CARDIOVASCULAR · VALVULAR DISORDERS

Mitral Valve *Disorders*

A side-by-side comparison of **Mitral Valve Prolapse · Regurgitation · Stenosis** — pathophysiology, signs & symptoms, nursing care, pharmacology, NCLEX traps, and patient teaching for the NGN 2026 exam.

NGN NCLEX 2026 | Clinical Judgment | Priority Setting | Med-Surg · Cardiac

1 Definition & Overview

The **mitral valve** sits between the left atrium and left ventricle. It opens to let oxygenated blood flow forward (atrium → ventricle) and closes during systole to prevent backflow.

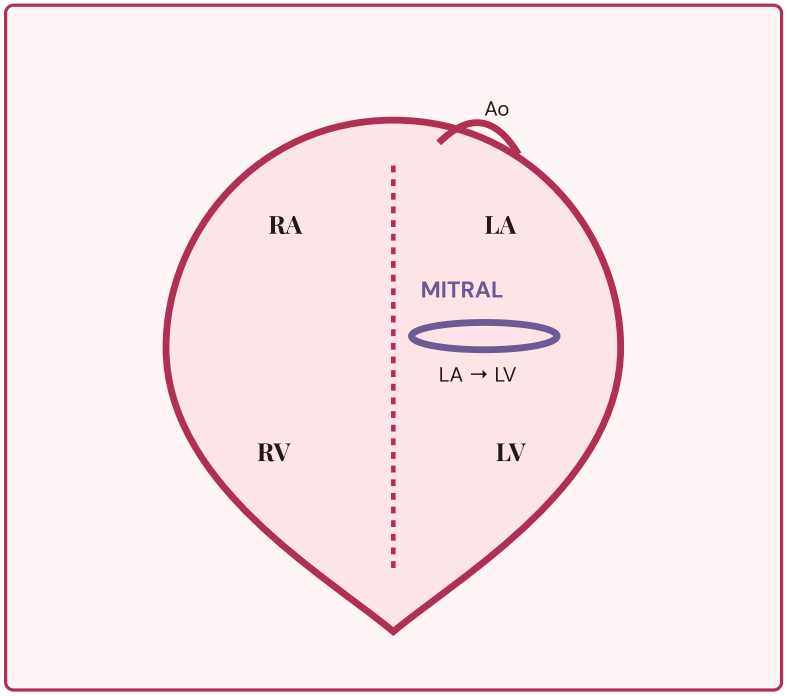
Three things can go wrong:

• **Prolapse (MVP)** — leaflets balloon back into the LA during systole. Usually benign.

• **Regurgitation (MR)** — valve does not close fully → blood leaks *back* into the LA.

• **Stenosis (MS)** — valve is stiff/narrowed → blood can't move *forward* into the LV.

Why it matters: Each disorder produces a different murmur, different symptoms, and different priority care. NCLEX expects you to differentiate them.



2 Pathophysiology — Side by Side

MVP · PROLAPSE

- Leaflets are floppy / redundant tissue
- ↓
- During systole, leaflets **balloon backward** into LA
- ↓
- Mid-systolic **click** ± late systolic murmur
- ↓
- Most often **benign**; can progress to MR

MR · REGURGITATION

- Valve fails to close completely (incompetent)
- ↓
- Blood leaks **back into LA** during systole
- ↓
- LA dilates → ↑ pulmonary pressures
- ↓
- LV volume overload → **L-sided heart failure**

MS · STENOSIS

- Valve leaflets thicken / fuse (rheumatic)
- ↓
- Narrow opening blocks LA → LV flow in **diastole**
- ↓
- LA pressure rises → pulm. HTN, pulm. edema
- ↓
- A-fib + thrombus risk → **R-sided heart failure**

🩺 **Quick concept:** MR = leak *back* (incompetent). MS = blocked *forward* flow (narrowed). MVP = leaflets *bulge* (often silent). Each one stresses a different chamber first.

3 Signs & Symptoms

Feature	MVP	MR	MS
Most common cause	Idiopathic; connective tissue (Marfan); ↑ in women	Rheumatic disease, MVP, endocarditis, MI (papillary muscle rupture)	Rheumatic heart disease (almost always)
Murmur	Mid-systolic **click** + late systolic murmur at apex	**Holosystolic** blowing murmur at apex → radiates to **axilla**	Low-pitched **diastolic rumble** + opening snap at apex
Early symptoms	Often **asymptomatic**; palpitations, atypical chest pain, anxiety, fatigue	Fatigue, weakness, dyspnea on exertion, palpitations	Dyspnea on exertion, fatigue, dry cough, palpitations
Late / severe	Rare; progression to MR, dysrhythmias	Orthopnea, PND, peripheral edema, S3 gallop, pulmonary edema	**Hemoptysis**, A-fib, JVD, hepatomegaly, ascites (R-HF)
🚩 **Red flag**	Sudden severe chest pain or new dyspnea → rule out chordae rupture	**Acute MR** after MI = papillary muscle rupture → cardiogenic shock	**A-fib + LA thrombus** → embolic stroke risk

4 Priority Nursing Interventions

Always ABCs first → Safety → Prioritize the unstable chamber.

🟣 MVP — Prolapse

- **Assess** for palpitations, chest pain, dysrhythmias.
- **Reassure** — most cases are benign and need no treatment.
- **Teach** avoidance of caffeine, nicotine, alcohol, decongestants (sympathetic stimulants).
- **Encourage** aerobic exercise, hydration, stress management.
- **Monitor** for progression to MR (new holosystolic murmur).

🔴 MR — Regurgitation

- **Monitor** ABCs — assess lung sounds for crackles (pulmonary edema).
- **Position** high-Fowler's to ease dyspnea.
- **Administer O_2**, diuretics, ACE inhibitors, beta blockers as ordered.
- **Anticoagulate** if A-fib develops.
- **Daily weights**, strict I&O, monitor BNP.
- **Prepare** for valve repair/replacement if symptomatic or EF declining.

🔵 MS — Stenosis

- **Assess** rhythm continuously — A-fib is common & emboligenic.
- **Anticoagulate** (warfarin, DOACs) — A-fib + LA stasis = stroke risk.
- **Monitor** for hemoptysis, dyspnea, JVD, pulmonary edema.
- **Restrict sodium** & fluids per orders; daily weights.
- **Prepare** for percutaneous balloon valvuloplasty or valve replacement.
- **Endocarditis prophylaxis** before dental/invasive procedures.

🚨 ALL Valve Disorders — Universal Priorities

- **A**irway / breathing — assess crackles, SpO_2, work of breathing.
- **C**irculation — heart sounds, peripheral pulses, perfusion.
- **Activity tolerance** — pace ADLs, plan rest periods.
- **Infection prevention** — endocarditis prophylaxis, dental hygiene.
- **Monitor** for new dysrhythmias, S3/S4, embolic events (stroke, limb).

5 Pharmacology

Beta Blockers

-OLOL drugs · MVP, MR, MS

Action: Slow HR → ↑ ventricular filling time, control palpitations & rate in A-fib.

Side effects: Bradycardia, hypotension, fatigue, bronchospasm.

Nursing: Hold if HR < 60 or SBP < 100. Never stop abruptly.

ACE Inhibitors / ARBs

-PRIL / -SARTAN · MR primarily

Action: ↓ afterload → less regurgitant volume; preserve LV function.

Side effects: Cough (ACE), hyperkalemia, angioedema, hypotension.

Nursing: Monitor K^+, creatinine, BP. Avoid in pregnancy.

Diuretics

Furosemide, HCTZ · MR, MS

Action: ↓ preload & pulmonary congestion.

Side effects: Hypokalemia (loop), hyponatremia, dehydration, ototoxicity.

Nursing: Daily weights, monitor K^+, give in AM.

Anticoagulants

Warfarin, DOACs · MS + A-fib

Action: Prevent LA thrombus → stroke prevention.

Side effects: Bleeding, bruising, hematuria, GI bleed.

Nursing: Warfarin → INR 2–3 (or 2.5–3.5 with mechanical valve). Vit K antidote. Mechanical valves require **warfarin**, not DOACs.

Digoxin

Cardiac glycoside · MR/MS with A-fib

Action: ↑ contractility, slows AV conduction.

Toxicity: N/V, headache, yellow-green halos, bradycardia (level > 2.0 ng/mL).

Nursing: Apical pulse 1 full min — hold if < 60. Watch hypokalemia ↑ tox.

Antibiotic Prophylaxis

Amoxicillin · all valve dx

Action: Prevent infective endocarditis with dental / invasive procedures.

Nursing: Give 30–60 min *before* procedure. Teach lifelong dental hygiene; report fever, new murmur, Janeway/Osler signs.

6 NCLEX Test Traps ⚠

✗ TRAP	✓ CORRECT
Choosing "*radiates to neck*" for a mitral murmur.	Mitral regurgitation radiates to the **axilla**. Aortic stenosis radiates to the neck. Don't mix the two.
Treating MVP aggressively with cardiac meds & activity restriction.	Most MVP is **asymptomatic and benign**. Teach lifestyle (avoid caffeine, alcohol, stimulants); meds only if symptomatic.
Picking "administer oxygen" first when an MS patient with A-fib develops sudden right-sided weakness.	These are **stroke symptoms from LA thrombus embolization**. Priority = call rapid response / activate stroke protocol; time = brain.
Confusing systolic vs diastolic murmurs.	**MR & MVP = SYSTOLIC** (valve should be closed, but isn't). **MS = DIASTOLIC** (valve should be open, but isn't).
Giving NSAIDs or stimulant decongestants to a valve patient because "they're OTC."	NSAIDs ↑ fluid retention & bleeding risk (esp. on warfarin); decongestants trigger palpitations & dysrhythmias. Teach patients to **check before taking any OTC**.
Selecting a DOAC (apixaban, rivaroxaban) for a patient with a mechanical mitral valve.	**Mechanical valves require warfarin**. DOACs are contraindicated — they don't prevent thrombus on mechanical surfaces. INR goal is higher (2.5–3.5).

7 NCJMM Clinical Judgment Framework

Applied to a patient with worsening mitral regurgitation.

STEP 1 · RECOGNIZE

Recognize Cues

New holosystolic murmur at apex, dyspnea on exertion, S3, crackles, JVD, ↑ BNP, weight gain 2 kg/24 hr.

STEP 2 · ANALYZE

Analyze Cues

Backflow into LA → pulmonary congestion → L-sided HF. Cluster: ↑ preload + pulmonary edema + activity intolerance.

STEP 3 · PRIORITIZE

Prioritize Hypotheses

#1 Impaired gas exchange / pulmonary congestion. #2 Decreased CO. #3 Risk for embolic stroke if A-fib develops.

STEP 4 · GENERATE

Generate Solutions

O_2 therapy, high-Fowler's, IV diuretic, ACE-I, beta blocker, sodium & fluid restriction, anticoagulation if A-fib, surgical eval.

STEP 5 · TAKE ACTION

Take Action

Position high-Fowler's, apply O_2, administer furosemide IV, obtain BMP/BNP/CXR, continuous telemetry, daily weights, strict I&O.

STEP 6 · EVALUATE

Evaluate Outcomes

Clear lung sounds, SpO_2 > 94%, ↓ dyspnea, weight loss, urine output > 30 mL/hr, sinus rhythm maintained, BNP trending down.

8 Patient & Family Education

MVP Teaching

- **Most MVP is benign** — reassure but don't dismiss.
- Avoid **caffeine, nicotine, alcohol, stimulants**, energy drinks, decongestants.
- Stay hydrated; aerobic exercise is encouraged.
- Manage stress — anxiety worsens palpitations.
- Report new chest pain, fainting, or sudden dyspnea.
- Lifelong dental hygiene; tell every provider about MVP.

MR Teaching

- **Daily weights** — call HCP for > 2–3 lb gain in 24 hr or 5 lb in a week.
- Low-sodium diet (< 2 g/day); fluid restriction as ordered.
- Take meds at the same time daily; never skip diuretic or ACE-I.
- Pace ADLs; rest before fatigue sets in.
- Report orthopnea, leg swelling, sudden weight gain, syncope.
- Endocarditis prophylaxis before dental procedures.

MS Teaching

- **Anticoagulation safety:** soft toothbrush, electric razor, no NSAIDs/aspirin without HCP.
- Warfarin: keep diet *consistent* with leafy greens; do NOT eliminate.
- Get regular INR draws; carry a med list and ID bracelet.
- Report **hemoptysis, palpitations, sudden weakness, severe HA** (stroke).
- Avoid pregnancy without HCP guidance — MS worsens with pregnancy volume load.
- Endocarditis prophylaxis before dental/invasive procedures.

9 Memory Boosters & Mnemonics

"MR. SAS"

M·R **M**itral **R**egurgitation = **S**ystolic.
S·A·S **S**tenosis **A**ortic = **S**ystolic too. So mitral *regurg* & aortic *stenosis* are systolic; the other two (MS & AR) are diastolic.

"PASS"

P·A·S·S For systolic murmurs (MR, AS): **P**ressure **A**cross **S**emi-shut **S**tructures. Helps you remember regurgitation & stenosis are heard in opposite phases of the cycle.

Murmur Radiation

MR → axilla (think "Mr. Arm-pit").
AS → carotids/neck (think "AS — All the way to the neck").
Don't swap them — common NCLEX trick.

"Click & Clunk"

MVP = mid-systolic **click** (floppy leaflet snaps).
MS = opening **snap** + diastolic rumble.
Both are mechanical sounds — picture the valve struggling.

"BAD MS" — A-fib in MS

B·A·D **B**lood pools in LA → **A**trial fibrillation → **D**islodged thrombus = stroke. That's why **warfarin** is mandatory.

Cause Recall

MS = Rheumatic, almost always. Ask about strep throat in childhood.
MR after MI = papillary muscle rupture — sudden severe pulmonary edema = surgical emergency.

🎯 **Pattern recognition:** If the question gives you *holosystolic murmur radiating to axilla + crackles,* think MR. *Diastolic rumble + A-fib + hemoptysis* = MS. *Mid-systolic click in a young anxious woman with palpitations* = MVP.