UTI Evaluation Guidance

Pyuria (WBC ≥ 5-10)
AND (if available)
Positive urine culture (≥ 10^5 CFU if no catheter, ≥ 10^3 CFU if catheter)

Note: pyuria is highly sensitive for UTI, and the absence of pyuria rules out UTI in most patients

There are also **non-infectious causes of pyuria** e.g., recent use of urinary catheter, kidney stones, interstitial cystitis, etc.

Symptoms of UTI?
- Dysuria, urgency, frequency, suprapubic pain
- Flank pain
- Unable to report symptoms (due to mental status/foley)
IN ADDITION TO
Fever/chills/leukocytosis OR new-onset septic shock

Note: in older patients with cognitive impairment with bacteriuria and delirium (**acute mental status change**) and **without clear symptoms of UTI:**

Prefer assessment for other causes (e.g., electrolyte disturbance, dehydration, acute pain, etc) and careful observation rather than antimicrobial treatment

No

Yes

Asymptomatic Bacteriuria
Monitor off antibiotics
Except in pregnancy, planned urologic procedure, or <1 month post-renal transplant

UTI
Refer to
UTI Treatment Guidance

Note: **at least 10% of men and 20% of women age >65 have asymptomatic bacteriuria**

Rates are higher in elderly patients in long term care facilities, and patients with indwelling catheters

UTI Treatment Guidance

Febrile UTI tx must be ≥5 days

UTI Diagnosed
(See Evaluation for UTI Guidance)

Complicated Infection – See Box 1

No

- Preferred: Nitrofurantoin x 5d if CrCl >30mL/min
- If IV therapy necessary + community organisms suspected: Ceftriaxone x 3-5d

Yes – IV Beta-lactam* upfront

* IV Beta-lactam empiric choice:
Review UCx and BCx over last 12 months
If no significant historical Cx findings:
- Community w/o MDR risk factors or shock: CTX
- Community w/o MDR risk factors w/ shock: Zosyn
- MDR risk factors w/ shock: meropenem

Stepdown: Bacteremia or prostatitis present?

No

Pyelonephritis present?

No

- If cefazolin susceptible:
  - cephalexin (if able to take QID)
  - cefpodoxime (if not able to take QID)
- If cefazolin resistant:
  - low risk (rapid clinical improvement on ceftriaxone, able to follow return precautions, and not immunocompromised): cefpodoxime
  - higher risk (any of above not met): refer to bacteremia pathway

Yes

- Preferred: Bactrim/Cipro (see bacteremia pathway)
- Alternative: Oral beta-lactams (see pathway on left)

Box 1
The following findings are suggestive of **complicated infection**:
- Fever
- Elevated WBC
- Undrained obstruction e.g., renal stone/hydronephrosis/stent/abscess
- Flank pain
- Pyelonephritis
- Nephrostomy
- Prostatitis
- Urethral catheter

Yes

Reasons to avoid SMX/TMP?
- Sulfa allergy
- Hemodialysis patient or CrCl <30
- Elevated potassium (or concurrent ACEi/ARB & aldosterone receptor antagonist use)
- Drug-drug interactions (e.g., Dofetilide)
- Bone Marrow Suppression

No

Preferred: SMX/TMP

Yes

Preferred: Cipro

UTI Treatment Guidance

Antimicrobial	Comments	Duration of Therapy	
		Uncomplicated Cystitis	Uncomplicated Pyelonephritis
Nitrofurantoin (Macrobid®) monohydrate/macrocrystals Dose: 100 mg twice daily	• Do not use for pyelonephritis • Do not use in patients with systemic symptoms/bacteremia • Avoid use in 1st trimester of pregnancy and at term (38 to 42 weeks' gestation) • Avoid in eGFR ≤30 mL/min/1.73 m²	5 days	Do Not Use
Trimethoprim-sulfamethoxazole Dose: 160/800 mg twice daily	• Avoid in sulfa allergy • Avoid empiric use if resistance >20% • Avoid in 1st and 3rd trimester of pregnancy • Alternative oral agent for concurrent prostatitis	3 days	7 to 14 days No evidence to suggest 7d inferior to 14d
Ciprofloxacin Dose: 250 to 500 mg twice daily **Levofloxacin** Dose: 500 mg to 750 mg once daily	• Use alternative for uncomplicated cystitis due to adverse effects (FDA 2016) • Avoid empiric use due to increased *E. coli* resistance (>10%) • Avoid use in pregnancy • Preferred oral agent for concurrent prostatitis	3 days	Ciprofloxacin 500 mg: 7 days Levofloxacin 750 mg: 5 days
Oral β-lactam agents • Amoxicillin • Amoxicillin/clavulanate • Cefpodoxime • Cephalexin	• Generally inferior efficacy compared with other UTI antimicrobials – use with caution • Avoid in bacteremia • Reserve amoxicillin for ampicillin-susceptible *Enterococcus* • Consider for oral stepdown therapy	3 to 7 days	10 to 14 days
IV β-lactam agents • Ceftriaxone • Cefepime • Piperacillin/Tazobactam • Ertapenem • Meropenem	• For empiric use in patients with history of MDR pathogens (except ceftriaxone) • For targeted use in patients with isolated MDR pathogen (except ceftriaxone) • Prefer ceftriaxone empiric if no MDR hx • Prefer cefepime for ampC-producers • Reserve carbapenems for ESBL-producers	3 days	7 days

Bacteremia Duration of Therapy

Recent literature suggests **7 days** of therapy is adequate for patients with **uncomplicated bacteremia from UTIs*** due to **E. coli, K. pneumoniae, and Proteus**. The literature does not support this shortened duration for other organisms/sources of infection at this time. The patient must be **hemodynamically stable and afebrile for at least 48 hours** to be eligible.

*Uncomplicated bacteremia from UTI if:
- No uncontrolled focus (e.g. undrained abscess, stone, stent, hydronephrosis, prostatitis)
- No complicated host factors (prosthetic valves, significant immunosuppressive condition)
- No positive repeat blood cultures
- Urethral catheters (if applicable) were removed/exchanged