EDUCATIONAL SERIES: Navigating Infection Control and Antimicrobial Stewardship in Long-Term Care

Webinar #5: Caring for the Long Term Care Patient with Suspected UTI

New England Nursing Home Quality Care Collaborative Webinar Will Begin Shortly.

Call-In Number: (888) 895-6448
Access Code: 1228904
Differentiating colonization from infection

Caring for the Long Term Care Patient with Suspected UTI

Shira Doron, MD; Kirthana Beaulac, PharmD; Gabriela Andujar, MD
Objectives

- Understand the difference between colonization and infection as it relates to judicious antibiotic use
- Recognize the appropriate steps involved in assessing a patient who may have urinary tract infection
- Become familiar with measures of success related to appropriate treatment of suspected urinary tract infection
- Identify resources and tools that can be useful in managing patients with suspected infection versus colonization
Case

• An 82-year-old long-term care resident with a tracheostomy has fever and a productive cough

• She has an indwelling urinary catheter due to incontinence but no urinary or other symptoms

• A chronic venous stasis ulcer on her lower extremity is unchanged

• A “pan-culture” is initiated in which urine is sent for UA and culture, sputum (obtained via aspirate from her tracheostomy) and blood are sent for culture, and the ulcer on the leg is swabbed.
• A CXR is done and is negative

• Sputum gram stain has no PMNs, no organisms

• Sputum grows 1+ *Candida albicans*

• The urinalysis has 3 white blood cells

• Urine culture is positive for >100,000 CFU of *E. coli*. The organism is resistant to all tested antibiotics including carbapenems.

• Wound culture grows VRE
• The patient is started on IV colistin for the *E. coli* in the urine, linezolid for the VRE in the wound, and fluconazole for the Candida in the sputum

• The patient develops acute kidney injury from the colistin, thrombocytopenia from the linezolid, and two weeks after therapy ends develops diarrhea which tests positive for *C. diff.*
The only infection this patient ever had was a viral URI
Lessons learned
People who carry bacteria or fungi without evidence of infection are **colonized**

If an infection develops, it is usually from bacteria or fungi that colonize patients

Bacteria or fungi that colonize patients can be transmitted from one patient to another by the hands of healthcare workers
But that’s a bad bug! We can’t just not treat it!

• The patient with the bad bug is particularly vulnerable to the resistance promoting effects of antibiotics (the next organism could be colistin resistant!)

• Patients with recurrent infections and resistant infections should be approached with an even higher threshold to treat
The Iceberg Effect
But let’s not...

Do not magnify your problems, making mountains out of molehills. For if you do, a giant mule may eat you.

There is no need to treat for colonization
• Understanding the difference between colonization and infection
  • No (or few) WBCs in a UA = no UTI
  • In the absence of dyspnea, hypoxia and CXR changes, pneumonia is unlikely
  • Candida is an exceedingly rare cause of pneumonia
  • Sputum cultures are nearly always positive in patients with tracheostomies
  • Wounds will grow organisms when cultured - infection can only be determined clinically
Sites often colonized mistaken as infected

- Urine
- Respiratory samples
- Wound
- GI (C. diff)
Infectious Diseases Society of America Guidelines for the Diagnosis and Treatment of Asymptomatic Bacteriuria in Adults

Lindsay E. Nicolle,1 Suzanne Bradley,2 Richard Colgan,2 James C. Rice,4 Anthony Schaeffer,5 and Thomas M. Hooton6
1University of Manitoba, Winnipeg, Canada; 2University of Michigan, Ann Arbor; 3University of Maryland, Baltimore; 4University of Texas, Galveston; 5Northwestern University, Chicago, Illinois; and 6University of Washington, Seattle

• Pregnant women
  • Increased risk for adverse outcomes
• Urologic interventions
  • TURP
  • Any urologic procedure with potential mucosal bleeding

Clinical Infectious Diseases 2005;40:643-54.
Table 2. **Prevalence of asymptomatic bacteriuria in selected populations.**

<table>
<thead>
<tr>
<th>Population</th>
<th>Prevalence, %</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy, premenopausal women</td>
<td>1.0–5.0</td>
<td>[31]</td>
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<tr>
<td>Pregnant women</td>
<td>1.9–9.5</td>
<td>[31]</td>
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<tr>
<td>Postmenopausal women aged 50–70 years</td>
<td>2.8–8.6</td>
<td>[31]</td>
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<tr>
<td>Diabetic patients</td>
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<tr>
<td>Women</td>
<td>9.0–27</td>
<td>[32]</td>
</tr>
<tr>
<td>Men</td>
<td>0.7–11</td>
<td>[32]</td>
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<tr>
<td>Elderly persons in the community&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
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</tr>
<tr>
<td>Women</td>
<td>10.8–16</td>
<td>[31]</td>
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<tr>
<td>Men</td>
<td>3.6–19</td>
<td>[31]</td>
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<tr>
<td>Elderly persons in a long-term care facility</td>
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<tr>
<td>Women</td>
<td>25–50</td>
<td>[27]</td>
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<tr>
<td>Men</td>
<td>15–40</td>
<td>[27]</td>
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<tr>
<td>Patients with spinal cord injuries</td>
<td></td>
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<tr>
<td>Intermittent catheter use</td>
<td>23–89</td>
<td>[33]</td>
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<tr>
<td>Sphincterotomy and condom catheter in place</td>
<td>57</td>
<td>[34]</td>
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<tr>
<td>Patients undergoing hemodialysis</td>
<td>28</td>
<td>[28]</td>
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<tr>
<td>Patients with indwelling catheter use</td>
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<tr>
<td>Short-term</td>
<td>9–23</td>
<td>[35]</td>
</tr>
<tr>
<td>Long-term</td>
<td>100</td>
<td>[22]</td>
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</tbody>
</table>

<sup>a</sup> Age, ≥70 years.
Proportion of Women with Diabetes Who Remained Free of Symptomatic Urinary Tract Infection, According to Whether They Received Antimicrobial Therapy or Placebo at Enrollment.

Consensus group recommendations

• McGeer criteria (recently revised) developed for surveillance and outcome assessments
  • Used by Centers for Medicare and Medicaid Services

• Loeb criteria recommends minimal set of criteria necessary to initiate antibiotic therapy for UTI
  • Similar to IDSA Guidelines
Criteria for Surveillance, Diagnosis and Treatment

Diagnostic algorithm for ordering urine cultures for NH residents in intervention arm

- Fever of >37.9°C (100°F) or 1.5°C (2.4°F) increase above baseline on at least two occasions over last 12 hours?
  - Yes
  - 2 or more symptoms or signs of non-urinary tract infection*?
    - Yes
      - Do not order urine culture
    - No
      - Order urine culture for one or more of following:
        - Dysuria
        - Urinary catheter
        - Urgency
        - Flank pain
        - Shaking chills
        - Urinary incontinence
        - Frequency
        - Gross haematuria
        - Suprapubic pain
  - No
    - Urinary catheter?
      - Yes
        - Order urine culture for new onset burning urination or for two or more of following:
          - Urgency
          - Flank pain
          - Shaking chills
          - Urinary incontinence
          - Frequency
          - Gross haematuria
          - Suprapubic pain
      - No

* Respiratory symptoms include increased shortness of breath, increased cough, increased sputum production, new pleuritic chest pain.
Gastrointestinal symptoms include nausea or vomiting, new abdominal pain, new onset of diarrhoea
Skin and soft tissue symptoms include new redness, warmth, swelling, purulent drainage

Loeb M et al. BMJ 2005;331:669

©2005 by British Medical Journal Publishing Group
Treatment algorithm for prescribing antimicrobials to NH residents in intervention arm

Loeb M et al. BMJ 2005;331:669
Change in Mental Status ≠ Symptomatic Urinary Tract Infection

- LTCF residents with cognitive impairment are more likely to have ASB (no symptoms, positive urine culture).

- LTCF residents with cognitive impairment are more vulnerable to changes in mental status with any new problem.

- **THEREFORE**, resident with cognitive impairment and change in mental status
  - MORE LIKELY to have a positive urine culture,
  - Independent of whether infection is the cause of clinical decline,
  - OR if infection is present, whether urinary tract is the source.

JAGS 2009 57:1113-1114
# Change in Mental Status: Delirium(s)

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<thead>
<tr>
<th>D</th>
<th>Drugs</th>
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<tr>
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<td>BEERS Criteria (e.g., anticholinergic, benzodiazepines, hypnotics) OR dose change</td>
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<td><em>Dementia</em></td>
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<td><em>Dementia Lewy bodies: Fluctuations in alertness and attention</em></td>
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<td><em>Discomfort</em></td>
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<td><em>Pain</em></td>
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<td>Eyes, ears, environment</td>
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<td></td>
<td>Sensory deprivation; <em>vulnerability to environment</em></td>
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<td>L</td>
<td>Low oxygen states</td>
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<td></td>
<td>Myocardial infarction, stroke, pulmonary embolus</td>
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<td>I</td>
<td>Infection</td>
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<td>Pneumonia, sepsis, symptomatic UTI</td>
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<td>R</td>
<td>Retention</td>
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<td>Urinary retention, constipation</td>
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<td>I</td>
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<td>Seizure disorder</td>
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<td>U</td>
<td>Underhydration/nutrition</td>
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<td>Dehydration</td>
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<td>M</td>
<td>Metabolic Causes</td>
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<td>Low or high blood sugar, sodium abnormalities</td>
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<td>S</td>
<td>Subdural hematoma</td>
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<td>Head trauma</td>
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Adapted from Saint Louis University Geriatric Evaluation Mnemonics Screening Tools
Respiratory Colonization

- **Viral**
  - Viral infections can often present very similar to bacterial infections
  - Hallmark differences:
    - Upper respiratory infection <7 days in duration
    - Profound rhinorrhea

- **Positive sputum cx**
  - Sputum culture may pick up oropharyngeal colonization
  - Review gram stain to assess for oral contamination
    - Look for squamous epithelial cells / skin cells
    - Look for neutrophils / white blood cells

- **Positive CXR without clinical signs/sx**
  - Non-infectious causes of infiltrate
  - Radiologic improvement after a pneumonia can take 1-2 months in an elderly patient
Antibiotic Treatment for Suspected Respiratory Infections

• Antibiotics are NOT indicated for:
  • Upper respiratory tract infections:
    o Acute bronchitis
    o Sinusitis
  • Positive sputum culture in the absence of acute chest x-ray findings
  • Chest x-ray findings in the absence of symptoms
    o Radiologic improvement after pneumonia can take 1-2 weeks
  • Chest x-ray findings consistent with non-infectious or viral processes
    o Utilize available tests for diagnosis of influenza
    o Cough and fever that gets better then worse may be a sign of bacterial superinfection

• Antibiotics may be considered for:
  • Moderate to sever COPD exacerbation
    o If worsening dyspnea or increased sputum volume with increased sputum purulence
    o Usually warrants hospitalization
Antimicrobial stewardship in wound care: a Position Paper from the British Society for Antimicrobial Chemotherapy and European Wound Management Association

Benjamin A. Lipsky¹,²*, Matthew Dryden³, Finn Gottrup⁴, Dilip Nathwani⁵, Ronald Andrew Seaton⁶ and Jan Stryja⁷

Table 2. Overview of optimizing antibiotic therapy for wounds

| Only prescribe antibiotics for wounds that are clinically infected | No antibiotics for clinically uninfected colonized or contaminated wounds | Wound infection should usually be diagnosed clinically
| Select empirical antibiotic therapy based on available clinical and laboratory data | No antibiotics for non-bacterial infections | Occasionally diagnosed by quantitative bacteriology (≥10⁶ cfu/g tissue)
| Revise (and constrain) therapy based on clinical response and culture/susceptibility results | Cover likeliest pathogens, based on clinical presentation and local antibiotic resistance data | Obtain optimal specimens for culture before starting therapy
| Provide antibiotic therapy for the shortest duration needed to treat infection | Aim for narrow-spectrum regimen, unless severe illness or immunocompromised host | If patient clinically stable, consider discontinuing any active antibiotic before taking culture
| | If clinically responding, attempt to narrow antimicrobial spectrum; change regimen from parenteral to oral | Often unnecessary to treat low virulence bacterial species in a polymicrobial infection
| | Consider switch to topical therapy or non-antibiotic antimicrobials | Treat only until all clinical evidence of infection has resolved, irrespective of wound healing
| | Duration of therapy usually 1–2 weeks for soft tissue, about 6 weeks for bone infection |

Is the wound clinically infected?

No

Is there an epidemiological reason to culture?*

No

Do not culture

Yes

Culture

Yes

Collect optimal (tissue) specimen for culture

Review culture/susceptibility results

Negative, or only likely colonizers*

Consider repeat culture, off antibiotics if possible

Presumed pathogens*

Select a definitive antibiotic regimen based on culture & susceptibility results

Spectrum: aim for narrowest appropriate

Route: consider topical, oral, parenteral

Duration: aim for shortest appropriate

Initiate empirical antibiotic regimen based on infection severity and available clinical & microbiological data (see text)

No

Is there a reason to eradicate the colonizing organism?

No

No antibiotic therapy

Yes

Treat with appropriate antibiotic regimen

*See text

C. difficile Diarrhea

• There are several different tests for testing for C. diff
  
  • Toxin assay lacks sensitivity
    
    o Toxin is labile at room temp
    
    o May not catch every case
  
  • PCR may be overly sensitive
    
    o Patients who have recently had C. diff but are clinically cured
    
    o Patients who are colonized with C. diff but are not currently infected
Prudent Use of Antibiotics in Long Term Care Residents with Suspected UTI:

A Massachusetts collaborative
Goals of the initiative

• Improve evaluation and treatment of urinary tract infection.

• Decrease treatment for asymptomatic bacteriuria.

• Use clinical quality improvement tools for decision support.

• Communicate with patients and their loved ones for safer care.
Two consecutive programs

2012
- 11/12 Kickoff Workshop
- 12/12 Coaching call
- 1/13 Clinical topic Webinars
- 2/13 Sharing and learning call
- 3/13 Sharing and learning call
- 4/13 Sharing and learning call

2013
- 10/13 Kickoff Workshop
- 12/13 Clinical Webinar
- 1/14 Evaluating Altered mental status webinar
- 2/14 Regional workshops
- 4/14 Antibiotic Stewardship Webinar
- 4/14 Sharing and learning call
- 6/14 Sharing and learning call

Hospital / Long Term Care Partnerships

SURVEY  MEASURE / MONITOR  SURVEYS
Round Table Discussions
**ABC’s of UTI**

**LINK TO ACCESS THESE TOOLS WILL BE PROVIDED IN THE COMING SLIDES**

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**Assessment: Clinical Signs and Symptoms of UTI**

**CHECK HERE IF CRITERIA ARE MET FOR SIGNS OR SYMPTOMS**

- Resident without indwelling catheter*
  - Acute dysuria alone OR
  - Fever + at least one of the symptoms below (new or increased) OR
  - If no fever, at least two of the symptoms below (new or increased)
    - Urgency
    - Frequency
    - Suprapubic pain
    - Gross hematuria
    - Costovertebral angle (CVA) pain or tenderness
    - Urinary incontinence
  
- Resident with indwelling catheter
  - At least one of the symptoms below (new or increased)
    - Fever
    - Costovertebral angle (CVA) pain or tenderness
    - Rigors (shaking chills)
    - Delirium
    - Flank pain (back, side pain)
    - Pelvic discomfort
    - Acute hematuria
    - Malaise or lethargy with no other cause

Blood Pressure_________Pulse_________Temperature_________Respiratory Rate_________

- Fever (oral > 100°F or any site > 2°F above baseline or repeated oral > 99°F / rectal >99.5°F)
**Bacteria (Order urinalysis and culture & sensitivity if above criteria are met)**

Collect clean voided specimen if possible; in and out catheter if necessary. For residents with chronic indwelling Foley catheter, change catheter; send urine obtained from new catheter.

Consider CBC, BMP if clinically indicated (e.g., lethargy, fever). The presence of an elevated WBC count suggests infection, with or without a fever.

<table>
<thead>
<tr>
<th>Urinalysis</th>
<th>Culture and sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrite</td>
<td>□ Positive □ Negative □ Positive urine culture:</td>
</tr>
<tr>
<td></td>
<td>Clean catch specimen: ( &gt; 10^5 \text{ cfu/mL} ) with ( &lt; 2 ) organisms</td>
</tr>
<tr>
<td>Leukocyte esterase</td>
<td>□ Positive □ Negative □ Catheterized specimen (straight cath or newly placed indwelling cath): ( &gt; 10^3 \text{ cfu/mL} ) with ( &gt; 1 ) organism</td>
</tr>
<tr>
<td>Pyuria</td>
<td>□ Positive □ Negative □ Negative urine culture</td>
</tr>
</tbody>
</table>
Care Plan

Criteria met for UTI symptoms AND positive urine culture

- Review for treatment with antibiotics
- Monitor vital signs
- Monitor fluid intake and increase if indicated

Criteria not met for UTI symptoms (with or without a positive urine culture)

- Review for alternate diagnosis
- Monitor vital signs and symptoms
- Monitor fluid intake and increase if indicated
- Re-evaluate if above criteria for symptomatic UTI emerge

AT ANY POINT, re-evaluate and review with MD/NP/PA, if symptoms progress or if the resident has any of the following: Fever > 100.5°F, heart rate > 100 or < 50, RR > 28/min or < 10/min, BP < 90 or > 200 systolic, oxygen saturation < 90%, finger stick glucose < 70 or > 300, unable to eat or drink.

Prior to treatment consider review:

- Advance directives for limiting treatment (especially antibiotics): □ NO □ YES
- Medication Allergies: □ NO □ YES
- The resident is on warfarin (Coumadin) □ NO □ YES

Possible causes for mental status changes include:

- Constipation
- Pain
- Dehydration
- Medication or dose change
- Hypoxia
- Infections such as pneumonia
- Hypo/hyperglycemia
- Urinary retention
- Environmental triggers

NOTES
**Treating Asymptomatic Bacteriuria: All harm, No Benefit**

### HIGH PREVALENCE OF ASYMPTOMATIC BACTERIURIA
- The bladder is normally colonized in many elderly people.
- A positive urinalysis or culture in the absence of symptoms reveals colonization, which is the presence of bacteria without infection.
- Treatment of asymptomatic bacteriuria is **not recommended**.

### IT'S HARD TO IGNORE A POSITIVE TEST
- Habitual + Prevalent = Unnecessary prescriptions
- Testing + Colonization & missing the real diagnosis

### UNNECESSARY TREATMENT WITH ANTIBIOTICS HARMs PATIENTS
- Drug-drug interactions
- Renal & other complications
- Increase of multi-drug resistant bacteria

### Myth vs. Fact

<table>
<thead>
<tr>
<th>Myth</th>
<th>Fact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloudy or malodorous urine is always diagnostic of a urinary tract infection.</td>
<td>These changes may be seen in asymptomatic bacteriuria. Other causes can include dehydration, certain medications and diet.</td>
</tr>
<tr>
<td>Positive urine culture and abnormal urinalysis (positive nitrates or leukocytes, increased white blood cells or pyuria) always indicates a urinary tract infection and requires antibiotics.</td>
<td>Positive urine culture and abnormal urinalysis in a resident without symptoms is consistent with asymptomatic bacteriuria - that is, colonization - not infection. Treatment with antibiotics is not indicated.</td>
</tr>
<tr>
<td>Positive urine culture in resident with chronic indwelling catheter always indicates a urinary tract infection and requires antibiotics.</td>
<td>A chronic indwelling catheter is associated with bacteriuria 100% of the time. There is no need to treat unless the resident has symptoms of a UTI.</td>
</tr>
<tr>
<td>Elderly residents often have a urinary tract infection with no symptoms except a change in mental status or delirium, or other nonspecific symptoms such as falls.</td>
<td>Urinary tract infection is much less likely without specific symptoms. Non-specific symptoms, such as a change in mental status, delirium, fatigue, or a fall may be due to a variety of causes, including pain, depression, constipation, dehydration, poor sleep, or medication side effects.</td>
</tr>
<tr>
<td>A follow-up urine culture is indicated to confirm successful treatment of UTI.</td>
<td>Even when a UTI is successfully treated, a urine culture may still be positive due to asymptomatic bacteriuria.</td>
</tr>
</tbody>
</table>

**Using Antibiotics Breeds Resistance in Your Patients and the Community**

- **Prevalence of Asymptomatic bacteriuria in seniors over 70 (upper estimate):**
  - In the community: 19%
  - In long-term care: 50%

**Graph:**
- Number of patients with VRE
- Defined daily doses of vancomycin/1000 patient days

(JID 1999; 179:163)

**Infection with Resistant Bacteria Increases Risk of Death**

- **Percent of subjects:**
  - Resistant: 48
  - Non-Resistant: 20

**Mortality**

(ICHE 2008;29:1008-1106)
Clinician Education Sheet

Do Not Test, Do Not Treat Asymptomatic Bacteriuria

Criteria for Urine Testing

Resident without indwelling catheter
- Acute dysuria alone OR
- Fever + at least one of the symptoms below (new or increased) OR
- If no fever, at least two of the symptoms below (new or increased)
  - Gross hematuria
  - Urinary incontinence
  - Urgency
  - Suprapubic pain
  - Costovertebral angle tenderness
  - Frequency

Resident with indwelling catheter
- At least one of the symptoms below (new or increased)
  - Fever
  - Pelvic discomfort
  - Flank pain (back, side pain)
  - Malaise or lethargy no other cause
  - Costovertebral angle (CVA) tenderness
  - Rigors (shaking chills)
  - Delirium
  - Acute hematuria

No symptoms of UTI
- Do not test urine
- Do not treat if a urine test was done by someone else or for "routine"

Weakness, delirium, or fever without a focus
- Individualize care
- Be mindful of the presence of asymptomatic bacteriuria
- Seek other causes

Specific UTI symptoms
- Test or treat as usual

Challenges
- The resident’s family wants a urine test and antibiotic treatment in the setting of asymptomatic bacteriuria.
- We’ve always ordered urine cultures for nonspecific problems in residents with dementia.
- It is okay to give an antibiotic even if it may not be needed. Better safe than sorry.
- It is hard to ignore a positive urine test even when done for no clearly apparent reason.

Strategies for practice change
- Educate the family about the prevalence of asymptomatic bacteriuria, and tell them you do not suspect UTI on clinical grounds.
- Emphasize the dangers of antibiotic overuse.
- There are many potential causes for nonspecific changes in status and thorough evaluation is needed.
- Residents in long-term care frequently have positive urine cultures, even when they are well.
- Antibiotics can cause adverse drug reactions, C. difficile infection, and promote the emergence of multi-drug resistant organisms. They should not be administered unless clinically indicated.
- Treatment decisions should not be made based on test results alone.
- Evaluate the resident clinically and consider a period of observation.

Reference:

Massachusetts Infection Prevention Partnership Massachusetts Coalition for the Prevention of Medical Errors, Massachusetts Department of Public Health, Massachusetts Senior Care Association, Maccpro Clinical Advisors
- Ruth Kandel MD, Director Infection Control, Hebrew Senior Life
- Daniel Pullin MD, MPH, Director of Research Brigham & Women’s Hospital Department of Emergency Medicine, and Chairman, Brigham and Women’s Hospital Clinical Investigation Committee
- Shira Doron MD, Antimicrobial Steward & Associate Hospital Epidemiologist, Tufts Medical Center

Questions or Copies
info@maccoalition.org
When Do You Need An Antibiotic?

Taking antibiotics when you don't need them is like leaving the lights on all the time.

» The lights may burn out, leaving you in the dark when you most need them.

» If you use antibiotics when you don't need them, they may not work when you get sick.

Antibiotics: Powerful Drugs, But Only When Used For The Right Reasons.

Antibiotic drugs are strong medicine that can save lives when used appropriately to treat bacterial infections. Overuse of antibiotics can cause problems for individuals and for the health of the community. It is important for us all that these powerful drugs are used only when they can help, so they will work when we really need them.

Overusing Antibiotics Can Cause Problems.

How can antibiotics hurt you?

Antibiotic drugs can save lives but using antibiotics can cause problems too. Older people have more side effects from medicines, which can cause problems all over the body.

Antibiotics can:

» Cause nausea and vomiting.
» Cause diarrhea, including the kind due to C. difficile that can lead to severe symptoms.
» Cause rash or other allergic reactions.
» Harm your kidneys.
» Create bacteria that are resistant to antibiotics.

What is “antibiotic resistance”?

Antibiotics normally work by killing germs called bacteria. Sometimes not all of the germs are killed. The strongest ones are left to grow and spread. A person can get sick again, and this time the germs are harder to kill because the antibiotics no longer work. This is called resistance and makes some infections very hard to control.

Resistance can make you sick longer, and need more doctor visits and drugs that are even stronger. The more often you use an antibiotic, the greater the chance that the germs will become resistant.
Bottom Line

www.macoalition.org/uti-elderly-tools
Results

• Year 1
  • 36 facilities participated
  • 17 submitted data
  • 371,204 resident days compared to baseline period with 246,045 resident days

• Year 2
  • 32 facilities participated
  • 25 submitted data (12 new, 13 returning)
  • 301,379 resident days compared to baseline period with 145,448 resident days
Results

Urine Culture rate in First Collaborative Long Term Care Facilities (n=17)

Rate / 10,000 Resident-Days

<table>
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<th>Sep-12</th>
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<td>10.0</td>
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</tbody>
</table>

Urine Culture Rate
Urine Culture rate in Continuing Second Collaborative Long Term Care Facilities (n=12)

Urine Culture rate in New Second Collaborative Long Term Care Facilities (n=13)

[Graph showing urine culture rates for continuing and new facilities with specific months and rates]
Results

Rate of UTI diagnosis in First Collaborative Long Term Care Facilities (n=17)

Rate / 10,000 Resident-Days

UTI Rate
Rate of UTI diagnosis in Continuing Second Collaborative Long Term Care Facilities (n=12)

Rate of UTI diagnosis in New Second Collaborative Long Term Care Facilities (n=13)
## Results: C. diff

<table>
<thead>
<tr>
<th>Measure, IRR (95% CI)</th>
<th>1st Collaborative Experience (n=17)</th>
<th>Continuing Facility 2nd Collaborative Experience (n=12)</th>
<th>New Facility 2nd Collaborative Experience (n=13)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>C. difficile</em> IRR</td>
<td>0.55 (0.39 - 0.78)</td>
<td>0.85 (0.45 - 1.68)</td>
<td>0.64 (0.33 - 1.28)</td>
</tr>
</tbody>
</table>
Resources

- www.macoalition.org/uti-elderly-tools

Massachusetts Coalition for the Prevention of Medical Errors

Initiatives:

- Elimination Of Healthcare Associated Infections
  - Overview
  - Evaluation & Treatment – UTI in Elderly

Elimination Of Healthcare Associated Infections

Improving Evaluation of Urinary Tract Infections in the Elderly: Collaborative on Antibiotic Stewardship for Seniors in Long Term Care

The focus of these 2 Collaboratives was to reduce the inappropriate use of antibiotics. Faculty coached clinical staff in long term care facilities and hospital emergency departments to:

- Improve evaluation and treatment of urinary tract infection
- Decrease treatment for asymptomatic bacteriuria
- Use clinical quality improvement tools for decision support
- Communicate with patients and their loved ones for safer care

This page provides access to:

- Quality improvement tools for clinicians
- Brochures, newsletters and articles aimed at educating seniors and their families
- Webinars, workshops and slide sets used to teach nurses, doctors, and staff from nursing homes and acute care hospital Emergency Departments about providing improved assessment and care for the elderly across the continuum

Tools and Programs to Reduce the Overuse of Antibiotics for Seniors

Webinars for Clinicians:

- Overview of our Quality Improvement Collaborative to Improve Antibiotic Stewardship through Evaluation of UTI in the Elderly
- Appropriate Evaluation of UTI vs Asymptomatic Bacteriuria
- Evaluating Altered Mental Status in Elderly Long Term Care Residents
CARE PATH Symptoms of Urinary Tract Infection (UTI)

Symptoms or Signs of UTI
- Painful urination (dysuria)
- Lower abdominal pain or tenderness
- Blood in urine
- New or worsening urinary urgency, frequency, incontinence

Take Vital Signs
- Temperature
- BP, pulse, apical HR (if pulse irregular)
- Respiration
- Oxygen saturation
- Finger stick glucose (diabetics)

Vital Sign Criteria (any met?)
- Temp > 100.5°F
- Apical heart rate > 100 or < 50
- Respiratory rate > 28/min or < 10/min
- BP < 90 or > 200 systolic
- Oxygen saturation < 90%
- Finger stick glucose < 70 or > 300
- Resident unable to eat or drink

Further Nursing Evaluation
- Resident meets minimum criteria for initiating antibiotics:
  - Dysuria alone
  - Fever > 100°F (37.9°C) or 2.4°F (1.5°C) increase above baseline, and one of the signs or symptoms listed above

Notify MD / NP / PA

Consider Orders for:
- Urinalysis
- Urine culture and sensitivity (if indicated by UA)
- Collect clean voided specimen if possible; in-and-out catheter only if necessary
- For residents with indwelling catheter, change the catheter, send the urine obtained from the new catheter
- Blood work (Complete Blood Count, Basic Metabolic Panel)
CARE PATH

Acute Mental Status Change

New Mental Status Change Noted
- New symptoms or signs of increased confusion (e.g., disorientation, change in speech)
- Decreased level of consciousness
- Inability to perform usual activities (due to mental status change)
- New or worsened physical and/or verbal agitation
- New or worsened delusions or hallucinations

Take Vital Signs
- Temperature
- BP, pulse, apical HR (if pulse irregular)
- Respirations
- Oxygen saturation
- Finger stick glucose (diabetics)

Vital Sign Criteria (any met?)
- Temp > 100.5°F
- Apical heart rate > 100 or < 50
- Respiratory rate > 28/min or < 10/min
- BP < 90 or > 200 systolic
- Oxygen saturation < 90%
- Finger stick glucose < 70 or > 300

NO

Further Nursing Evaluation
- Mental Status
- Functional Status
- Cardiovascular
- Respiratory
- Gastrointestinal/abdomen
- Genitourinary
- Skin

Evaluate Symptoms and Signs**
- Not eating or drinking
- Acute decline in ADL abilities
- New cough, abnormal lung sounds
- Nausea, vomiting, diarrhea
- Abdominal distension or tenderness
- New or worsened incontinence, pain with urination, blood in urine
- New skin condition (e.g., rash, redness suggesting cellulitis, signs of infection around existing wound/pressure ulcer)

NO

Consider Orders for:
- Portable chest X-ray
- Urinalysis and C&S if indicated
- Blood work (Complete Blood Count, Basic Metabolic Panel)

YES

Notify MD / NP / PA

YES

Version 3.0 Tool
CARE PATH  Change in Behavior
Evaluation of Medical Causes of New or Worsening Behavioral Symptoms

New or Worsening Behavioral Symptoms
- Physical aggression (e.g., biting, hitting, kicking, spitting, etc.)
- Physical symptoms, non-aggressive (e.g., inappropriate disrobing or voiding, repetitive mannerisms, wandering or attempts to elope)
- Verbal aggression (e.g., cursing, screaming, etc.)
- Verbal symptoms, non-aggressive (e.g., repetitive calling out or requests for attention, constant complaining or whining, etc.)
- Social withdrawal (e.g., isolation, apathy)
- Depression (e.g., crying, hopelessness, not eating, multiple somatic complaints)

Take Vital Signs
- Temperature
- BP, pulse, apical HR (if pulse irregular)
- Respirations
- Oxygen saturation
- Finger stick glucose (diabetic)

Vital Sign Criteria (any met?)
- Temp > 100.5°F
- Apical heart rate > 100 or < 50
- Respiratory rate > 28/min or < 10/min
- BP < 90 or > 200 systolic
- Oxygen saturation < 90%
- Finger stick glucose < 70 or > 300

Further Nursing Evaluation
- Mental Status
- Cardiovascular
- Gastrointestinal
- Respiratory
- Genitourinary
- Functional Status
- abdomen
- Skin

Evaluate Symptoms and Signs*
- Danger to self or others
- Suicidal ideation
- Symptoms or signs of pain
- Not eating or drinking at all
- Acute decline in ADL abilities
- Nausea, vomiting, diarrhea
- Abdominal distention or tenderness
- New cough, abnormal lung sounds
- New or worsened incontinence, pain with urination or blood in urine
- New skin condition (e.g., rash, redness suggesting cellulitis, signs of infection around existing wound or pressure ulcer)

Notify MD / NP / PA

NO

YES

*Some symptoms may require immediate treatment.
Acknowledgements

• This initiative was supported by the Centers for Disease Control and Prevention Epidemiology and Laboratory Capacity for Infectious Diseases (ELC) funds made available to the Massachusetts Department of Public Health: CDC-C110-101203PPHF12, CDC-RFA-C110-101204PPHF13

• The team: Susanne Salem-Schatz, Ruth Kandel, Danny Pallin, Nora McElroy, Barbara Bolstorff, Eileen Mchale, Al DeMaria, Paula Griswold, Irene Campbell, Laurie Herndon, Sharon Benjamin and others
You're right - it's wearing a red cape and blue tights!

Scientists discover a new superbug.
## Upcoming Educational Series Webinars

<table>
<thead>
<tr>
<th>Date</th>
<th>Webinar Title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jun 12</strong></td>
<td>WEBINAR: Infection Control: Management (Case Scenarios)</td>
</tr>
<tr>
<td><strong>Jul 10</strong></td>
<td>WEBINAR: Antibiotic Selection, De-Escalation, and Duration</td>
</tr>
<tr>
<td><strong>Aug 14</strong></td>
<td>WEBINAR: How to Get an A on Your Report Card: Prevention and Management of <em>C. difficile</em> and Other Healthcare Associated Infections</td>
</tr>
<tr>
<td><strong>Sep 11</strong></td>
<td>WEBINAR: Measure Your Success: Monitoring and Tracking Data</td>
</tr>
</tbody>
</table>
New England Nursing Homes
Commitment to Quality Improvement

Take a photo of your badge displayed in your front entrance (bonus points if staff are included), post it to social media using the hashtag #WeCommit2Quality, and tag the New England QIN-QIO on any of the following:

- Facebook  @NEQINQIO
- Twitter  @NewEnglandQI
- LinkedIn  @New England QIN-QIO

Facilities who use this hashtag will have a chance to be featured in New England QIN-QIO social media postings, newsletters and programs.
Congratulations to Mary Immaculate Nursing/Restorative Center for their active participation and commitment to the New England Nursing Home Quality Care Collaborative. Thank you for your continued engagement to improving the quality of life and care provided to your residents!

#WeCommit2Quality New England QIN QiO
Blue ribbons will be awarded to Collaborative participants who:

- Actively participate in the New England Nursing Home Quality Care Collaborative (ex: attending webinars and other learning events related to your quality goals)
- Implement performance improvement projects and best practices to help improve performance and health care outcomes and share as a “success story” to the New England QIN-QIO

Gold ribbons will be awarded to Collaborative participants who:

- Achieved a composite score of 6.0 or below by September 2018
- Earned and maintained a percentage at or below the state average for the long-stay antipsychotic medication quality measure by September 2018
- Met criteria outlined for the blue ribbon requirements
Captures valuable data such as:
• Pre and post tests
• Knowledge checks
• Surveys

Learners’ course specific reports:
• Test responses
• Activity completions
• Feedback
• Number of Attempts

Access at Learning4Quality.org
Questions, comments, or concerns, email: learning@healthcentricadvisors.org
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