Nebraska Medicine
SERIOUS MEDICINE. EXTRAORDINARY CARE.

Guidance on Urinary Tract Infection (UTI) in Special Populations

Evaluation of UTI in Elderly Patients and Residents of Long-term Care Facilities:

Symptoms:

- UTI is common in this population, but diagnosis is challenging as is diagnosis due to underlying urologic problems such as bladder dysfunction
- UTI onset may be heralded by typical UTI symptoms or significant worsening of chronic symptoms
- Symptoms and signs have a poor positive predictive value (50-60%) and are primarily useful in ruling out UTI. Diagnosis of UTI must include urine studies.
- In non-severely ill patients, antibiotic therapy should be withheld if the diagnosis is uncertain
- Non-specific symptoms such as changes in behavior/functional status, general fatigue, changes in urine quality, or falls should NOT prompt urine studies

Signs/symptoms where urine testing is appropriate:	Signs/symptoms should NOT prompt urine testing:
• Dysuria • Urgency • Gross hematuria • New/worsening incontinence • Fever or shaking chills • Suprapubic/bladder pain • CVA tenderness • True delirium	• Urinary retention • Changes in mental status, behavior, or functional status • Changes in urine color, quality, or odor • Fall • General malaise, fatigue, or feeling unwell • Patient or family request

- UTI can be associated with changes in mental status in the elderly, but altered mental or functional status **alone** should **not** prompt UTI evaluation[1]
    - Nearly all elderly patients with complicated UTI have fever and/or UTI symptoms[2]
        - Those without UTI symptoms or fever will have other signs of clinical illness (tachycardia, hypotension, leukocytosis, etc.)
        - The absence of UTI symptoms, fevers, or other signs of infection basically rules out complicated UTI and the need for immediate antibiotics

Urine Studies:

- Urine study interpretation is challenging in the elderly as abnormal findings (pyuria, bacteriuria) are very common in patients without evidence of UTI
- Pyuria is defined at >10 WBC per high power field
    - The absence of pyuria has a negative predictive value of 92-98%
    - The presence of pyuria has a positive predictive value of <15%

- Pyuria is useful in ruling out UTI, but its presence does not indicate a UTI is present
    - In the elderly the presence of pyuria is **not** useful in determining if a UTI is present

Treatment:

- Patients who exhibit findings suggestive of complicated UTI (see guideline) or systemic signs (fever, rigors, clear cut delirium without another cause) with urine studies that have not ruled out UTI (<10 WBC) are appropriate for initiating antibiotic therapy
    - Agents should be chosen based on cUTI guideline
- In stable patients where the UTI diagnosis is unclear, another explanation is possible, or where urine studies do not support a UTI, antibiotics should be withheld pending further evaluation
    - Provide hydration and actively monitor

Evaluation and Management of UTI in Patients with Neurogenic Bladder:

Neurogenic Bladder Definition: Lower urinary tract dysfunction due to disturbance of neurological control mechanism typically due to spinal cord injury, multiple sclerosis, spina bifida, Parkinson's disease, or stroke. Neurogenic bladder is associated with:

- High rates of urinary catheter use (both indwelling and intermittent)
- High rates of asymptomatic bacteriuria (50-100%) and asymptomatic pyuria
- Increased risk of UTI

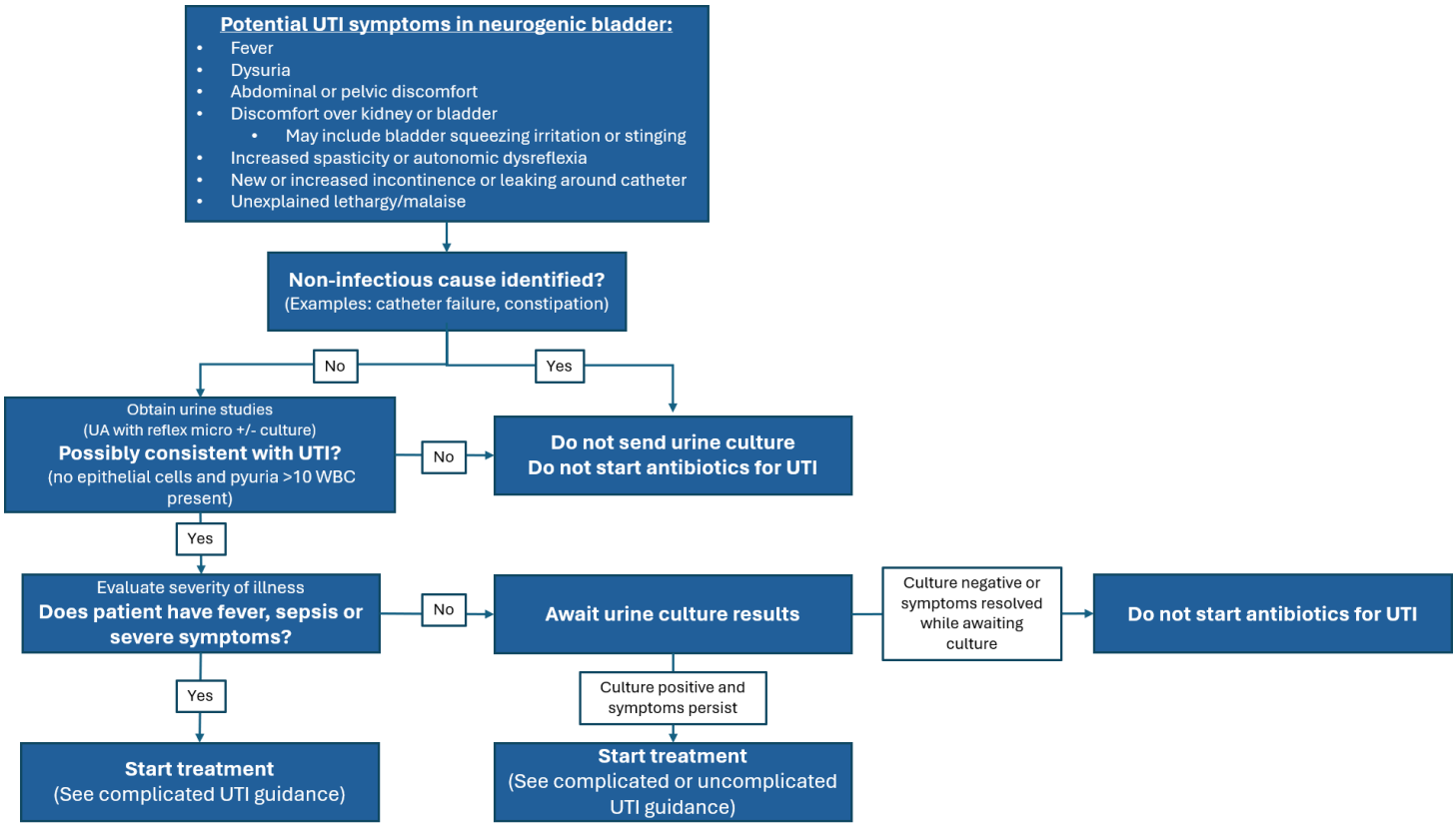
Symptoms: Patients with neurogenic bladder may have atypical and non-localizing symptoms with UTI[3,4]

- Typical symptoms may be present (dysuria, fever, abdominal/pelvic discomfort, pain over bladder/kidney)
- Atypical symptoms can include atypical bladder pain (squeezing, stinging, etc.), increased spasticity, new autonomic dysreflexia, new or increased incontinence (including leaking around catheter), or unexplained lethargy/malaise
    - Atypical symptoms are poorly predictive of UTI and alternative causes of symptoms should be explored including catheter failure, constipation, etc.

Urine studies:

- If an alternative explanation of symptoms is not obvious urine studies should be ordered
    - Patients who do not have pyuria (<10 WBC/hpf) are highly unlikely to have a UTI and alternative diagnoses should be pursued
- If urine studies do not rule out UTI (>10 WBC/hpf), send a urine culture and consider if immediate treatment is indicated
    - Immediate treatment is reasonable in patients with fever, sepsis, or severe symptoms
    - Otherwise, treatment should be withheld.
        - Patient should be hydrated and monitored

Figure 1: Evaluation and Management for UTI in Patients with Neurogenic Bladder[5]



Treatment:

- If no indication for immediate treatment (fever, sepsis, severe symptoms), await urine culture results to determine if treatment is indicated
    - Urine culture negative or $<10^5$ CFU/ml in clean catch specimen → Do not treat
    - Urine culture positive → Re-evaluate symptoms
        - If symptoms have improved or resolved no need for treatment
        - If symptoms unchanged, treat based on urine culture results
- Choose treatment based on current UTI guideline recommendations and culture results

References:

1. Rowe TA et al. *Infect Control Hosp Epidemiol*. 2020 Dec 9:1-10.
2. Bai AD, et al. BMC Infect Dis. 2020;20:781.
3. Wirth M, et al. *Am J Phys Med Rehab*. 2023;102:663-9.
4. Farrelly E, et al. *Scand J Uro*. 2020;54:155-61.
5. Milligan J, et al. Top Spinal Cord Inj Rehabil. 2020;26:108-115

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