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ELDER CARE

A Resource for Interprofessional Providers

Urinary Tract Infections in Long-Term Care

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This edition of Elder Care addresses diagnosis and treatment of urinary tract infections (UTI) in non-catheterized patients in long-term care facilities. UTIs are said to be the most common infections in residents of long-term care facilities as well as in home-bound and ambulatory older adults. It is also the most frequent indication for starting antibiotics in older adults. There is growing realization, however, that many older adults treated for a UTI do not actually meet the standard case definition for having a UTI (Table 1).

Asymptomatic Bacteriuria

Up to 50% of older adults residing in long-term care facilities will have a positive urine culture without meeting the clinical criteria for UTI. These individuals have asymptomatic bacteriuria and do not require antibiotic therapy. Yet, nearly 70% of long-term care facility residents receive at least one course of antibiotics every year, and many receive multiple courses, often to treat what has been diagnosed as a "recurrent" or "chronic" UTI, but which is often simply asymptomatic bacteriuria.

Non-UTI Syndromes

Sometimes patients have non-specific symptoms such as confusion or lethargy, a urine dipstick positive for leukocyte *esterase and/or nitrites, and a urine culture with a colony count of 25,000 to >100,000 with an identified organism and antibiotic* susceptibilities. While the patient may have those symptoms, this clinical picture is a "non-UTI" as the patient does not meet the criteria in Table 1. Nonetheless, this non-UTI scenario often masquerades as a UTI and leads clinicians to prescribe antibiotics. Some other common masquerade scenarios and the appropriate responses to those scenarios are shown in Table 2. The risks of inappropriate antibiotic use in these scenarios include the emergence of multi-drug resistant organisms, an increased risk of *Clostridium difficile* infection, and adverse effects from antibiotic medications.

Table 1. Case Definition of UTI in Non-Catheterized patients

Microbiologic and clinical criteria must both be met

Microbiologic Criteria:

- Urine culture with ≥100,000 cfu/ml of one organism

Clinical Criteria:

- Acute dysuria OR
- Fever OR leukocytosis AND one** of the following
  1. Suprapubic pain or tenderness
  2. Gross hematuria
  3. New or marked increase in urgency, frequency, or incontinence

** If no fever or leukocytosis, then two or more of 1-3 must be present

Information modified from Stone (see reference list)

Table 2. Common Scenarios in Which Asymptomatic Bacteriuria Is Misinterpreted as UTI in Non-Catheterized Patients

Masquerade Scenario	Appropriate Response
Patient is otherwise well but has a positive urine culture with >100,000 colonies of E. Coli, so patient should be treated with antibiotics.	In the absence of symptoms, this patient has asymptomatic bacteriuria. Diagnosis of UTI requires both positive culture and specific clinical criteria (Table 1).
Patient is confused this morning. Should order urinalysis and culture and start antibiotics while awaiting results.	Hold antibiotics until urine results are back. Give fluids and careful observation while awaiting results.
Culture results show 50,000 colonies of E. coli and testing for extended-spectrum beta lactamase (ESBL) is positive. Patient should be treated because this is a "superbug."	Presence of a multi-drug resistant organism is not, by itself, an indication for antibiotic treatment or contact isolation. Patient should meet criteria for UTI (Table 1) before starting antibiotics.
Patient has a positive urinalysis and culture. Although asymptomatic at this time, patient should be treated to avoid risk of invasive infection developing later.	Multiple studies show that antibiotic treatment of asymptomatic bacteriuria confers no benefit and does not prevent invasive disease.

TIPS

- STOP: Antibiotics, urinalyses, and urine cultures are not indicated as the initial approach to mental status changes, foul smelling urine, or urine color changes.
- OBSERVE: When such findings are present, increase fluid intake for 24-48 hrs, and monitor the patient's fluid input/output and vital signs. Seek alternative causes for mental status changes, like dehydration, dementia, medications effects, etc.
- TREAT: Only when patients have clinical findings of UTI (Table 1) and a positive urine culture (≥ 100,000 cfu/ml).
- Antibiotics of choice for uncomplicated UTIs are short course (3-5 days) nitrofurantoin or trimethoprim-sulfamethoxazole. Avoid fluoroquinolones for uncomplicated UTI unless patient has no other treatment options available.

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Clinical Evaluation

Best practice standards say that when there is uncertainty about a UTI in an older adult who lives in a long-term care facility, the correct approach to managing the uncertainty is withholding empiric antibiotic treatment, not ordering urine studies initially, increasing fluid intake, and actively observing the patient for 24-48 hours. At the end of the observation period, symptoms have often resolved and unnecessary antibiotics will have been avoided.

If the clinical picture has not resolved, or if the patient's condition deteriorates at any time during observation, urine studies can then be obtained. If results of the urine studies are positive and the patient also has clinical findings that meet the definition of UTI (Table 1), antibiotic treatment can be initiated.

Practical implementation of this approach in a long-term care facility depends on updating the facility's policies and an education campaign aimed at all members of the care team who have direct patient contact. Educating facility residents and their families is equally important, and can be accomplished through the facility's admission orientation packet and presentations at resident meetings and family nights.

Analogous care in outpatient clinics and office practices should emphasize the same basic approach of withholding antibiotics unless the patient meets criteria for UTI, along with encouraging fluid intake, non-pharmacologic alternatives, (e.g., cranberry juice) and urinary analgesics (e.g., phenazopyridine) for low-grade dysuria symptoms.

Treatment

When a UTI has been diagnosed and treatment is indicated, fluoroquinolones are no longer the drugs of first choice for uncomplicated UTI in non-hospital settings. Current guidelines from professional societies emphasize either nitrofurantoin or trimethoprim-sulfamethoxazole as a first-line drug. Duration of therapy for uncomplicated UTI (cystitis) is now recommended to be 3-5 days. Repeat urine culture as a test of cure is not necessary or recommended.

Evolving Concepts

The approach outlined in this edition of *Elder Care* is a change from long-standing practice standards. Much of the existing literature discussing UTI in older adults is based on outmoded concepts and clinical definitions that have not been updated as our understanding of the human urinary tract microbiome has evolved.

For example, it was formerly believed that a normal urinary bladder should be free of bacteria and that a colony count of as little as 100 colony-forming unit/ml in a catheterized specimen represented significant bacteriuria calling for treatment. We now know that older adults can be asymptomatically colonized with one or more organisms in the bladder at colony counts up to or exceeding 100,000. In the past, a finding of two or more organisms in the urine at or near these levels might have been considered a UTI, but now is considered prima facie evidence of asymptomatic colonization because poly-microbial UTIs do not occur. In addition, note that current National Healthcare Safety Network criteria for diagnosing UTI no longer make a distinction between clean-voided and catheter-drawn specimens.

The predominant force generating widespread antimicrobial resistance to antibiotics is antibiotic overuse. Unnecessary antibiotic treatment of the various asymptomatic bacteriuria scenarios that are misinterpreted UTI (Table 2) provides no clinical benefit and only contributes to increased multi-drug resistance. Avoiding over-diagnosis and over-treatment of UTI is an important step in the campaign to preserve the effectiveness of antibiotics - a mainstay of modern healthcare.

References and Resources

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