

NGN NCLEX 2026 TEST PLAN

Valvular Disorders

Stenosis • Regurgitation • Prolapse



CARDIOVASCULAR SYSTEM

SECTION 01



Definition / Overview

What It Is

Structural disease of one or more heart valves causing impaired forward blood flow and/or backward leakage.

Two Core Problems

Stenosis — valve too stiff to open fully. **Regurgitation** — valve cannot close fully (backflow/insufficiency).

Why It Matters

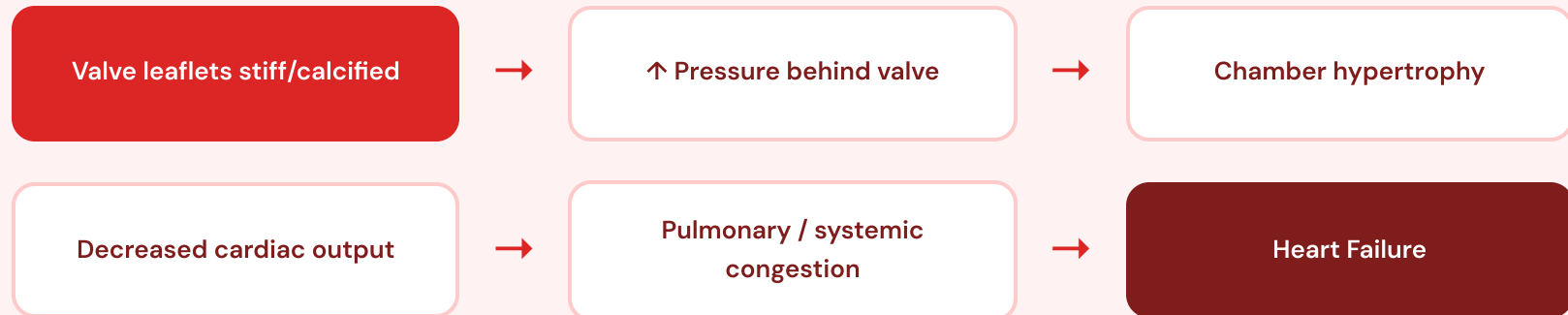
Chronic valve dysfunction leads to chamber hypertrophy, dysrhythmias (A-fib), heart failure, and pulmonary edema.

SECTION 02

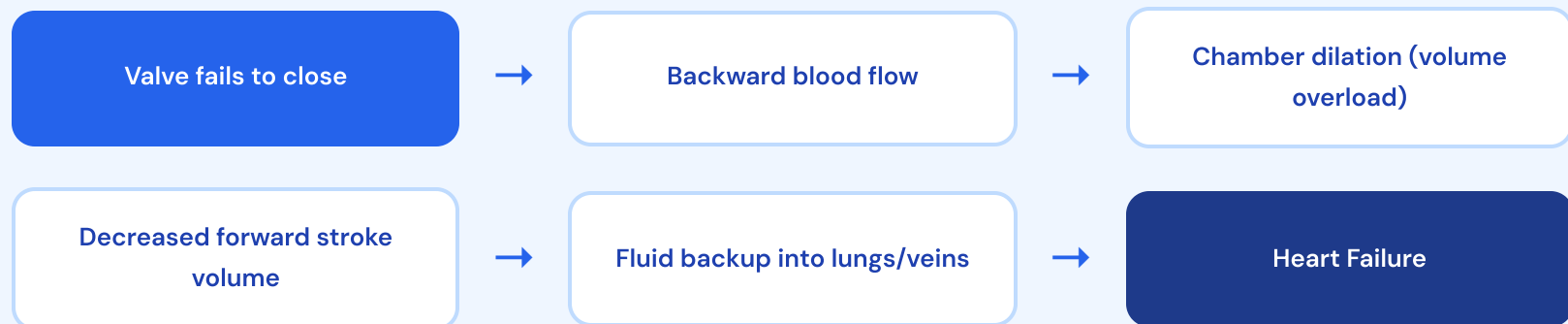


Pathophysiology (Simplified)

◆ STENOSIS PATHWAY (Narrowed Valve)



◆ REGURGITATION PATHWAY (Leaky Valve)



Common Causes:

- Rheumatic heart disease (classic cause of **mitral stenosis**)
- Age-related calcification (aortic stenosis in elderly)
- Infective endocarditis
- Congenital defects (bicuspid aortic valve)
- MI → papillary muscle rupture → acute mitral regurgitation
- Marfan syndrome
- Connective tissue disorders

QUICK REFERENCE



Four Key Valve Disorders at a Glance

Disorder	Hallmark Finding	Murmur Type	Key Complication
Mitral Stenosis	Dyspnea on exertion, orthopnea, hemoptysis, A-fib	DIASTOLIC rumble at apex	Atrial fibrillation → stroke
Mitral Regurgitation	Fatigue, dyspnea, pulmonary edema, S3	SYSTOLIC blowing at apex	Left HF, pulmonary hypertension
Aortic Stenosis	SAD triad: Syncope, Angina, Dyspnea	SYSTOLIC ejection at R 2nd ICS	Sudden cardiac death
Aortic Regurgitation	Widened pulse pressure, bounding pulses, palpitations	DIASTOLIC blowing at L sternal border	Left ventricular failure

SECTION 03



Signs & Symptoms

● EARLY / MILD

- ▶ Fatigue / decreased activity tolerance
- ▶ Dyspnea on exertion (DOE)
- ▶ Palpitations
- ▶ New heart murmur (often asymptomatic)
- ▶ Mild orthopnea (needs extra pillow)
- ▶ Dizziness, lightheadedness

● LATE / SEVERE

- ▶ Resting dyspnea, orthopnea, paroxysmal nocturnal dyspnea
- ▶ Crackles, pulmonary edema (pink frothy sputum)
- ▶ Hemoptysis (classic in mitral stenosis)
- ▶ Atrial fibrillation (esp. mitral stenosis)
- ▶ Syncope, chest pain (aortic stenosis)
- ▶ JVD, peripheral edema, ascites (right HF)
- ▶ Thromboembolism / stroke



RED FLAG FINDINGS — Priority Action Required

SAD Triad (Aortic Stenosis)

Syncope + Angina + Dyspnea = high risk of sudden cardiac death

Acute Pulmonary Edema

Pink frothy sputum, severe dyspnea, crackles — medical emergency

New-Onset A-Fib

Irregular pulse + mitral stenosis = high stroke risk

Acute Mitral Regurgitation

Post-MI onset = papillary muscle rupture — surgical emergency

Signs of Endocarditis

Fever + new murmur + petechiae + Janeway lesions

Hemoptysis

Classic late sign of severe mitral stenosis



SECTION 04

Priority Nursing Interventions

AIRWAY

Position client in High Fowler's

Reduces venous return; eases breathing in pulmonary congestion.

BREATHING

Administer humidified O₂ as prescribed

Maintain SpO₂ ≥ 95%; monitor for worsening dyspnea and crackles.

CIRCULATION

Auscultate heart & lung sounds every shift

Identify murmur changes, S3/S4 gallops, crackles suggesting HF.

MONITOR

Continuous cardiac monitoring for A-fib

Mitral stenosis especially → A-fib → thromboembolism / stroke.

SAFETY

Fall precautions — syncope risk

Especially in aortic stenosis; assist with ambulation.

ASSESS

Daily weights, strict I&O, BP q4h

Weight gain > 2–3 lb/day = fluid retention; report promptly.

ADMIN

Give prophylactic antibiotics before invasive procedures

Prevents infective endocarditis (dental, GU, GI, surgical).

EDUCATE

Activity restrictions and low-sodium diet

Reduce cardiac workload and fluid overload.

PREP

Prepare for valve repair / replacement

Balloon valvuloplasty, TAVR, or open surgical replacement.

EVALUATE

Monitor anticoagulation labs (INR)

Post-mechanical valve or A-fib: target INR typically 2.5–3.5.



SECTION 05

Pharmacology

Furosemide (Lasix)

LOOP DIURETIC

- Mechanism:** Inhibits Na/K/Cl reabsorption in loop of Henle → diuresis
- Use:** Reduce fluid overload, pulmonary congestion
- Side Effects:** Hypokalemia, hypotension, ototoxicity, dehydration
- Nursing:** Monitor K⁺ (3.5–5.0), daily weights, orthostatic BP

Warfarin (Coumadin)

VITAMIN K ANTAGONIST / ANTICOAGULANT

- Mechanism:** Inhibits vitamin K-dependent clotting factors (II, VII, IX, X)
- Use:** Mechanical valves, A-fib with valve disease
- Side Effects:** Bleeding, bruising, hematuria
- Nursing:** Monitor INR (2.5–3.5 mechanical valve); antidote = Vitamin K

Metoprolol / Atenolol

BETA BLOCKER

- Mechanism:** Blocks β_1 receptors $\rightarrow$ $\downarrow$ HR, $\downarrow$ contractility, $\downarrow$ workload
- Use:** Rate control in A-fib, reduce cardiac stress
- Side Effects:** Bradycardia, hypotension, fatigue, bronchospasm
- Nursing:** Hold if HR < 60 or SBP < 100 ; never abruptly stop

Digoxin (Lanoxin)

CARDIAC GLYCOSIDE

- Mechanism:** Positive inotrope + negative chronotrope
- Use:** A-fib rate control; HF
- Toxicity:** > 2.0 ng/dL — N/V, yellow-green halos, bradycardia
- Nursing:** Apical pulse 1 min before dose; hold if < 60

Enalapril / Lisinopril

ACE INHIBITOR

- Mechanism:** Blocks angiotensin II $\rightarrow$ vasodilation $\rightarrow$ $\downarrow$ afterload
- Use:** Regurgitation (reduces backward flow); HF management
- Side Effects:** Dry cough, hyperkalemia, angioedema, hypotension
- Nursing:** Monitor K⁺ and creatinine; avoid salt substitutes (KCl)

Amoxicillin (Prophylaxis)

ANTIBIOTIC — ENDOCARDITIS PREVENTION

- Mechanism:** Beta-lactam; inhibits bacterial cell wall synthesis
- Use:** Given 30–60 min before dental / invasive procedures
- Side Effects:** GI upset, rash, anaphylaxis (PCN allergy)
- Nursing:** Verify allergies; clindamycin if PCN-allergic



NCLEX Test Traps

1

Timing the Murmur Wrong

Stenosis of outflow valves (aortic/pulmonic) = SYSTOLIC. Stenosis of inflow valves (mitral/tricuspid) = DIASTOLIC.

Regurgitation is the opposite of the valve's natural closing phase. Memorize the location + timing together.

2

Mechanical vs Bioprosthetic Valves

Mechanical = LIFELONG anticoagulation (INR 2.5–3.5). Bioprosthetic (tissue) valves = anticoagulation only 3–6 months post-op. Test frequently confuses these.

3

Forgetting Endocarditis Prophylaxis

Clients with prosthetic valves, prior endocarditis, or unrepaired congenital defects need **antibiotics before dental and invasive procedures**. This is a classic "what would you teach" question.

4

Missing the SAD Triad

In aortic stenosis, the triad **Syncope, Angina, Dyspnea** signals severe disease with high risk of **sudden cardiac death**. Prioritize over mild chest pain alone.

5

Selecting "Encourage Exercise" in Severe Disease

In severe aortic stenosis, strenuous activity can cause sudden death. The correct answer favors **activity restriction and rest**, not exercise programs.

6

Ignoring New-Onset A-Fib

In mitral stenosis, A-fib is not "just" a rhythm issue — it is a **stroke risk emergency**. Anticoagulation is essentially always indicated. Don't defer it.

7

Confusing Pulse Pressure Clues

Aortic regurgitation → wide pulse pressure, bounding (water-hammer) pulses. **Aortic stenosis** → narrow pulse pressure, weak/delayed pulse. Opposite findings.

8

Holding Digoxin Incorrectly

Hold digoxin if **apical pulse < 60 (adult)**. Check K⁺ first — hypokalemia increases digoxin toxicity risk (especially with diuretics).

SECTION 07



Patient Education



Dental & Procedure Prophylaxis

Always inform dentists and providers about valve disease. Take prescribed antibiotic 30–60 min before dental cleanings, extractions, and invasive procedures.



Anticoagulant Teaching (if applicable)

Report bleeding, dark stools, blood in urine, severe bruising. Keep vitamin K intake (green leafy veggies) **consistent**, not avoided. Never skip INR appointments.



Daily Weights & Fluid Awareness



Low-Sodium Diet

Weigh every morning, same scale, same clothing. Report weight gain of **more than 2–3 lb in 24 hrs or 5 lb/week**. Follow fluid and sodium restrictions.

Limit to ≤ 2 g sodium/day. Avoid processed foods, canned soups, deli meats. Read labels carefully. Avoid salt substitutes if taking ACE inhibitors ($\uparrow$ K+).



Activity Modification

Balance rest with activity as tolerated. **Avoid strenuous exertion** in severe aortic stenosis. Cardiac rehab post-valve surgery supports safe reconditioning.



Warning Signs to Report

Call provider for: new or worsening dyspnea, syncope, chest pain, palpitations, fever $> 100.4^{\circ}\text{F}$, sudden weight gain, or new leg swelling.



Lifestyle Modifications

Stop smoking, limit alcohol, manage blood pressure and cholesterol, control diabetes. Stress management and adequate rest reduce cardiac workload.



Medical ID & Follow-Up

Wear a medical alert bracelet (valve type, anticoagulant). Keep all cardiology appointments; echocardiograms monitor disease progression.

SECTION 08



Memory Boosters & Mnemonics



SAD

S A D



Stenosis vs Regurgitation

Stenosis = Stiff / Squeezed → valve won't open (forward flow blocked)

Classic triad of severe **Aortic Stenosis**:

Syncope • **A**ngina • **D**yspnea

→ *High risk for sudden cardiac death*



MR. ASS

Timing of common murmurs:

Mitral **R**egurgitation + **A**ortic **S**tenosis = **S**ystolic murmurs
(and by contrast: *Mitral Stenosis + Aortic Regurgitation = Diastolic*)

Regurgitation = Reversed / Returning → valve won't close
(backward leak)



"LEFT Side = High Pressure"

Mitral and aortic valves (left heart) get diseased far more often than tricuspid/pulmonic — because the left side handles systemic pressure.

Think: M-A before T-P.



CHECK Before Digoxin

C H E C K

Check apical pulse × 1 full min

Hold if < 60 bpm

Evaluate K⁺ (hypokalemia → toxicity)

Confirm dig level < 2.0 ng/dL

Know signs: N/V, yellow-green halos



BIG Pulses = AR

Aortic Regurgitation = wide pulse pressure + *bounding* "water-hammer" pulses.

Aortic Stenosis = narrow pulse pressure + *weak, delayed* pulse (pulsus parvus et tardus).



PROMPT — Endocarditis

Prophylaxis

P R O M P T



Rheumatic → Mitral

Rheumatic fever classically attacks the **mitral valve** → **mitral stenosis**.

Prosthetic valve history

Rheumatic / prior endocarditis

Oral/invasive procedure planned

Med: Amoxicillin (or Clindamycin)

Prior to procedure by 30–60 min

Teach lifelong awareness

Watch for a history of strep throat in childhood + now presenting with A-fib and hemoptysis.

NCJMM — Clinical Judgment Framework

Next Generation NCLEX 2026: Recognize → Analyze → Prioritize → Evaluate

01

RECOGNIZE CUES

New or changing murmur, dyspnea, fatigue, palpitations, syncope, weight gain, JVD, crackles, irregular pulse, pink frothy sputum.

02

ANALYZE CUES

Cluster findings: systolic vs diastolic murmur, left vs right HF signs, stable vs decompensated. Link to valve type and severity.

03

PRIORITIZE HYPOTHESIS & ACTION

ABC first — airway, O₂, positioning. Address acute pulmonary edema, A-fib, syncope risk, and acute regurgitation emergencies before routine care.

04

EVALUATE OUTCOMES

Reassess SpO₂, lung sounds, HR/BP, daily weights, INR/K+, dyspnea scale, activity tolerance, and patient teach-back.

NGN NCLEX 2026 Study Library — Valvular Disorders Infographic • Cardiovascular System
High-yield review aligned with the NCJMM Clinical Judgment Measurement Model