



VASP Urinary Tract Infections - Inpatient Management

Note: High risk patients are not addressed in this algorithm



Positive UA in Patient Unable to Report Symptoms & Has Signs/Sx of Infection without Other Source or in Patient Who Reports UTI Symptoms:

- >10 Wbc on urine
- Positive leukocyte esterase, nitrate or presence of bacteria alone does not meet criteria

Nitrofurantoin is typically avoided in the first trimester.

TMP/SMX is typically avoided in the first trimester and after 32 weeks.

Urologic procedures require 24 hours of prophylaxis.

Fosfomycin is restricted to ID approval.

Nitrofurantoin should only be used for E. coli and susceptible gram-positive organisms.

Adjust doses based on renal function.

Asymptomatic Bacteriuria Treatment

ASB should **not** be treated regardless of pyuria or isolation of bacteria on urine culture (including resistant organisms).

***Treatment is recommended in pregnancy, prior to urologic procedures, and in kidney transplant recipients within 30 days.**

1st line (regardless of trimester)
 Amoxicillin 500 mg PO TID x 5 days
 Cephalexin 500 mg PO BID x 5 days

2nd line
 Nitrofurantoin monohydrate 100 mg PO BID x 5 days
 TMP/SMX 1 DS PO BID x 3 days
 Fosfomycin 3 g ONCE (for E. coli and E. faecalis ONLY)

Fever, hypotension, tachycardia, leukocytosis, etc.

Alternatives to consider:
 O2 requirement suggests pneumonia, post-op fever within 48 hours, etc.

Possible explanations:
 PE, DVT, b/ venous hyperstasis, CHF, dehydration, medication interactions (especially for Geriatrics)

Clear Symptoms:	May be Symptoms:	Without Other Symptoms, NOT Indicative of UTI:
Without urinary catheter <ul style="list-style-type: none"> Dysuria Urinary frequency or urgency Suprapubic pain Flank pain Costovertebral angle tenderness Septic shock and no other obvious source With urinary catheter <ul style="list-style-type: none"> Suprapubic pain Flank pain Costovertebral angle tenderness Septic shock 	Without urinary catheter <ul style="list-style-type: none"> Fever Leukocytosis Hypotension with no other known cause With urinary catheter <ul style="list-style-type: none"> Fever Leukocytosis Hypotension with no other known cause Delirium 	Without urinary catheter <ul style="list-style-type: none"> Altered mental status Change in urine color, sediment, or smell With urinary catheter <ul style="list-style-type: none"> Change in urine color, sediment, or smell

Complicated UTI: infection beyond the bladder in women OR men
 Pyelonephritis
 Febrile or bacteremia UTI
 CA-UTI

Uncomplicated UTI: infection confined to the bladder in afebrile women

BEFORE Ordering Antibiotics...

- Review prior VJMC and outside urine cultures for the last 6-12 months
- Tailor antibiotic choice based on those cultures
- For cultures older than 12 months, it is UNLIKELY those organisms are driving current clinical picture

Complicated UTI classifications for guidelines purposes (intended to guide treatment, not diagnosis)

- Clinical presentation:
 - Complicated UTI is accompanied by symptoms which suggest an infection extending beyond the bladder, including:
 - Fever
 - Other signs or symptoms of systemic illness (including chills, rigors, or hemodynamic instability)
 - Flank pain
 - Costovertebral angle tenderness
- Pyelonephritis is encompassed in complicated UTI.
- UTI associated with transurethral, suprapubic, or intermittent catheterization is encompassed in complicated UTI.
- Populations:
 - Patients with complicated UTIs may have an indwelling urinary catheter, neurogenic bladder, urinary obstruction, or urinary retention as an underlying condition.
 - These guidelines are not intended to apply to bacterial prostatitis, epididymitis, or orchitis.

Uncomplicated UTI classifications for guidelines purposes (intended to guide treatment, not diagnosis)

- Clinical presentation:
 - A clinical syndrome characterized by local bladder signs and symptoms such as dysuria, urgency, frequency, and suprapubic pain.
 - Uncomplicated UTI is presumed to be confined to the bladder and is defined by absence of signs or symptoms which suggest an infection extending beyond the bladder:
 - No fever
 - No other signs or symptoms of systemic illness (including chills, rigors, or unstable vital signs)
 - No flank pain
 - No costovertebral angle tenderness
- Populations:
 - Uncomplicated UTI can occur in females or males, patients with underlying urologic abnormalities, patients with immunocompromise, and persons with diabetes. Recurrent UTI can be uncomplicated.
 - Patients with urinary catheters (including transurethral, suprapubic, and intermittent catheterization), stents, and percutaneous nephrostomy tubes do not have uncomplicated UTI.
 - These guidelines are not intended to apply to bacterial prostatitis, epididymitis, or orchitis.

Uncomplicated Cystitis Without Sepsis, Bacteremia or Pyelonephritis Treatment

- Nitrofurantoin 100 mg PO BID x 5 days
- Cephalexin 500 mg PO BID x 5 days
- Amox-Clav 875-125 PO BID x 5 days
- Ceftriaxone 2 g IV x 3 days

Confirm Susceptibility:

- TMP-SMX 1 DS BID x 5 days
- Amox 500 mg PO TID x 5 days
- Cipro 500 mg PO BID x 3 days
- Levo 500 mg PO daily x 3 days
- Fosfomycin 3 g ONCE

Fluoroquinolones should be reserved for more serious infections than uncomplicated cystitis, and only after susceptibility results are confirmed given high rates of resistance.

Fosfomycin is restricted to ID approval. Nitrofurantoin should only be used for E. coli and susceptible gram-positive organisms. Adjust doses based on renal function.

CA-UTI Treatment

- Ceftriaxone 2 g IV x 7 days
- Cephalexin 500 mg PO QID x 7 days
- Amox-clav 875-125 BID x 7 days
- Amox 500 mg PO TID x 7 days

Confirm Susceptibilities prior to Rx:

- TMP-SMX 1 DS BID x 7 days
- Cipro 500 mg PO BID x 5 days
- Levo 500 mg PO daily x 5 days
- Fosfomycin 3 g q48h x 3 doses

Complicated UTI with Sepsis or Bacteremia, Pyelonephritis Treatment

- Ceftriaxone 2g IV daily

Critically ill:

- Cefepime 2g q8h IV or
- Pip/tazo 4.5g q8h IV

**** If ESBL in last 6 months, consider meropenem 1g q8h****

Step down to PO based on susceptibilities: With or Without Bacteremia

- Amoxicillin 1g TID PO x 7 days
- Amox-clav 875-125 PO TID x 7 days
- TMP-SMX 2DS BID x 7 days
- Cephalexin 1g PO QID x 7 days
- Ciprofloxacin 750mg PO BID x 7 days
- Levofloxacin 750mg PO daily x 7 days

If there is concern for Enterococcus spp. piperacillin-tazobactam is the preferred empiric agent.

MRSA coverage is NOT usually indicated unless the patient has a history of MRSA UTI or has recent procedure or instrumentation.

Fluoroquinolones are not recommended for empiric therapy due to increasing rates of E.coli resistance.

This guidance does NOT include treatment for prostatitis or perinephric abscess; please consult ID for assistance if needed.

Day 1 (of 7) is the first day of active antibiotic therapy.

Adjust doses based on renal function.