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ECHO Clinic: update on UTIs and asymptomatic bacteriuria

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Discussion today about when to treat bacteriuria... and when to leave it alone

- How to diagnose cystitis
- Why we treat cystitis
- How to treat cystitis
- What is asymptomatic bacteriuria
- Is there any harm in treating asymptomatic bacteriuria?
- The role of the Antibiotic Stewardship Team in reducing overtreatment of both UTIs and asymptomatic bacteriuria
Question: What is the best way to diagnose Uncomplicated Cystitis (UTI)?

Answer: Ask the patient – do you feel like you have a bladder infection!

- Thomas Hooton, M.D. UTI review NEJM 3/15/2012– don’t do dip stick, u/a or culture – can be negative or misleading – just treat on basis of classic symptoms in uncomplicated UTI

- **Best: Symptoms only**: +dysuria, +frequency, no discharge or irritation:
  
  ***90% chance of cystitis***

- **Not as good: Dipstick**: leukocyte esterase + and/or nitrite + only 75% sensitive, so symptoms more important for diagnosis even if dip is negative

- **Poor choice: Culture**: $10^5$ (100,000) bacterial CFUs – traditional criterion for UTI – 50% sensitive – will miss up to half the cases of UTI – counts of 100 to 10,000 colonies – all at levels that may be called as “no growth” by micro lab. Least sensitive diagnostic test.
Why treat Acute cystitis?

- **Cystitis rarely** progresses to severe disease even if untreated. Pyelonephritis patients do not initially present with uncomplicated cystitis that if untreated progresses to pyelonephritis, they present with fever, vomiting, back pain as their initial complaint:
  
  - goal of cystitis treatment is to ameliorate symptoms

  In selecting therapy, efficacy as well as “ecologic collateral damage” (selecting for antibiotic resistant bacteria, causing C. difficile colitis) should be considered equally. Fluoroquinolones should be avoided, except in pyelonephritis.

  Therefore use First line agents whenever possible:

  - Trimethoprim/sulfa (Bactrim) for 3 days
  - Nitrofurantoin (Macrodantin) for 5 days
  - Fosfomycin for one dose
FDA recommends that:

- Serious side effects associated with fluoroquinolone antibacterial drugs generally outweigh the benefits for patients with acute sinusitis, acute bronchitis, and uncomplicated urinary tract infections (UTI) who have other treatment options.

- For patients with these conditions, fluoroquinolones should be reserved for those who do not have alternative treatment options.

- Providers should instruct patients to contact their healthcare professional immediately if they experience any serious side effects while taking fluoroquinolone medicine such as tendon, joint and muscle pain; a “pins and needles” tingling or pricking sensation; confusion; and hallucinations.

- Providers should stop systemic fluoroquinolone treatment immediately if a patient reports serious side effects, and switch to a non-fluoroquinolone antibacterial drug to complete the patient’s treatment course.
Recent Study of antibiotic use in uncomplicated cystitis in 2 large private Fam. Practice clinics with well insured patients

- 1546 visits reviewed – all women with any possible complicating factor were excluded - pregnancy, recurrent infection, antibiotic allergy, fever

- Prescribed Antibiotics:
  - 52% Fluoroquinolones- Cipro or levofloxacin (71% of these prescriptions were for 5 to 10 days of therapy, only 29% were for recommended 3 days)
  - 36% nitrofurantoin-Macrodantin® (70% were for one week of therapy)
  - 12% trimeth/sulfa-BactrimDS® (50% were for more than 5 days)

Conclusion- primary care physicians strongly prefer fluoroquinolones and prescribe longer courses of therapy than recommended in Guidelines
Patients are rightfully becoming more concerned about the fluoroquinolones.
New approach to Asymptomatic Bacteriuria (ABU)

- **Definition:** presence of bacteria $>100,000$ cfu/ml in urine of an individual without signs or symptoms of UTI.
- This definition is independent of the presence or absence of pyuria, odor, cloudy urine.
Incidence of Asymptomatic bacteriuria in the non-catheterized patient

- Very Common:
  1. Young healthy women: 3 to 5%
  2. Pregnant women: 2 to 9.5%
  3. Women aged 65-80 years: 18 to 43%
  4. Women >80 years: up to 43%
  5. Men 65-80 years: 2 to 15%
Study: Results of treatment of Asymptomatic Bacteruria (ABU) in young healthy women

- Results after one year of observation:
  - Those treated for ABU - 46.8% had a symptomatic UTI later during the year.
  - Those not treated for ABU - only 13.1% had another UTI!

Conclusion: The paradoxical result was increased incidence of symptomatic UTIs in patients given antimicrobials for asymptomatic bacteruria!
Why this study result is really not surprising

- **Bacterial interference** - the inability of pathogenic bacteria to set up a bladder infection due to blockage by commensal bacteria colonizing the bladder was disrupted by the treatment of ABU.

Conclusion: The human microbiome is a potent defense mechanism against superinfecting pathogenic bacteria. Applies to the bladder, as well as the GI tract and other sites.
Treatment of ASB just leads to drug resistant bacteria and side-effects from the antibiotic.

- Antibiotic treatment of ASB does not reduce frequency of symptomatic UTIs.
- Treatment of ASB in diabetes does not reduce adverse outcomes or improve glucose control.
- It does lead to untreatable drug resistant bacteria, e.g., C. difficile infection, etc.
- Only exceptions are pregnancy where ASB is associated with pyelonephritis, growth retardation, neonatal death... and patients undergoing urologic procedures (such as prostate bx).
Case 1: 56 year old female with asymptomatic bacteriuria before THR

- 56 year old female had standard pre-op evaluation prior to elective total hip replacement (THR)
- Noted on urinalysis to have bacteriuria and positive culture but no symptoms (asymptomatic bacteriuria)
- Surgeon prescribed one week of ciprofloxacin, completed day before surgery
- Uneventful THR surgery, discharged
- Readmitted next day with fulminant C. difficile colitis and dies
Case 2- weak elderly woman with bacteruria

- second hospitalization in 2 weeks of 77 year old woman seen by me for drug resistant Urine culture
- Has Parkinson’s Disease, A.fibrillation- feels weak when she stands up, no GU symptoms- admitted by primary M.D. to hospital with pyuria, drug resistant Klebsiella- given iv antibiotics for a few days, goes home.
- seen in f/u by her doctor- same complaints- readmitted. Despite prior Rx, same u/a and culture results- now put on meropenem, still no change in her postural symptoms
- Dx: sick sinus syndrome
- Needed pacemaker, not treatment of ASB
Elimination of Screening Urine Cultures Prior to Elective Joint Arthroplasty


- Screening urine cultures are frequently done prior to joint arthroplasty despite no evidence of clinical benefit, and puts patient at risk for harm - drug reaction, C. difficile, resistance.
- Toronto Orthopedic hospital did prospective study where they eliminated preoperative urine cultures and observed for 2 years.
- 1891 cases were done with no pre-op urines, 3 post-op wound infections – all staph aureus. No urinary pathogens isolated.
- Conclusion: No role for pre-op cultures unless patient is symptomatic.
From: *Elimination of Screening Urine Cultures Prior to Elective Joint Arthroplasty*


Figure Legend:
Monthly average number of urine cultures ordered and processed per 100 elective joint arthroplasties before and after implementation of policy to no longer process screening urine cultures. Abbreviations: LCL, lower control limit; UCL, upper control limit.
## Bottom line on UTIs

<table>
<thead>
<tr>
<th>Think</th>
<th>Consider</th>
<th>Avoid</th>
<th>Don’t do</th>
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<tr>
<td>Think twice before ordering a urine culture- go by symptoms and signs. Only obtain culture in: possible pyelonephritis, unclear diagnosis, complicated cases or treatment failure</td>
<td>Consider Nitrofurantoin or Septra as first line therapy, quinolones only if ill or allergic to first line therapies</td>
<td>Avoid over treatment with too long a course of therapy</td>
<td>Don’t do follow-up cultures unless patient is still symptomatic</td>
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Bottom line on Asymptomatic Bacteriuria

- if it ain’t broke, don’t fix it – treatment of ASB just leads to drug resistant bacteria and side effects from the antibiotic

- Antibiotic treatment of ASB does not reduce frequency of symptomatic UTIs

- Treatment of ASB in diabetes does not reduce adverse outcomes, improve glucose control, or reduce symptomatic UTIs

- Pre-op urinalysis and culture is counterproductive and can lead to bad outcomes for the patient

- It does lead to untreatable drug resistant bacteria, c.difficle, etc

- It does increase risk of developing symptomatic UTIs

- Only exceptions are pregnancy where asymptomatic bacteriuria is associated with pyelonephritis, growth retardation, neonatal death... and patients undergoing urologic procedures (such as prostate bx)
Examples of ASP measures to improve appropriate UTI/ASB management

- Provide Guidelines for providers suggesting short course antibiotics for outpatient UTI. Suggest Macrodantin or Bactrim as first line; save ciprofloxacin for treatment failures or pyelonephritis
- No follow-up cultures for “test of cure” unless patient not improved
- Educate RNs in SNF when to check a urinalysis and culture- see the flow sheet attached. The RN is the most important line of defense against over prescribing antibiotics. **If there is no urinalysis or culture, doctors won’t order antibiotics!**
- Educate patients about asymptomatic bacteriuria – see the Choosing Wisely site on line for complete handout
- Talk to your orthopedists about dropping pre-op urinalysis and culture
Tests & treatments for urinary tract infections (UTIs) in older people
When you need them—and when you don’t

UTIs are infections of the urinary tract. The main symptoms of UTIs are:
- A burning feeling when you urinate
- A strong urge to urinate often

Bacteria cause most UTIs. Doctors usually treat UTIs with antibiotics, which are strong medicines that kill bacteria.

Older adults are often tested for UTIs, especially in nursing homes. But if you don’t have symptoms, urine tests are not very useful. The tests can lead to unnecessary treatments that can even be harmful. This is especially true in older adults. Here’s why:

Urine tests usually don’t help if you don’t have UTI symptoms.

Older people often have bacteria in their urine, even if they have no urinary symptoms. This is true for nearly half of all nursing home residents.

Doctors will often order a urine test if an older adult has vague symptoms, such as increased confusion, irritability, or falling. The test will probably show some bacteria. This may lead the doctor to order an antibiotic.

But if the bacteria is in the urine and not causing a real infection, the antibiotic won’t help the vague symptoms. There are many other reasons why an older adult might be confused or irritable, or fall.