Medical Providers' Frequently Asked Questions About Urinary Tract Infections (UTI):

Evidence for Safe Management of Suspected UTIs

This document is intended to provide guidance but does not replace clinical judgement.

Q: How can I tell if my patient has a UTI vs. asymptomatic bacteriuria (ASB)?[1]

A: According to The Infectious Diseases Society of America (IDSA) :

ASB	1 or more types of bacteria growing in the urine at specific counts (≥100,000 [colony-forming units or CFUs]/mL) regardless of the presence of pyuria, without symptoms of a UTI
UTI	A clinical diagnosis that requires a positive urinalysis (UA) plus symptoms. Symptoms can include: • Urgency • Frequency • Dysuria • Suprapubic tenderness • Gross hematuria • Costovertebral tenderness • Fever ≥ 100.4°F

This Loeb Criteria web application can also be used to identify patients with UTIs

Q: I have a patient with a long-term indwelling urinary catheter who has no symptoms of UTI but always has a positive urinalysis (UA). Should I keep giving antibiotics until the UA is clean?[1]

A: According to IDSA**,** all patients who have a catheter in place for an extended length of time will have bacterial colonization of urine. This is due to the development of biofilms, which are films created by bacteria to stick to the catheter. The bacteria will always eventually grow back regardless of the amount of antibiotics given. Based on this, IDSA does not recommend treating or even screening for asymptomatic bacteriuria in a catheterized patient who does not have symptoms of a UTI.

Q: Is delirium (acute mental status change, confusion) a symptom of UTI?[1,2,3]

A: According to IDSA, patients who are delirious but have no UTI symptoms or systemic signs of infections should be evaluated for other causes of delirium. Delirious patients are less likely to be mobile and may have incontinence issues, which can lead to positive UAs in the absence of a true UTI. Data show that treating these patients with antibiotics does not improve behavior or mortality. Additionally, focusing on a UA obtained from an asymptomatic patient may lead to missing the true reason for the delirium. IDSA recommends investigating first for other causes for delirium, which can include medications, dementia, visual or hearing impairments, depression, certain foods, and dehydration.

Q: Is a fall a symptom of a UTI in the elderly?[1,3,4]

A: According to Rowe et al. and the IDSA guidelines, the probability of falls being associated with bacteriuria plus pyuria was only about 20%. Falls are, therefore, not considered to be associated with UTI in the elderly. Consider investigating first for other causes for falls, such as medications, malnutrition, weakness, and dehydration.

Q: Does smell or appearance of urine correlate to a UTI?[3,5]

A: Per data from Midthun et al., the probability of smell or appearance indicating a urinary tract infection is approximately 54%. Diagnosing a UTI by smell, therefore, carries the same odds as flipping a coin. Changes in urine smell can be caused by diabetes, malnutrition, dehydration, food, poor hygiene, or medications.

Q: Are pyuria/leukocyte esterase/nitrites in a UA indicative of a UTI?[3,6]

A: As per Kayalp et al., the absence of these specific results on a UA means there is a 97% – 99% probability that the person does not have a UTI. In people who do have these UA results, the probability of having a UTI is only 9-11%. These data indicate that a positive UA on its own is not a very reliable indicator of UTI.

Q: If I don't treat an asymptomatic UA, will my patient get sicker?[7,8]

A: Data from Sabe et al., shows that treating ASB in kidney transplant patients on active immunosuppressive treatment does not prevent pyelonephritis. These data from a very vulnerable population provide reassurance that clinically stable patients with ASB will be okay without antibiotics. Cai et al. found that treating ASB may lead to more UTIs, which suggests that those bacteria may actually have a protective effect.

Q: Isn't prescribing an antibiotic "just in case" a lot less harmful then accidentally missing a UTI?[1,9,10,11,12,13,14,15]

A: Per Curran et. al., approximately 20% of all patients prescribed an antibiotic will suffer an adverse drug reaction. Each additional day of antibiotic therapy is associated with significant antibiotic harm! The IDSA guidelines also make a strong recommendation against treating ASB because there is high certainty for harm and low certainty of any benefit from treatment of ASB in older adults. The table below lists some possible side effects of antibiotics commonly used for UTI.

Antibiotic Name(s)	**Associated Side Effects**
Ciprofloxacin, Levofloxacin	Changes in blood sugar, confusion or changes in mental status, tendon rupture, aortic aneurism, cardiac arrhythmia, liver damage, sun sensitivity, nerve damage
Sulfamethoxazole Plus Trimethoprim	Acute kidney failure, high potassium levels, allergic reactions, nausea/vomiting, diarrhea
Beta-Lactams (Amoxicillin Plus Clavulanate, Cephalexin, Cefdinir, and Others)	Allergic reactions, nausea/vomiting, diarrhea, drug-induced liver injury, seizures, *C. difficile*-associated diarrhea, vaginal yeast infections

Q: I have a patient who is worried that they have a UTI, despite my workup showing otherwise. How can I reassure my patient?

A: There are some great patient education and clinician resources available that can help. While some of the links below are for resources designed for the long-term care setting, they may be applicable in other settings. The Centers for Disease Control (CDC) resource linked below is based on the Dialogue Around Respiratory Illness Treatment (DART) technique, a method that has been shown to be helpful in outpatient pediatric settings.

- **Patients:**
  - Antibiotics for UTI in Older Adults (English)
  - Antibiotics for UTI in Older Adults (Spanish)
- **All healthcare professionals:**
  - Dialogue Around Respiratory Illness Treatment
  - Effective Communication with Residents and Families

DOH 420-466 March 2023

Sources:

1. Nicolle LE, Gupta K, Bradley SF, et al. Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by -the Infectious Diseases Society of America. Clinical Infectious Diseases. 2019;68(10). doi: https://doi.org/10.1093/cid/ciy1121
2. Ormseth CH, LaHue SC, Oldham MA, Josephson SA, Whitaker E, Douglas VC. Predisposing and Precipitating Factors Associated With Delirium. JAMA Network Open. 2023;6(1):e2249950. doi: https://doi.org/10.1001/jamanetworkopen.2022.49950
3. Tichy, Michael (2020 May 6). Myths Surrounding UTI Diagnosis [PowerPoint slides]. University of Washington's Centers for Stewardship in Medicine (UW-CSiM)
4. Rowe T, Towle V, Van Ness PH, Juthani-Mehta M. Lack of Positive Association Between Falls and Bacteriuria Plus Pyuria in Older Nursing Home Residents. Journal of the American Geriatrics Society. 2013;61(4):653-654. doi: https://doi.org/10.1111/jgs.12177
5. Midthun SJ, Paur R, Lindseth G. Urinary tract infections. Does the smell really tell? Journal of Gerontological Nursing. 2004;30(6):4-9. doi: https://doi.org/10.3928/0098-9134-20040601-04
6. Kayalp D, Dogan K, Ceylan G, Senes M, Yucel D. Can routine automated urinalysis reduce culture requests? Clinical Biochemistry. 2013;46(13-14):1285-1289. doi: https://doi.org/10.1016/j.clinbiochem.2013.06.015
7. Sabé N, Oriol I, Melilli E, et al. Antibiotic Treatment Versus No Treatment for Asymptomatic Bacteriuria in Kidney Transplant Recipients: A Multicenter Randomized Trial. Open Forum Infect Dis. 2019;6(6):ofz243. Published 2019 May 21. doi:10.1093/ofid/ofz243
8. Sabé N, Oriol I, Melilli E, et al. Antibiotic Treatment Versus No Treatment for Asymptomatic Bacteriuria in Kidney Transplant Recipients: A Multicenter Randomized Trial. Open Forum Infectious Diseases. 2019;6(6). doi: https://doi.org/10.1093/ofid/ofz243
9. Curran J, Lo J, Leung V, et al. Estimating daily antibiotic harms: an umbrella review with individual study meta-analysis. Clinical Microbiology and Infection: The Official Publication of the European Society of Clinical Microbiology and Infectious Diseases. 2022;28(4):479-490. doi: https://doi.org/10.1016/j.cmi.2021.10.022
10. Taro Pharmaceuticals USA. Cipro Medication Guide. Taro Pharmaceuticals USA; 2016. https://www.accessdata.fda.gov/drugsatfda_docs/label/2021/019537s092lbl.pdf#page=39
11. Cipla USA, Inc. Levaquin Medication Guide. Cipla USA, Inc; 2022. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3c5219e9-b75b-4898-aaf5-8357ddb36373

12. New Horizon Rx Group, LLC. Sulfamethoxazole and Trimethoprim Double Strength Tablet. New Horizon Rx Group, LLC; 2013. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=804f8363-8ea1-4a57-bbd1-7fd9b6b4d29b
13. Physicians Total Care, Inc. Amoxicillin and Clavulante Potassium Tablet. Physicians Total Care, Inc; 2010. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d567412a-e5ed-4c7f-90f0-ea3039786480
14. Amella Pharma, LLC. Cephalexin Capsule. Amella Pharma, LLC; 2018. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=602fae70-3b8a-4f09-8db1-41fef4a2ecd7
15. Ascend Laboratories, LLC. Cefdinir Capsule. Ascend Laboratories, LLC; 2022. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=18888955-4db3-4d0d-939f-eaaa5f2e0dc4