NGN NCLEX 2026 · GENITOURINARY · INFECTION

Urinary Tract Infection

Cystitis · Pyelonephritis · Urosepsis

Med-Surg | Pharmacology | NCJMM Integrated | High-Yield

Definition & overview

01 / FOUNDATION

WHAT IT IS

- Bacterial infection anywhere along the urinary tract: urethra, bladder, ureters, or kidneys
- **E. coli causes ~80%** — ascends from the perineum
- Females > males (urethra ≈ 4 cm vs 20 cm)

TYPES BY LOCATION

- **Urethritis** — urethra only
- **Cystitis** — bladder (lower UTI, most common)
- **Pyelonephritis** — kidney (upper UTI, can lead to **urosepsis**)

Pathophysiology

02 / MECHANISM

ASCENDING INFECTION PATHWAY

Bacteria enter urethra → Colonize bladder → Multiply → inflammation → Ascend ureters → Pyelonephritis / urosepsis

Key risk factors: indwelling catheter (CAUTI), sexual activity, urinary stasis/retention, pregnancy, diabetes, menopause (↓ estrogen), immunosuppression, poor perineal hygiene, BPH in older men.

Signs & symptoms

03 / RECOGNIZE CUES

⚠️ Lower UTI (cystitis)

- **Dysuria** — burning on urination
- **Frequency & urgency**
- Nocturia
- Suprapubic pain / pressure
- Cloudy, foul-smelling urine
- Hematuria (gross or microscopic)
- Low-grade fever (<101°F)

🚨 Upper UTI (pyelonephritis)

- **Flank pain / CVA tenderness**
- High fever (>101°F) + shaking chills
- Nausea, vomiting, malaise
- Tachycardia, hypotension
- Costovertebral angle knock = positive
- **Altered mental status → urosepsis**

🚨 **RED FLAG — Older adults:** New-onset **confusion, delirium, falls, or new incontinence** may be the **ONLY** sign of UTI. Classic symptoms (dysuria, fever) are often absent. Always rule out UTI in the confused elder.

Priority nursing interventions

04 / TAKE ACTION — ABC & SAFETY

ASSESSMENT & DIAGNOSTICS

- **Assess** urine: color, odor, clarity, volume
- **Obtain urinalysis & C&S BEFORE antibiotics** — gold standard
- **Clean-catch midstream** specimen technique
- Monitor vitals — watch for **sepsis** (↓BP, ↑HR, ↑T)
- Monitor I&O strictly
- Assess flank/CVA tenderness bilaterally

TREATMENT ACTIONS

- **Administer antibiotics** on schedule; complete full course
- **Push fluids 2–3 L/day** unless contraindicated (HF, CKD)
- Encourage frequent voiding — every 2–3 h
- Warm sitz bath or heating pad to suprapubic area for cramping
- Administer **Pyridium** PRN for dysuria
- Acidify urine: cranberry juice, vitamin C

Pharmacology

05 / HIGH-YIELD DRUGS

DRUG / CLASS	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
Trimethoprim-sulfamethoxazole (Bactrim, TMP-SMX)	Sulfonamide — blocks bacterial folate synthesis	**Sulfa allergy**, rash/SJS, photosensitivity, crystalluria, ↑K^+	Push fluids, avoid sun, check sulfa allergy FIRST
Nitrofurantoin (Macrobid)	Damages bacterial DNA in urine	GI upset, **brown/rust urine (expected!)**, pulmonary fibrosis (long-term)	Give WITH food; avoid if CrCl < 60; reassure re: urine color
Ciprofloxacin (Cipro — fluoroquinolone)	Inhibits DNA gyrase	**Tendon rupture (esp. Achilles)**, QT prolong, photosensitivity, C. diff	No dairy / antacids within 2 h; stop at first tendon pain; not for < 18 yrs
Fosfomycin (Monurol)	Cell wall inhibitor — single dose	Diarrhea, headache	ONE-dose oral packet dissolved in water; uncomplicated UTI only
Phenazopyridine (Pyridium) — ANALGESIC only	Azo dye — topical anesthetic on bladder mucosa	**Orange / red-orange urine (expected!)**, stains clothing & contacts	**NOT an antibiotic**; short-term only (max 2–3 days); take with food

NCLEX test traps ⚠️

DON'T GET TRIPPED UP

- **Confusion in an older adult = UTI** until proven otherwise — NOT "just dementia"
- **Pyridium treats pain, NOT infection** — patient still needs antibiotics
- **Orange urine + Pyridium** = EXPECTED (not a reaction)
- **Brown/rust urine + Macrobid** = EXPECTED (not hematuria)
- Obtain C&S **BEFORE** first antibiotic dose
- Cranberry juice = **prevention, not treatment**

PRIORITY VS DISTRACTOR

- **Cystitis vs pyelonephritis:** flank pain + fever > 101°F = UPPER → priority
- Catheter bag: always keep **BELOW bladder**; never let tubing loop
- CAUTI prevention: **remove catheter ASAP** is the #1 intervention
- Finish entire antibiotic course even if "I feel better"
- No bladder training with an active infection
- Vague abd pain + fever in pregnancy → rule out pyelo (risk of preterm labor)

🧠 NCJMM clinical judgment framework NGN 2026

RECOGNIZE CUES

Dysuria, frequency, cloudy urine, suprapubic/flank pain, fever, **confusion in elderly**

ANALYZE CUES

Lower UTI vs pyelonephritis? Sepsis risk? Risk factors (catheter, pregnancy, DM)?

PRIORITIZE HYPOTHESIS

Rule out pyelonephritis/urosepsis FIRST — most life-threatening

GENERATE SOLUTIONS

C&S → antibiotics, fluids 2–3 L, Pyridium PRN, catheter removal, education

TAKE ACTION

Collect clean-catch BEFORE ABX, administer ABX on time, push fluids, monitor vitals

EVALUATE OUTCOMES

↓ dysuria, afebrile, clear urine, normal mental status, completed full course

Patient education

07 / TEACH BEFORE DISCHARGE

HYGIENE

- **Wipe front to back** after toileting
- Void BEFORE & AFTER intercourse
- Cotton underwear only
- Avoid bubble baths, douches, scented products
- Shower > tub baths

FLUIDS & DIET

- Drink **2–3 L water/day**
- Cranberry juice or tablets (acidifies urine)
- Avoid caffeine, alcohol, spicy foods & citrus (bladder irritants)
- Vitamin C daily

MEDICATIONS & RED FLAGS

- **Finish ALL antibiotics**, even if you feel better
- Expect orange urine (Pyridium), brown urine (Macrobid)
- Report **flank pain, fever > 101°F, chills, vomiting** immediately
- Don't share antibiotics or save leftovers

Memory boosters

08 / MNEMONICS & PATTERNS

QUICK RECALL TOOLS

F · U · N · D · Y

Frequency · **U**rgency · **N**octuria · **D**ysuria · **Y**ellow-cloudy urine — classic cystitis triad+

C · A · U · T · I

Catheter-**A**ssociated **U**TI → #1 hospital-acquired infection. Prevent: **remove it early**, hand hygiene, closed system, bag below bladder.

PEE

Pyridium = **P**ain relief (not antibiotic) · **E**xpect orange urine · **E**phemeral — 2–3 days only

"Achilles' heel"

Cipro (all -floxacins) → tendon rupture. Stop drug at first ankle/calf pain.

Colored urine = OK

Orange = Pyridium · **Brown** = Macrobid — both EXPECTED, not a reaction

Confused elder?

Think **U-T-I** first, dementia second. New confusion + incontinence + falls = **dip the urine**.