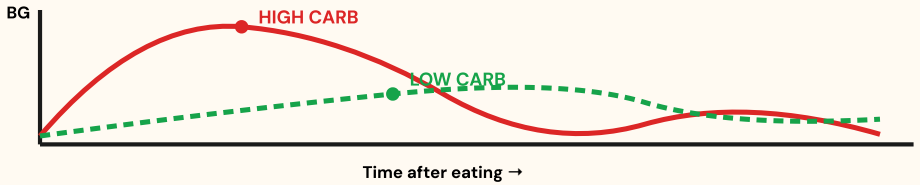
Simple (sugars — fast spike), **Complex** (starches — slower), **Fiber** (not digested — does NOT raise glucose).

2 Pathophysiology — Carb to Glucose

HOW FOOD BECOMES BLOOD SUGAR

Carb-rich food eaten → Broken down in GI tract → Glucose enters bloodstream

Pancreas releases insulin → Insulin opens cells → Glucose used for energy



⬆️ HIGH-Carb Meal

Rapid glucose spike → big insulin surge needed → risk of **hyperglycemia** in diabetics if uncovered, then crash to **hypoglycemia**.

⬇️ LOW-Carb Meal

Gentle, sustained glucose rise → less insulin demand → **more stable BG**, less hunger, supports diabetes & weight management.

3

High vs. Low Carb Foods

THE FOOD LISTS YOU MUST MEMORIZE

⬆️ HIGH CARB

SPIKE GLUCOSE · ≥ 15 G PER SERVING

🌾 GRAINS & STARCHES

Bread, rice, pasta, oatmeal, cereal, crackers, tortillas, bagels **15g = 1 slice**

🥔 STARCHY VEGETABLES

Potatoes, sweet potatoes, corn, peas, winter squash, plantains

🍌 MOST FRUITS

Bananas, grapes, mangoes, apples, pears, dates, raisins, dried fruit, fruit juice **FAST**

🥛 MILK & SWEET YOGURT

Milk (12g/cup), flavored yogurt, ice cream, chocolate milk

🍰 SWEETS & SUGARS

Candy, cake, cookies, pastries, soda, juice, honey, syrup, jam, jelly **FAST**

🫘 LEGUMES

Beans, lentils, chickpeas *(also high protein)*

⬇️ LOW CARB

STABLE GLUCOSE · < 5 G PER SERVING

🥬 NON-STARCHY VEGETABLES

Leafy greens, broccoli, cauliflower, cucumber, peppers, asparagus, zucchini, mushrooms, celery, tomatoes

🍗 PROTEINS (ESSENTIALLY 0 CARB)

Chicken, turkey, beef, pork, fish, seafood, eggs

🥑 HEALTHY FATS

Avocado, olive oil, butter, nuts (almonds, walnuts), seeds (chia, flax), peanut butter

🧀 CHEESE & PLAIN DAIRY

Cheddar, mozzarella, cream cheese, plain Greek yogurt, cottage cheese

🫐 BERRIES (IN MODERATION)

Strawberries, blueberries, raspberries, blackberries

☕ DRINKS

Water, unsweetened tea, black coffee, diet soda, sugar-free drinks

4 Signs & Symptoms

WHEN CARB INTAKE GOES WRONG — HYPER VS HYPO

🔥 HYPERGLYCEMIA

BG > 180 mg/dL · TOO MANY CARBS

- **3 P's:** Polyuria, Polydipsia, Polyphagia
- Hot, dry, flushed skin
- Fruity breath odor (DKA)
- Kussmaul respirations (deep, rapid)
- Blurred vision, fatigue
- Nausea, abdominal pain

🚨 **RED FLAG**

BG > 250 + ketones = DKA → ICU. Slow, prolonged onset.

❄️ HYPOGLYCEMIA

BG < 70 mg/dL · NOT ENOUGH CARBS

- **Cold, Clammy → Need some Candy**
- Shaky, tremors, nervousness
- Tachycardia, palpitations
- Diaphoresis (sweating)
- Hunger, irritability
- Confusion, slurred speech, seizures

🚨 **RED FLAG**

Hypoglycemia is the priority — can cause seizure/coma in MINUTES. Rapid onset.

5 Priority Nursing Interventions

CARB-RELATED CARE — ABCS, SAFETY, PRIORITIZATION

1 ASSESS BG before meals
& at bedtime; with insulin coverage, check before insulin admin.

2 15–15 RULE for hypoglycemia
: 15 g fast carb (4 oz juice, 3 glucose tabs, 1 tbsp honey) → recheck BG in 15 min. Repeat × 3 if needed.

3 FOLLOW WITH PROTEIN/COMPLEX CARB
after BG normalizes (cheese & crackers, peanut butter toast) to sustain glucose.

4 UNCONSCIOUS + low BG
→ IV D50 (hospital), Glucagon IM/SQ (home/EMS). NEVER give oral carbs to unconscious patient — aspiration risk.

5 COUNT CARBS, NOT CALORIES
for diabetics: 1 serving = 15 g carb. Match insulin to carb intake (insulin-to-carb ratio).

6 HOLD INSULIN if BG low
or patient NPO — never give insulin without confirming patient will eat.

7 TIME RAPID-ACTING INSULIN
(Lispro, Aspart) 15 min before or with the first bite. Regular insulin = 30 min before meal.

8 ENCOURAGE COMPLEX CARBS + FIBER
over simple sugars to flatten BG curve. Pair carbs with protein/fat.

ABCs FIRST: Hypoglycemia with seizure or unconsciousness → Airway protection BEFORE giving anything by mouth

6 Pharmacology — Carbs & Meds

INSULINS, ORAL DIABETICS & MEAL TIMING

Lispro / Aspart (Rapid-Acting)

INSULIN

Onset: 15 min · **Peak:** 1 hr

SE: Hypoglycemia (sudden)

Nursing: Food MUST be available — patient must eat within 15 min.

⏱ 15 min before / with meals

Regular Insulin (Short-Acting)

INSULIN

Onset: 30 min · **Peak:** 2–4 hr

SE: Hypoglycemia at peak

Nursing: Only insulin given IV. Watch BG at peak.

⏱ 30 min before meals

NPH (Intermediate-Acting)

INSULIN

Onset: 1–2 hr · **Peak:** 4–12 hr

SE: Hypoglycemia (delayed peak)

Nursing: Cloudy — roll, never shake. Give snack at peak.

⏱ With breakfast & dinner

Glargine (Lantus) / Detemir

LONG-ACTING

Onset: 1 hr · **Peak:** NONE

SE: Lower hypoglycemia risk

Nursing: NEVER mix with other insulins. Same time daily.

⏱ Bedtime — independent of meals

Metformin (Glucophage)

BIGUANIDE

Action: Decreases liver glucose output

SE: GI upset, lactic acidosis (rare)

Nursing: Hold 48 hr before contrast dye. Does NOT cause hypoglycemia.

⏱ With meals — reduces GI upset

Glipizide / Glyburide

SULFONYLUREA

Action: Stimulates pancreas to release insulin

SE: HYPOGLYCEMIA (highest risk of orals)

Nursing: Patient MUST eat — skipping meals = hypoglycemia.

⏱ Before breakfast

Acarbose (Precose)

α-GLUCOSIDASE INHIBITOR

Action: Slows carb absorption in gut

SE: Flatulence, diarrhea

Nursing: If hypoglycemia → must use GLUCOSE (dextrose), NOT table sugar.

⏱ With first bite of meal

Glucagon

EMERGENCY HORMONE

Action: Triggers liver to release stored glucose

SE: Nausea/vomiting on waking

Nursing: Use for unconscious hypoglycemia. Position SIDE-LYING (vomiting risk).

! Emergency — IM/SQ

7 NCLEX Test Traps

WHERE STUDENTS LOSE POINTS

⚠ TRAP #1

"Diabetic patient is shaky and sweating — what do you give first?"

❌ Wrong: A glass of milk with peanut butter (too slow — has fat that delays absorption)

✓ **CORRECT: 4 oz juice, 3 glucose tabs, or regular soda — FAST simple carbs FIRST. Protein/fat comes AFTER BG normalizes.**

⚠ TRAP #2

"Which snack is BEST for a diabetic at 9 PM (NPH peaks overnight)?"

❌ Wrong: Apple alone (simple carb only — won't last)

✓ **CORRECT: Cheese & crackers OR peanut butter toast — complex carb + protein sustains glucose through peak action.**

⚠ TRAP #3

"Acarbose patient becomes hypoglycemic — what do you give?"

❌ Wrong: Orange juice or table sugar (acarbose blocks sucrose breakdown!)

✓ **CORRECT: Glucose tablets or dextrose ONLY — sucrose won't be absorbed.**

⚠ TRAP #4

"Patient is NPO for surgery — should I give scheduled morning insulin?"

❌ Wrong: Give full dose as scheduled

✓ **CORRECT:** Hold or reduce — confirm with HCP. Insulin without carbs = severe hypoglycemia.

⚠ TRAP #5

"Patient says 'I can eat anything labeled SUGAR-FREE' — what do you teach?"

✗ Wrong: That's true — sugar-free has no carbs

✓ **CORRECT:** "Sugar-free" ≠ "carb-free." Read the **TOTAL carbohydrate** line on the label, not just sugar.

⚠ TRAP #6

"Hypoglycemia AND hyperglycemia — which is the priority?"

✗ Wrong: Hyperglycemia (it's higher numbers!)

✓ **CORRECT: HYPOGLYCEMIA always wins.** It can kill in minutes (seizure, coma). Hyperglycemia/DKA develops over hours.

⚠ TRAP #7

"Fruit is healthy — diabetics can eat unlimited fruit, right?"

✗ Wrong: Yes, fruit is natural sugar so it's fine

✓ **CORRECT:** Fruit IS a carb (15 g per serving). Portion-control. **Berries** are lower-carb than bananas/grapes/dried fruit.

8 Patient & Family Education

TEACHING FOR SELF-MANAGEMENT

🍽️ Plate Method

½ plate non-starchy veggies · ¼ lean protein · ¼ complex carb. Add a fruit or dairy serving.

🔢 Carb Counting

1 serving = 15 g carb. Read TOTAL carbs on label — not sugar alone. Learn portion sizes.

⏰ Eat on Schedule

Don't skip meals — especially on insulin or sulfonylureas. Spread carbs evenly through the day.

🍫 Carry Fast Carbs

Always have glucose tabs, hard candy, or juice for hypoglycemia emergencies. Wear medical ID.

🚫 Limit Liquid Sugar

Soda, juice, sweet tea, sports drinks spike BG fast. Choose water, unsweetened tea.

🌾 Choose Whole Grains

Brown rice, whole-wheat bread, oats over white versions — fiber slows glucose absorption.

💪 Pair Carbs Smart

Always pair carbs with protein or fat to flatten the BG curve (apple + peanut butter, crackers + cheese).

📓 Track BG Patterns

Log BG before meals & 2 hours after. Identify which foods spike YOU the most.

9 NCJMM Clinical Judgment

ALL 6 COGNITIVE STEPS APPLIED TO A HYPOGLYCEMIC EPISODE

1

Recognize Cues

Diabetic on insulin · BG = 58 · shaky, diaphoretic, confused · skipped lunch.

2

Analyze Cues

BG < 70 + neuroglycopenic symptoms = hypoglycemia. Cause: insulin without adequate carbs.

3

Prioritize Hypotheses

Hypoglycemia is #1 — risk of seizure, coma, death within minutes if not treated.

4

Generate Solutions

15–15 rule · 15 g fast carb (juice, glucose tabs) · recheck BG · IV D50 if unconscious · glucagon if no IV access.

5

Take Action

Give 4 oz juice → recheck in 15 min → if still < 70, repeat → follow with protein/complex carb snack.

6

Evaluate Outcomes

BG returned to 95 · symptoms resolved · patient able to verbalize 15–15 rule. Document & teach prevention.

10

Memory Boosters

MNEMONICS THAT STICK

"Cold & Clammy → Need Some Candy"

Hypoglycemia = pale, sweaty, shaky → give FAST sugar.
Hot & Dry → Sugar's High (hyperglycemia → hold sugar, give insulin).

15-15 Rule

1. **15 g fast carb** (juice, tabs, soda)
2. **Wait 15 minutes**
3. **Recheck** BG — repeat if still low

3 P's of Hyperglycemia

- **P** olyuria (excessive urination)
- **P** olydipsia (excessive thirst)
- **P** olyphagia (excessive hunger)

"WHITE = Watch It"

White bread, white rice, white pasta, white potatoes, white sugar = simple/refined high carbs that spike BG. Choose **brown/whole grain** alternatives.

CARBS Spike

- **C** ereal, Cookies, Crackers
- **A** pples, All fruits
- **R** ice, Raisins
- **B** read, Bananas, Beans
- **S** oda, Sweets, Starches

"FREE Foods" (≤ 5 g carb)

- **F** resh leafy greens
- **R** aw veggies (cucumber, celery)
- **E** ggs & lean protein
- **E** xtras: diet drinks, broth, herbs