Uncomplicated Cystitis

- Infection of the lower urinary tract
- No signs or symptoms that suggest an infection extending beyond the bladder (such as fever, chills, back pain, nausea, vomiting)
- No risk factors for complicated infection

MOST COMMON MICROORGANISMS

- *Escherichia coli*
- Other Enterobacteriaceae (*Klebsiella* sp., *Proteus* sp.)

RESISTANCE PATTERNS

- Increasing *E. coli* resistance to fluoroquinolones. These agents are not recommended for empiric or first line treatment of uncomplicated cystitis.
- Local uropathogens’ susceptibilities should be considered when choosing empiric treatment:
  - Trimethoprim/sulfamethoxazole should not be used if resistance exceeds 20%
  - Ciprofloxacin should not be used if local resistance exceeds 10%

DIAGNOSTIC CONSIDERATIONS

- Signs and symptoms: dysuria, urgency, frequency, suprapubic pain/tenderness
- No symptoms of upper urinary tract infection: fever, chills, flank pain, costovertebral angle tenderness
- No risk factors for complicated infection:
  - Pregnancy
  - Immunosuppression
  - Diabetes (especially if long term complications)
  - Indwelling catheter
  - Anatomical abnormality
  - Voiding dysfunction
  - Obstruction
  - Recent urogenital procedure
- Cystitis in men is often, but not always, considered complicated. Investigation for anatomical abnormalities or prostatitis should be considered.
- **Urine culture** is not generally recommended unless:
  - Antibiotic use or UTI in last 3-6 months
  - Suspected UTI in a male
  - Travel outside North America in last 6 months
  - Recent hospitalization
  - History of a UTI caused by a multidrug resistant microorganism
  - Complicated UTI
  - Failure to respond to empiric therapy after 48hrs

- The reliability of the urine dipstick as a diagnostic tool for UTI is low due to an inability to differentiate between an infection and asymptomatic bacteriuria, and is not recommended as a test for diagnosing UTI.

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MANAGEMENT CONSIDERATIONS

- Post treatment urine cultures are not recommended if adequate response to therapy

EMPIRIC TREATMENT

- First line:
  - Nitrofurantoin macrocrystals 100 mg twice daily x 5 days*

- Second line:
  - Fosfomycin 3 g x 1 dose
  - Trimethoprim-sulfamethoxazole (TMP-SMX) 1 DS tablet twice daily x 3 days*
  - Cephalexin 500 mg qid x 5-7 days*
  - Amoxicillin-clavulanate 875/125 mg twice daily x 5-7 days*

  * Treatment duration of 7 days is recommended in males with uncomplicated cystitis

SPECIAL CONSIDERATIONS

- Ciprofloxacin is no longer recommended as first line treatment due to high risk of adverse effects including tendinopathy, aortic dissection, peripheral neuropathy, central nervous system effects and C. difficile infection.
- Moxifloxacin should not be used as it does not attain sufficient concentration in the urine
- TMP-SMX
  - Associated with higher risk of renal injury, hyperkalemia, and sudden death if
    - Patients aged 65 years and older
    - Patients on medications that can increase potassium: angiotensin converting enzyme inhibitor (ACEi), angiotensin receptor blocker (ARB), or K+ sparing diuretic (e.g. spironolactone)
  - Regular monitoring of kidney function and electrolytes are recommended for patients with risk factors for hyperkalemia or prolonged duration of therapy.
- Nitrofurantoin should not be used in patients with:
  - CrCl less than than 30 ml/min
  - Infections outside lower urinary tract due to poor distribution into serum and tissue

- If *Staphylococcus aureus* is isolated in the urine, bacteremia may be present. The patient must be assessed for other sources of infection.

REFERENCES