Empiric management of Urinary Tract Infections (UTI)

DIAGNOSIS

Presence of signs/symptoms of urinary tract infection plus positive urinalysis and culture.
Asymptomatic bacteriuria is common and does not lead to symptomatic infections in most cases.

MOST COMMON BACTERIAL ORGANISMS

Empiric therapy is directed at Enterobacteriaceae (*E.coli* account for >75%)

Less common UTI Pathogens:

- *Staphylococcus saprophyticus*
- *Enterococcus sp* (elderly, prior antibiotics)
- *Staphylococcus aureus, Pseudomonas sp* (long-term catheterization)

SYMPTOMS

Cystitis	Dysuria, urinary frequency, urinary urgency, suprapubic pain
Pyelonephritis	Symptoms of cystitis not always present; fever (>38°C), chills, flank pain, costovertebral angle tenderness, and nausea/vomiting

- Urine cultures should only be collected in patients with high clinical suspicion of UTI
- Urine cultures should NOT be obtained for asymptomatic patients with foul smelling or cloudy urine.
- If indwelling urinary catheter, samples should be obtained from newly placed catheter (within 5 days) or by straight catheterization.
- A positive urine culture may confirm a suspected UTI, but may also reflect asymptomatic bacteriuria
- Consider sexually transmitted infection (chlamydia, gonorrhea) in sexually active patients with symptoms of urethritis
- In males with recurrent infection, consider prostatitis

DEFINITIONS:

Asymptomatic Bacteriuria	Positive urine culture without signs or symptoms of a UTI - reflects colonization of the urinary tract
Uncomplicated UTI	UTI in female patient who is otherwise healthy, not pregnant, and with normal urinary tract anatomy
Complicated UTI	UTI in patient with: pregnancy, urinary tract obstruction, functional or anatomic abnormality of the urinary tract, renal failure, diabetes mellitus, immunosuppression, hospital-acquired infection, renal transplant, males
Complicated pyelonephritis	Upper UTI complicated by an abscess, nephrolithiasis, papillary necrosis, or emphysematous pyelonephritis
Catheter-associated UTI	UTI in patient with indwelling bladder catheters or occurring within 2 days of catheter removal

EMPIRIC TREATMENT

Asymptomatic bacteriuria	Treat ONLY pregnant women, patients with renal transplant within past 1 month and/or patients who will have major urologic surgery
Acute uncomplicated cystitis (lower tract UTI)	**TMP/SMX-DS 1 tablet po BID x 3 days**
	Alternative (if sulfa allergy): Nitrofurantoin 50 mg po Q6H x 5 days
Acute complicated cystitis	**TMP/SMX DS 1 tablet po BID x 7 days**
	Alternative (if sulfa allergy): Ciprofloxacin 500 mg po BID x 7 days
Acute uncomplicated pyelonephritis	**Ciprofloxacin 500 mg po BID x 7 days** **OR** **TMP/SMX DS 1 tab po BID x 14 days**
Acute complicated pyelonephritis	**Ceftriaxone 1 g iv Q24H** If age greater than 75y, add ampicillin 1 g iv Q6H (for enterococcal coverage)
	If severe beta-lactam allergy: Tobramycin 5 mg/kg iv Q24H **OR** Ciprofloxacin 500mg po BID x 10-21 days +/- Vancomycin IV 15 mg/kg iv q12h (for enterococcal coverage) (pharmacy for dosing recommendation)

DATA ON RESISTANCE

Resistance rate of up to 20% for *E. coli* to TMP/SMX reported.

Check cultures and readjust therapy as necessary

ADDITIONAL COMMENTS

- **Fluoroquinolones:** should be spared to decrease risk of development of resistance and *C. difficile* colitis; also **FDA black box safety warnings**:
  - increased risk of ruptures or tears in the aorta blood vessel (2018)
  - significant decreases in blood sugar and certain mental health side effects (2018)
  - disabling side effects of the tendons, muscles, joints, nerves, central nervous system (2016)
  - peripheral neuropathy (2013)
  - tendinitis and tendon rupture (2008)
- Enterococci should not be treated with TMP/SMX

REFERENCES

Gupta, et al. International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases Clinical Infectious Diseases 2011;52(5):e103–e120

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