NGN NCLEX 2026 · CARDIAC · CONDUCTION

AV Heart Blocks — *Decoding the Dropped Beat*

SYSTEM · CARDIOVASCULAR
DYSRHYTHMIA · CONDUCTION

Study Card

A heart block is a **conduction delay or interruption** *between the atria and ventricles — measured in the PR interval. From harmless first-degree prolongation to the life-threatening atrio-ventricular divorce of complete block, each type carries a distinct ECG signature, a distinct clinical risk, and a distinct nursing priority.*

01 Definition & Overview

WHAT IT IS · WHY IT MATTERS

AV BLOCK · ATRIOVENTRICULAR BLOCK

The PR interval tells the story.

An **AV block** is a partial or complete failure of the electrical impulse to travel from the **SA node → atria → AV node → bundle of His → ventricles**. The block is graded by *where* it happens and *how many* atrial impulses actually reach the ventricles.

Normal PR interval: **0.12 – 0.20 sec** (3–5 small boxes). Anything longer is a first clue that conduction is delayed.

Classified as **1st degree** (delayed), **2nd degree Mobitz I & II** (intermittent), or **3rd degree** (complete).

Why it matters on the NCLEX

- → Cardiac output depends on synchronized atrial-ventricular contraction.
- → Higher-degree blocks drop ventricular rate → drop perfusion → drop LOC.
- → Mobitz II and 3rd degree are *pacemaker emergencies.*
- → First-action questions almost always = *assess perfusion, then pace.*

03 The Four Types — ECG Signatures

RECOGNIZE → ANALYZE

FIRST DEGREE SEVERITY

1° AV Block

— just a slow handshake

ECG · LEAD II

"If the R is far from P, then you have a First Degree."

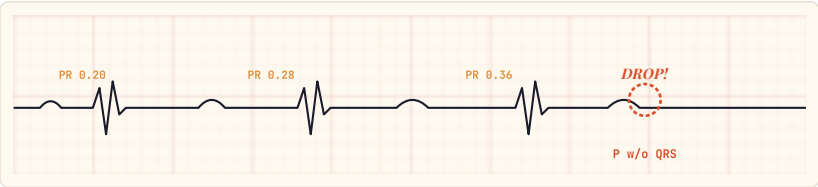
HALLMARK	**PR interval > 0.20 sec**, but constant and every P is followed by a QRS (1:1 conduction).
MECHANISM	Delayed conduction through the AV node — impulse gets through, just slowly.
RATE / RHYTHM	Regular, usually 60–100 bpm.
SYMPTOMS	Usually **asymptomatic** — often an incidental finding.
RISK LEVEL	Low. Benign in most patients.
NURSING PRIORITY	Monitor; review meds (digoxin, BB, CCB); treat cause. Rarely needs treatment.

2° · MOBITZ I · WENCKEBACH SEVERITY

Mobitz I

— longer, longer, longer, DROP

ECG · LEAD II



"Longer, longer, longer, drop — then you have a Wenckebach."

HALLMARK	**PR interval progressively lengthens** until a QRS is dropped, then the cycle repeats.
SITE OF BLOCK	**AV node** (above the bundle of His) — usually reversible.
RATE / RHYTHM	Atrial regular; ventricular **irregular** (R–R shortens, then a pause).
SYMPTOMS	Often asymptomatic; may feel skipped beats, dizziness. Usually well tolerated.
COMMON CAUSES	Inferior MI, ↑ vagal tone, AV-nodal drugs, post-cardiac surgery.
NURSING PRIORITY	Monitor; treat cause; **atropine** only if symptomatic bradycardia. Pacemaker rarely needed.

2° · MOBITZ II SEVERITY

Mobitz II

— some P's just don't get through

ECG · LEAD II

> *"PR stays the same, but some P's never make it through."*

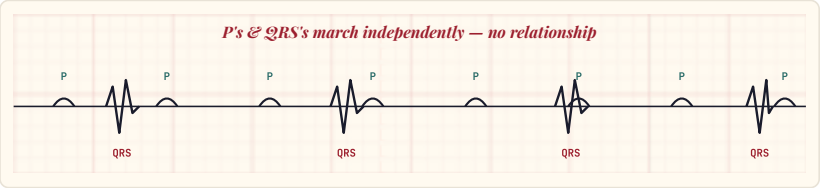
HALLMARK	**PR interval constant**, but occasional P waves are **not followed by a QRS** (dropped beats without PR lengthening). May be 2:1, 3:1, etc.
SITE OF BLOCK	**Below AV node** (His-Purkinje) — structural, often permanent.
RATE / RHYTHM	Atrial regular; ventricular **irregular or slow**.
SYMPTOMS	Dizziness, fatigue, chest pain, syncope. Often symptomatic.
RISK	**Can progress to complete heart block** without warning.
NURSING PRIORITY	**Pacemaker required.** Prepare for transcutaneous pacing → permanent pacemaker. **Atropine often ineffective** (block is below AV node).

3° · COMPLETE · AV DISSOCIATION SEVERITY

3° AV Block

— P's and Q's don't agree

ECG · LEAD II



"If P's and Q's don't agree, then you have a Third Degree."

HALLMARK	**Complete AV dissociation** — atria and ventricles fire independently. **No relationship** between P waves and QRS complexes.
MECHANISM	No atrial impulse reaches ventricles. A slower escape rhythm takes over — junctional (40–60) or ventricular (20–40).
RATE	Atrial rate faster than ventricular rate (e.g., P @ 80, QRS @ 35).
SYMPTOMS	**Syncope, dizziness, hypotension, chest pain, HF, shock.** Can progress to asystole.
RISK LEVEL	**MEDICAL EMERGENCY.**
NURSING PRIORITY	Transcutaneous pacing *immediately* → transvenous → permanent pacemaker. Atropine may be tried but often ineffective.

04 Side-by-Side Comparison

QUICK REFERENCE

TYPE	PR INTERVAL	DROPPED QRS?	SITE OF BLOCK	ATROPINE?	TREATMENT
1° AV Block	Prolonged >0.20 s, but **constant**	No — every P conducts	AV node	Usually not needed	Monitor; review/hold AV-nodal drugs; treat cause
2° Mobitz I	**Progressively lengthens**, then drops	Yes — cyclical	AV node	Yes (if symptomatic)	Monitor; atropine if symptomatic; pacing rarely needed

TYPE	PR INTERVAL	DROPPED QRS?	SITE OF BLOCK	ATROPINE?	TREATMENT
2° Mobitz II	**Constant**	Yes — sudden, no warning	Below AV node (His-Purkinje)	Usually ineffective	**Pacemaker** — prepare for transcutaneous → permanent
3° Complete	**No relationship** — P's and QRS's independent	AV dissociation	Below AV node (variable)	Often ineffective	**EMERGENT pacing** — transcutaneous now, permanent soon

05 Signs & Symptoms

MILD → SEVERE

Mild / Low-Grade

1° · MOBITZ I

Often found on routine ECG. Cardiac output preserved.

- **Asymptomatic** in most patients
- Mild fatigue or occasional dizziness
- Sensation of skipped beats (Mobitz I)
- Irregular pulse on palpation (Mobitz I)
- Vital signs usually within normal limits
- ECG finding discovered incidentally

Severe / High-Grade

MOBITZ II · 3°

Cardiac output drops. Perfusion fails. Emergency.

- **Syncope** or near-syncope (Stokes-Adams attack)
- **Bradycardia** — HR often < 40 bpm
- **Hypotension** & cool, clammy skin
- Chest pain, dyspnea, fatigue, exercise intolerance
- Altered LOC, confusion, lightheadedness
- Signs of **heart failure** — crackles, JVD, edema
- Progression to **asystole / cardiac arrest**

06 Priority Nursing Interventions

ABC · SAFETY · ACT

01

AIRWAY · BREATHING · CIRCULATION

Assess perfusion first

Check **LOC, pulse, BP, skin color, capillary refill, O_2 sat**. Stable or unstable is the driving question — unstable patients (hypotension, altered LOC, chest pain, HF) need immediate pacing regardless of block type.

02

MONITOR

Continuous cardiac & telemetry monitoring

Attach to a 12-lead ECG and run telemetry. Measure the **PR interval** on every strip. Document the ratio of P waves to QRS complexes (e.g., 2:1, 3:1). Watch for progression of block.

03

ACCESS & OXYGEN

Establish IV · Apply O_2 if hypoxic

Patent **large-bore IV** for emergency medications and fluids. Apply supplemental O_2 only if SpO_2 < 94% or the patient is short of breath (don't reflexively apply if saturating well).

04

PHARMACOLOGY

Atropine for symptomatic bradycardia

Atropine 1 mg IV push, may repeat every 3–5 min (max 3 mg total). **Works well for 1° and Mobitz I** (AV-nodal block). **Often ineffective for Mobitz II and 3°** — don't delay pacing waiting for it to work.

05

DEFINITIVE

Pacing for Mobitz II & 3° block

Prepare for **transcutaneous pacing (TCP)** at the bedside. Pads applied anterior/posterior. Sedation may be needed (TCP is painful). Bridge to **transvenous pacing**, then **permanent pacemaker**. Keep pads/pacer ready for any patient at risk of progression.

06

MEDICATION REVIEW

Hold AV-nodal blocking agents

Review the MAR and **hold digoxin, beta-blockers, calcium channel blockers, amiodarone**. Check **digoxin level** if on digoxin (toxicity > 2.0 ng/dL). Check **K^+, Mg^{2+}, Ca^{2+}** — correct imbalances.

07

COMMUNICATION

Notify HCP & prepare for transfer

Call the provider with SBAR. High-grade blocks are transferred to a **telemetry or ICU bed**. Keep the patient on bedrest with call light in reach. Have **emergency cart and pacer** available.

07 Pharmacology Snapshot

RESCUE · PACE · HOLD

ANTICHOLINERGIC · CLASS: ANTIMUSCARINIC

Atropine

USE	First-line for **symptomatic bradycardia**, 1° & Mobitz I block.
MOA	Blocks vagal (parasympathetic) input to the AV node → ↑ HR & ↑ conduction.
DOSE	1 mg IV push, repeat q 3–5 min, max 3 mg.
SIDE EFFECTS	Dry mouth, blurred vision, urinary retention, tachycardia.
⚠ WATCH	**Often ineffective** in Mobitz II & 3° — don't delay pacing.

DEVICE / IV INFUSION · ADRENERGIC SUPPORT

Pacing & Pressors

TCP	Transcutaneous pacing — immediate bridge therapy for unstable blocks.
EPINEPHRINE	2–10 mcg/min IV infusion — ↑ HR & BP if atropine fails.
DOPAMINE	5–20 mcg/kg/min IV infusion — chronotropic support.
NURSING	Titrate to HR & BP; continuous telemetry; monitor for ischemia.
⚠ WATCH	Sedate for TCP — it's painful. Verify **mechanical capture** by palpating pulse, not just ECG.

HOLD THESE · CONTRIBUTING AGENTS

Hold / Review

DIGOXIN	Slows AV conduction; check level (toxic > 2.0 ng/dL); look for **N/V, yellow-green halos**.
BETA-BLOCKERS	Metoprolol, atenolol, labetalol — ↓ HR & AV conduction.
CCBS	**Non-DHP**: diltiazem, verapamil — ↓ AV conduction.
AMIODARONE	Slows conduction; long half-life.
ACTION	Hold & notify HCP; correct electrolytes (↑K^+, ↑Mg^{2+}).

08 NCLEX Test Traps

WHERE STUDENTS LOSE POINTS

⚠

Read the rhythm strip — don't just read the label.

TRAP 01 · LOOK-ALIKE RHYTHMS

Mobitz I vs Mobitz II — check the PR interval

If PR **lengthens** before the drop → **Mobitz I** (benign). If PR is **constant** before the drop → **Mobitz II** (dangerous). Same name, opposite urgency.

TRAP 02 · OVER-RELIANCE ON ATROPINE

Atropine works best above the AV node

Atropine can save a Mobitz I patient but **won't fix Mobitz II or 3°** — those blocks are below the AV node. **Don't delay pacing** waiting for a drug that won't work.

TRAP 03 · MISSING THE CAUSE

Always check the MAR

Before calling the doctor for "unexplained" bradycardia or block, scan for **digoxin, beta-blockers, CCBs, amiodarone**. New-onset block plus one of those drugs = drug-induced until proven otherwise.

TRAP 04 · PRIORITY IN A STABLE 1° BLOCK

Stable ≠ untreated

A 1° block in a stable patient doesn't need atropine or pacing — the correct priority is **monitor and report**. The trap is choosing an aggressive action when "continue monitoring" is correct.

TRAP 05 · PACEMAKER CAPTURE

Verify mechanical capture, not just electrical

A pacing spike on the monitor does not guarantee a pulse. Always **palpate the pulse** (femoral or carotid) to confirm *mechanical* capture. Electrical capture without a pulse = PEA.

TRAP 06 · SYMPTOM MISATTRIBUTION

Syncope in a block is never "just a faint"

Syncope in a patient with Mobitz II or 3° is a **Stokes-Adams attack** — treat as a near-arrest event. Don't discharge, don't wait-and-see.

09 NCJMM Clinical Judgment Framework

RECOGNIZE · ANALYZE · PRIORITIZE · EVALUATE

RECOGNIZE CUES 01

See the pattern

PR interval? Every P followed by QRS? PR lengthening or constant? Are P's

ANALYZE CUES 02

Classify the block

Decide: 1°, Mobitz I, Mobitz II, or 3°. Identify the cause — ischemia, drugs,

PRIORITIZE · GENERATE · TAKE ACTION 03

ABCs → pace if unstable

EVALUATE OUTCOMES 04

Did perfusion improve?

Re-assess HR, BP, LOC, urine output, skin perfusion. Is capture present?

and QRS's related? HR, BP, LOC, symptoms.

electrolytes, vagal. Determine stable vs unstable.

Unstable → TCP now. Stable low-grade → monitor, hold drugs, correct cause. High-grade always needs a pacer plan.

Has rhythm stabilized? Escalate if no improvement.

10 Patient Education

PRE-DISCHARGE TEACHING

Living with a Heart Block / Pacemaker

Teach the patient, family, and caregivers — and verify teach-back.

DAILY SELF-CARE

- ✓ Check pulse daily — record rate and any irregularity.
- ✓ Take medications as prescribed; do not skip or double up.
- ✓ Carry a **pacemaker ID card** at all times; wear a medical alert bracelet.
- ✓ Keep cell phones & magnets at least **6 inches** from the pacemaker site.
- ✓ Avoid **MRI** unless the device is labeled MRI-conditional.
- ✓ Avoid strong magnetic or electrical fields — large running motors, arc welding, some industrial equipment.
- ✓ Airport security is safe to walk through; show the ID card and avoid handheld wands over the device.
- ✓ Avoid heavy lifting > 10 lb and raising the affected arm above the head for 4–6 weeks after insertion.
- ✓ Inspect the incision for redness, swelling, warmth, drainage.
- ✓ Resume activity gradually — no contact sports, no driving until cleared by HCP.

CALL THE HCP / 911 IF…

- ! Dizziness, fainting, or near-fainting episodes
- ! Chest pain, palpitations, or a sustained sense of skipped beats
- ! Shortness of breath or new swelling in the legs
- ! Persistent hiccups (may indicate lead displacement)
- ! Pulse rate consistently below the pacemaker-set rate
- ! Fever, incision redness, swelling, drainage, or dehiscence
- ! Feeling the pacemaker "firing" or twitching of nearby muscle
- ! Any sign of infection — signs of sepsis, chills

11 Memory Boosters

MNEMONICS & PATTERN RECOGNITION

THE CLASSIC AV BLOCK POEM

"If the R is far from P, then you have a First Degree."

Pattern: PR > 0.20 sec but every P gets a QRS. The delay is the whole finding.

WENCKEBACH RHYTHM (MOBITZ I)

"Longer, longer, longer, drop — then you have a Wenckebach."

Pattern: Progressive PR lengthening until a QRS is dropped. Then the cycle restarts.

MOBITZ II

"If some P's don't get through, then you have a Mobitz II."

Pattern: PR constant, but random P's are not followed by a QRS. Suspect it; pace it.

THIRD DEGREE (COMPLETE) BLOCK

"If P's and Q's don't agree, then you have a Third Degree."

Pattern: AV dissociation — P's and QRS's march to their own drumbeats.

SEVERITY LADDER

"1 monitor · 2a monitor · 2b pace · 3 pace now."

Pattern: 1° & Mobitz I are usually monitored; Mobitz II & 3° need a pacemaker.

ATROPINE RULE OF THUMB

"Atropine helps above, pace below."

Pattern: Atropine works for AV-nodal blocks (1°, Mobitz I). Below the node (Mobitz II, 3°) → pace.

DRUGS TO HOLD

"D-A-B-C = Digoxin · Amiodarone · Beta-blockers · CCBs."

Pattern: The four biggest AV-nodal suppressors. Any new block? Scan the MAR for these.

STOKES-ADAMS CLUE

"Syncope + bradycardia = think heart block."

Pattern: Sudden loss of consciousness due to transient asystole or very slow ventricular rate in 3° block.

Recognize the pattern — rescue the rhythm.

Every dysrhythmia question is a puzzle: the PR interval tells you *where*, the dropped beat tells you *what*, and the patient's perfusion tells you *how fast* you must act. Master the four patterns above, and the NCLEX conduction questions unlock.

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STUDY CARD · v1.0