

# IV Therapy Maintenance

Pharmacology + Clinical Skills | NGN NCLEX 2026 Test Plan

HIGH-YIELD

## ● OVERVIEW

IV therapy delivers fluids, medications, and blood products directly into the bloodstream via catheter

Requires sterile technique, proper site selection, and ongoing assessment to prevent complications

Nurse is responsible for insertion, maintenance, flow rates, and early complication detection

## ● INSERTION ESSENTIALS

### GLOVES

Clean gloves — protect against body fluid exposure

### CLEANSE SITE WITH

Povidone-iodine — NOT alcohol

### BEST VEINS

Large veins of lower arm (nondominant preferred)

## ● SITE SELECTION — AVOID THESE

Back of hand veins

Leg veins

Arm after breast surgery (same side)

Thrombophlebitis limb

Arm with hemodialysis fistula/shunt

## ● IV FLOW RATES — ADULT REFERENCE

|                                |             |               |
|--------------------------------|-------------|---------------|
| Keep vein open (KVO)           | <div></div> | 30–60 mL/hr   |
| Low therapeutic                | <div></div> | 60–90 mL/hr   |
| Moderate therapeutic           | <div></div> | 100–150 mL/hr |
| High therapeutic               | <div></div> | 175–250 mL/hr |
| Emergency only (HCP monitored) | <div></div> | >250 mL/hr    |

## ● COMPLICATION: INFILTRATION 🧊

### CAUSE

Catheter dislodges into sub-Q tissue

### SKIN TEMP

Cool / Cold

### COLOR

Pale

### TEXTURE

## ● COMPLICATION: PHLEBITIS 🔥

### CAUSE

Local inflammation of vessel lining

### SKIN TEMP

Warm / Hot

### COLOR

Erythematous (red)

### TEXTURE

Swollen, hard

BLOOD RETURN

None

Action: Discontinue IV immediately. Start new site in different extremity if possible.

Swollen, painful

OTHER

Possible red streak

Action: Discontinue IV immediately. Start new site in different extremity if possible.

### ● FLUID: D5W

BEST USED FOR

Tissue rehydration

TYPE

Hypotonic dextrose solution

KEY NOTE

Distributes into cells — NOT for BP support

### ● FLUID: NORMAL SALINE (0.9%)

BEST USED FOR

BP support / volume expansion

TYPE

Isotonic crystalloid

KEY NOTE

Stays in vascular space; pairs with blood transfusions

### ● FLUID: LACTATED RINGER'S

BEST USED FOR

BP support / volume expansion

TYPE

Isotonic crystalloid (electrolyte-balanced)

KEY NOTE

Closer to plasma composition than NS

### ● MAINTENANCE SCHEDULE

1 IV tubing change: every 72 hours

2 Piggyback tubing change: every 72 hours

3 Assess site each shift for signs of infiltration or phlebitis

4 Use IV pump for ALL titrated and high-risk medications

### ● PRIORITY NURSING INTERVENTIONS (ABCS FIRST)

1 **Assess** insertion site each shift (temp, color, swelling, blood return)

2 **Verify** correct fluid, rate, and tubing before infusion

3 **Use** povidone-iodine for site prep — NOT alcohol

4 **Monitor** for complications: swelling, redness, pain, streaking

5 **Discontinue** IV immediately if infiltration or phlebitis suspected

6 **Change** tubing every 72 hours; document all assessments

### ● NCLEX TEST TRAPS ⚠️

⚠️ **Trap 1:** Students confuse infiltration (cool/pale) with phlebitis (warm/red) — remember ❄️ ICE for Infiltration vs 🔥 FIRE for Phlebitis

⚠️ **Trap 2:** D5W is NOT used for BP support — it distributes into cells, not the vascular space. Use NS or LR for hypotension

⚠️ **Trap 3:** Alcohol is NOT the correct prep agent — povidone-iodine is required for IV insertion site cleansing

⚠️ **Trap 4:** Emergency rates (>250 mL/hr) require HCP monitoring — the nurse cannot initiate independently

**Trap 5:** Both infiltration and phlebitis require the same action — STOP the IV and restart at a different site/extremity

### ● CLINICAL JUDGMENT — NCJMM FRAMEWORK

#### 1 — RECOGNIZE CUES

Site swelling, hardness, pallor, or coolness (infiltration); redness, warmth, streaking, pain (phlebitis); sluggish flow rate; no blood return on aspiration

#### 2 — ANALYZE CUES

Cool + pale + swollen = infiltration (catheter in sub-Q tissue). Warm + red + streaking = phlebitis (vessel inflammation). Both = IV compromise

#### 3 — PRIORITY HYPOTHESIS

Continued infusion into compromised site = tissue damage or systemic infection. Priority: stop infusion immediately to prevent harm

#### 4 — TAKE ACTION

Discontinue IV → apply warm/cold compress per facility protocol → restart IV in opposite extremity if possible → document and notify HCP

#### 5 — EXPECTED OUTCOME

Resolution of swelling/redness at discontinued site; new patent IV site established; infusion resumed safely; no tissue necrosis or systemic infection

### ● MEMORY BOOSTERS

#### ❄ INFILTRATION = ICE

Inflation (swollen) | Cool skin | Extravascular (no blood return)

#### 🔥 PHLEBITIS = FIRE

Flame-red | Inflamed | Red streak | Erythematous + warm

#### FLUID SELECTION TRICK

D5W = "D for Drink" → rehydration into cells

NS/LR = "NS for Nourish Vessels" → BP support, stays vascular

#### RATE MEMORY ANCHORS

KVO = 30–60 (just a trickle)

Moderate = 100–150 (everyday therapy)

High = 175–250 (pushing fluids fast)