University of Nebraska Medical Center
Nebraska Medicine

Guidance on UTI Management in the Ambulatory Care Setting

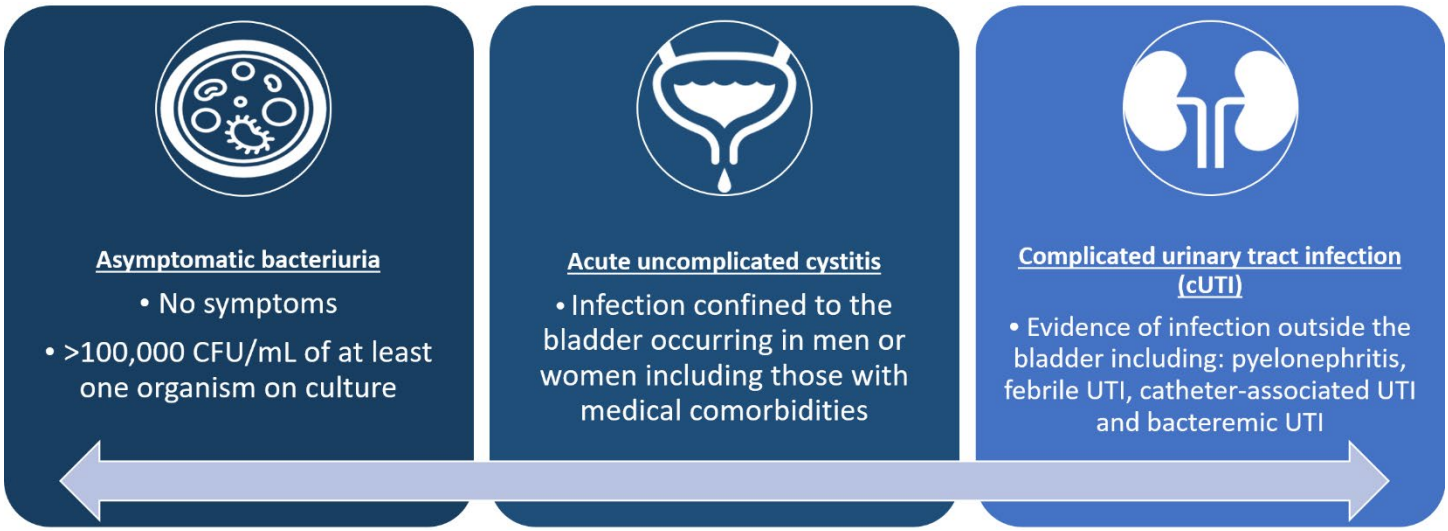

Figure 1: UTI Definitions

Definitions

Asymptomatic bacteriuria (ASB)

- ASB is defined as isolation of >100,000 CFU/mL of at least one organism on culture in the absence of symptoms. [1]

Acute uncomplicated cystitis (uUTI)

- uUTI is characterized by lower urinary tract symptoms without evidence of infection beyond the bladder and can occur in females or males, patients with underlying urologic abnormalities, immunocompromised patients, those with comorbidities including diabetes, or be recurrent.[2]

Complicated urinary tract infection (cUTI)

- cUTI includes patients with symptoms suggesting extension of infection beyond the bladder including: febrile patients, pyelonephritis, catheter associated UTI, and UTI with bacteremia.
    - Patients with catheter use (indwelling suprapubic, intermittent catheterization), nephrostomy tubes, or recent urologic stenting are also considered cUTI
    - Prostatitis and renal abscesses are not currently addressed in guidelines and may need longer treatment duration[2]

Diagnosis

- UTI is a clinical diagnosis based on history and exam. Urine studies alone cannot diagnose UTI in the absence of clinical symptoms.
- Detection of bacteriuria in the absence of symptoms is designated asymptomatic bacteriuria (ASB). **Treatment of asymptomatic bacteriuria is harmful in virtually all patient populations** and should be avoided with 2 exceptions:
    - Treatment of asymptomatic bacteriuria is appropriate in pregnancy due to increased risk of progression to symptomatic UTI and pyelonephritis
    - Patients undergoing urologic procedures with mucosal trauma should receive a urine culture to guide pre-operative single dose prophylaxis (DO NOT provide a full treatment course)[3]
- Treatment of ASB will result in patient harm including increased antimicrobial resistance, antibiotic side effects and toxicities without benefit, increased *C. difficile* risk, vaginitis (bacterial vaginosis and candida vulvovaginitis) as well as increased risk of subsequent symptomatic UTI[1]

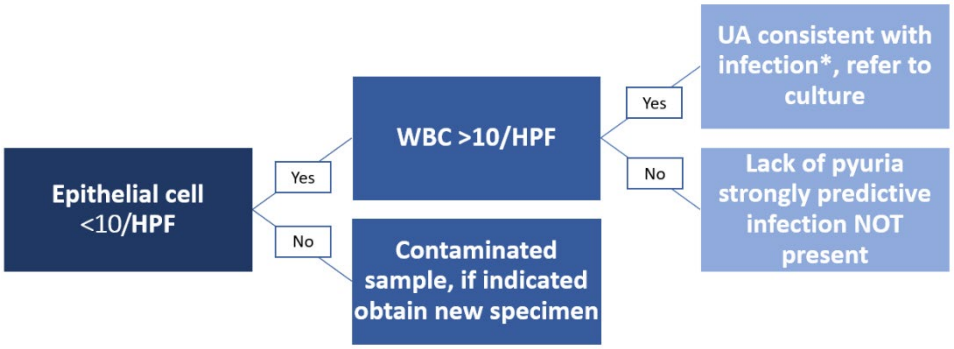

Figure 2: Interpretation of Urinalysis

Interpretation of Urinalysis

Figure 1: Interpretation of urinalysis *Urinalysis (UA) should be correlated with clinical findings to make a diagnosis

- **Step 1**: Evaluate for epithelial/squamous cells. Samples with epithelial cells >10 per high powered field (HPF) or >100 squamous cells per low power field are contaminated and should not be used for UTI evaluation. Cultures from these samples typically grow multiple organisms and are uninterpretable. Obtain an additional sample if clinically relevant (patient has urinary symptoms)
- **Step 2**: Evaluate for pyuria which is defined as >10 WBC per high power field. The absence of pyuria (<10 WBC per hpf) has a negative predictive value of 92-98%. The presence of pyuria does not diagnose UTI, as the positive predictive values ranges from <10-35%[4]
- **Other Urine findings**: While patients with UTI can have blood, nitrites, and/or bacteria detected in their urine, patients without UTI can often have these same things detected. Thus, the presence or absence of these findings is neither sensitive nor specific for UTI and should NOT be used to diagnose UTI[4,5].
- **Detection of Yeast in the Urine**: The detection of yeast in the urine is generally considered a contaminant and occurs either through contamination with vaginal/skin flora or colonization of a urinary catheter. Patients with yeast detected in their urine who have an indwelling catheter should have their catheter exchanged and if UTI remains a concern repeat urine studies could be obtained. Very rarely Candida can cause UTI, although other causes of symptoms should be evaluated thoroughly and clinical findings should be strongly suggestive of infection before considering treatment[6].

Treatment

Recommendations for Treatment of Asymptomatic Bacteriuria in Specific Populations

Most patient populations should not be treated for asymptomatic bacteriuria due to lack of benefit and risk of harms with the exception of pregnant patients and those undergoing urologic procedure with mucosal trauma.

Pregnancy

- Nitrofurantoin 100mg x 5 days
- Cephalexin 500mg BID x 7 days
- Fosfomycin tromethamine 3g x single dose
- Avoid trimethoprim/sulfamethoxazole and fluoroquinolones are contraindication in pregnancy

Impending urologic procedure

- Choice should be based on culture and susceptibility
- Dose should be given **30-60 minutes prior to procedure x 1 dose**
- Prefer narrow spectrum beta-lactam (cefazolin) if available, alternatives include ceftriaxone and levofloxacin

Pregnancy
• Nitrofurantoin monohydrate/microcrystal 100mg BID **x 5 days** **OR** • Cephalexin 500mg BID **x 7 days** **OR** • Fosfomycin tromethamine 3g x **single dose** **Note:** Trimethoprim/sulfamethoxazole and fluoroquinolones are contraindicated in pregnancy
Impending urologic procedure
• Choice should be based on culture and susceptibility • Dose should be given **30-60 minutes prior to procedure x 1 dose** • Prefer narrow spectrum beta-lactam (cefazolin) if available, alternatives include ceftriaxone and levofloxacin

Figure 3: Agents for the Treatment of Asymptomatic Bacteriuria in Pregnancy and Impending Urologic Surgery

Recommendations for Management of Uncomplicated UTI

First-line agent:

- Nitrofurantoin 100mg BID x 5 days
    - Do not use if CrCL <30

Second-line agents (in order of preference):

- Trimethoprim/sulfamethoxazole 160/800mg (one double strength tablet) BID x 3 days
- Cephalexin 500mg BID x 7 days
- Fosfomycin tromethamine 3g x single dose

First-line agent:
• Nitrofurantoin monohydrate/microcrystal 100mg BID **x 5 days**   o Do not use if CrCL <30
Second-line agents (in order of preference):
• Trimethoprim-sulfamethoxazole 160/800mg (one DS tablet) BID **x 3 days** **OR** • Cephalexin 500mg BID **x 5-7 days** **OR** • Fosfomycin tromethamine 3g x **single dose**

Figure 4: Uncomplicated UTI Treatment Recommendations

Recommendations for Management of Complicated UTI

Many cUTI will be managed inpatient but stable patients can be managed in the outpatient setting. Empiric therapy should be guided by recent treatment and urine culture data if available. If a fluroquinolone was prescribed in the last 12 months or the patient has a history of resistance to fluoroquinolones we recommend using an alternative agent until culture is available. Urine culture should be obtained in all cUTI and therapy adjusted based on results.

First-Line agents:

- Levofloxacin 750mg daily 5-7 days
  - Most patients can be treated with 5 days
  - Those with associated bloodstream infection should be treated with 7 days
- Trimethoprim/sulfamethoxazole 160/800mg (one double strength tablet) BID x 7 days

Second-line agents:

- Amoxicillin-clavulanate 875/125mg BID x 7 days **PLUS** ceftriaxone 1g IM x 1 dose

First-line agents:
• Levofloxacin* 750mg daily **x 5-7 days** **OR** • Trimethoprim/sulfamethoxazole 160/800mg (one DS tablet) BID **x 7 days**
Second-line agents:
• Amoxicillin-clavulanate 875/125mg BID **x 7 days PLUS** Ceftriaxone 1g IM **x 1 dose**
Most cUTI will be managed inpatient; stable patients can be managed outpatient. Empiric therapy should be guided by recent treatment and urine culture data if available. If fluroquinolone prescribed in last 12 months, or history of resistance use an alternative agent until culture available. Adjust therapy as needed based on urine culture results. *Ciprofloxacin 500mg BID is an alternative

Figure 5:Complicated UTI Treatment Recommendations

References

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