Community Antibiotic Stewardship – Hot Topic: Urinary Tract Infections in Post-Acute Patients and Long-Term Care Residents
Antibiotic Resistance: A Serious National and Global Health Problem

The discovery of antibiotics in the early 20th century fundamentally transformed human and veterinary medicine. Antibiotics now save millions of lives each year in the United States and around the world. However, the rise of antibiotic-resistant bacterial strains represents a serious threat to public health and the economy.

The CDC estimates that annually at least two million illnesses and 23,000 deaths are caused by antibiotic-resistant bacteria in the United States alone.¹
How to Get Involved

We invite you to join the Great Plains Learning and Action Network (LAN). All LAN partners will be invited to attend educational sessions on a variety of topics, have opportunities to learn from peers throughout the state and region and have access to an abundance of resources and tools. The LAN is a great opportunity to get connected and demonstrate your commitment to quality improvement. To sign-up, visit: greatplainsqin.org/lan-signup-page/
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Great Plains Quality Innovation Network  
www.facebook.com/GPQIN/
Our Speaker

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Associate Professor, Division of Infectious Diseases,
University of Nebraska Medical Center
Co-Medical Director, Nebraska ASAP

Nebraska ASAP Program at
https://asap.nebraskamed.com/
Management of Urinary Tract infections in Patients Residing in or Transferred from Post-Acute and Long-Term Care Facilities:

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Medical Director, Nebraska ICAP
Co-medical Director, Nebraska ASAP
University of Nebraska Medical Center
Disclosures

• Received funding for investigator initiated study from Merck & Co., Inc., to evaluate the effectiveness of a consultant pharmacist antimicrobial stewardship training program.
Objectives

• Describe the signs and symptoms associated with urinary tract infections

• Understand the step wise approach to manage residents of long-term care facilities with suspected urinary tract infections

• Recognize the need of care coordination among different healthcare settings when managing residents of post-acute and long-term care facilities
Important Definitions

**Pyuria**
- >10 white blood cells (WBC)/mm³ per high-power field noticed on UA
- Can be present without an infection

**Bacteriuria**
- Presence of bacteria in the urine
- Can be present without an infection
Important Definitions

Asymptomatic Bacteriuria

- Bacteriuria without any signs and symptoms of UTI
- Usually no antibiotic is required even if pyuria (or abnormal UA) is present

Symptomatic UTI

- Bacteriuria with infection related genitourinary signs and symptoms
- Will require antibiotic treatment
Diagnosis of UTI in Patients Without Indwelling Catheter

Noncatheterized

Minimum criteria include 1 of the following:
- Acute dysuria or acute pain, swelling or tenderness of testes, epididymis or prostate

OR

- Fever (≥38°C or increase of at least 1.1°C above baseline), rigors or leukocytosis and at least 1 of the following symptoms (see below)

OR

- At least 2 of the following symptoms:
  - New or increased frequency
  - New or increased urgency
  - New or increased incontinence
  - Suprapubic pain
  - Acute flank pain or tenderness
  - Gross hematuria

Diagnosis of UTI in Patients With Indwelling Catheter

Catheterized

Minimum criteria include: **no alternative diagnosis** AND 1 of the following:

- Fever (≥38°C or 1.1°C above baseline), rigors or new-onset hypotension
- Leukocytosis and either an *acute change* in mental status or acute functional decline
- New-onset flank or suprapubic pain or tenderness
- Purulent discharge from catheter site
- Acute pain, swelling or tenderness of testes, epididymis or prostate

Difference between Uncomplicated and Complicated UTI

**Uncomplicated UTI**
- UTI in a patient with no structural or functional urinary tract abnormality
- Usually need treatment for shorter duration

**Complicated UTI**
- UTI in a patient with structural or functional urinary tract abnormality
- Duration slightly longer than for uncomplicated UTI
<table>
<thead>
<tr>
<th>Factors</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstruction</td>
<td>Ureteric or urethral strictures</td>
</tr>
<tr>
<td></td>
<td>Nephrolithiasis</td>
</tr>
<tr>
<td></td>
<td>Diverticula</td>
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<td></td>
<td>Renal cysts</td>
</tr>
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<td></td>
<td>Tumors of the urinary tract</td>
</tr>
<tr>
<td></td>
<td>Prostatic hypertrophy</td>
</tr>
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<td></td>
<td>Pelvicalyceal obstruction</td>
</tr>
<tr>
<td></td>
<td>Congenital abnormalities</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>Indwelling urethral catheter</td>
</tr>
<tr>
<td></td>
<td>Ureteric stent</td>
</tr>
<tr>
<td></td>
<td>Urologic procedures</td>
</tr>
<tr>
<td></td>
<td>Intermittent catheterization</td>
</tr>
<tr>
<td></td>
<td>Nephrostomy tube</td>
</tr>
<tr>
<td>Impaired voiding</td>
<td>Neurogenic bladder</td>
</tr>
<tr>
<td></td>
<td>Vesicoureteral reflux</td>
</tr>
<tr>
<td></td>
<td>Cystocele</td>
</tr>
<tr>
<td></td>
<td>Ileal conduit</td>
</tr>
<tr>
<td>Metabolic abnormalities</td>
<td>Nephrocalcinosis</td>
</tr>
<tr>
<td></td>
<td>Renal failure (eCrCl &lt; 30 mL/min)(^{17})</td>
</tr>
<tr>
<td></td>
<td>Medullary sponge kidney</td>
</tr>
<tr>
<td>Others</td>
<td>Immunosuppressed (renal transplant)</td>
</tr>
<tr>
<td></td>
<td>Pregnancy</td>
</tr>
<tr>
<td></td>
<td>Male sex</td>
</tr>
</tbody>
</table>

Abbreviations: eCrCl = estimated creatinine clearance

https://asap.nebraskamed.com
Can J Infect Dis Med Microbiol Vol 16 No 6 November/December 2005
Pyelonephritis

• Infection of the kidney (renal parenchyma and renal pelvis)

• Patient usually more sicker as compared to when they have lower urinary tract infections

• Signs and Symptoms may include:
  • Fever, rigors and/or chills
  • Flank pain / Costovertebral angle tenderness
  • Nausea and/or vomiting

• Usually need slightly longer duration of antibiotic treatment (7 to 14 days depending on the antibiotic being used)
When is a UA helpful?

• When UA results are not suggestive of infection then it is very helpful to rule out a urinary tract infection.

• UA is not suggestive for infection when we see the following:
  • Negative Nitrite
  • Negative leukocyte esterase (LE)
  • <10 white blood cells (WBC)/mm3 per high-power field

• A positive UA by itself does not help in making a diagnosis

Collection and Transport of Urine Specimens for Culture

**Midstream:**
- Instruct women to hold labia apart, discard the first portion of voided urine and collect midstream urine in a sterile container.
- Instruct men to retract foreskin (uncircumcised), discard first portion of voided urine and collect in sterile container.

**Catheterized**
- Short-term: collect specimen by aseptically aspirating from port of urinary catheter.
- Long-term: change urinary catheter first then collect specimen by aseptically aspirating port of urinary catheter.

**Transport:**
- Keep urine refrigerated and send to microbiology lab promptly;
- If significant delay is anticipated (e.g., regional lab) put urine in a tube with boric acid to prevent overgrowth of contaminating organisms.
- Urine specimens for culture should be processed as soon as possible.

https://www.cdc.gov/antibiotic-use/healthcare/implementation/clinicianguide.html Accessed on 1/13/18
Significant Growth on Urine Culture

- **Without indwelling catheter**
  - $\geq 10^5$ cfu/mL of no more than 2 species of organisms in a voided urine sample
  - $\geq 10^2$ cfu/mL of any organism(s) in a specimen collected by an in-and-out catheter

- **With Indwelling catheter**
  - Urinary catheter specimen culture with $\geq 10^5$ cfu/mL of any organism(s)

- If “mixed bacterial flora” is reported instead of identification of an organism, it is usually an indication of contaminated sample, not an infection

- Occasionally patients may have significant culture results not fulfilling these criteria, so, clinical correlation on case by case basis is also important

UTI SBAR Tools

Suspected UTI SBAR

Complete this form before contacting the resident’s physician.

Date/Time ____________________

Nursing Home Name ____________________

Resident Name ____________________ Date of Birth __________

Physician/NP/PA ____________________ Phone ____________________

Fax ____________________

Nurse ____________________ Facility Phone ____________________

Submitted by □ Phone □ Fax □ In Person □ Other ____________________

S Situation

I am contacting you about a suspected UTI for the above resident.

Vital Signs BP __________ __________ HR __________ Resp. rate __________ Temp. __________

B Background

Active diagnoses or other symptoms (especially, bladder, kidney/genitourinary conditions)

Specify ____________________

☐ No ☐ Yes The resident has an indwelling catheter ____________________

☐ No ☐ Yes Patient is on dialysis ____________________

☐ No ☐ Yes The resident is incontinent If yes, new/worsening? ☐ No ☐ Yes ____________________

☐ No ☐ Yes Advance directives for limiting treatment related to antibiotics and/or hospitalizations.

Specify ____________________

☐ No ☐ Yes Medication Allergies ____________________

Specify ____________________

☐ No ☐ Yes The resident is on Warfarin (Coumadin®) ____________________

R Recommendation

☐ Protocol criteria met. Resident may require UA and urine culture or an antibiotic.

☐ Protocol criteria are NOT met. Resident DOES NOT need immediate antibiotic but may need additional observation.

Nurse’s Signature: ____________________ Date/Time: __________

☐ Notification of Family/PPO Name: ____________________ Date/Time: __________

☐ Faxed or □ Called to: ____________________ By: ____________________ Date/Time: __________

Physician Orders/Response (Please check all that apply)

☐ Urine culture (if indicated)

☐ Encourage 4oz of cranberry juice or another liquid (___________) TID, until symptoms resolve

☐ Record fluid intake & output until symptoms resolve (output can also be measured from urinary or by weighing diapers, etc.)

☐ Assess vital signs, including temp; every ________ hours for ________ hours

☐ Monitor and notify PCP if symptoms worsen or unresolved in ________ hours

☐ Other:

☐ For antibiotic orders (if needed) please complete script below:

Drug: ____________________ Dose: ____________________ Route: ____________________ Frequency: ____________________ Duration: ____________________ Indication: ____________________

Physician Signature: ____________________ Date/Time: __________

Please Fax Back To: ____________________ or □ Telephone Order

File Under Physician Order/Progress Notes

https://www.ahrr.gov/sites/default/files/wysiwyg/nhguide/4_TK1_T1-SBAR_UTI_Final.pdf Accessed on 1/14/18

Understanding and Using the SBAR tool for Communication: The need for Background Information

Clinical Assessment and Communication Tool Template for Suspected UTI

<table>
<thead>
<tr>
<th>S</th>
<th>Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I am concerned about a suspected UTI for the above resident.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>Background</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indwelling catheter □Yes □No</td>
</tr>
<tr>
<td></td>
<td>If yes, □Urethral □Suprapubic</td>
</tr>
<tr>
<td></td>
<td>Incontinence □Yes □No</td>
</tr>
<tr>
<td></td>
<td>If yes, is this new or worsening □Yes □No</td>
</tr>
<tr>
<td></td>
<td>UTI in last 6 months □Yes □No</td>
</tr>
<tr>
<td></td>
<td>If yes, Date: _______ Organism: _____________ Treatment: _________________</td>
</tr>
<tr>
<td></td>
<td>Active diagnosis (especially bladder, kidney, genitourinary conditions; diabetes; receiving dialysis, anticoagulants):</td>
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<td></td>
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</tr>
</tbody>
</table>

Advance directives for limiting treatment (especially antibiotic use):

Medication allergies:
Understanding and Using the SBAR tool for Communication: The need for Proper Assessment

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vital signs: BP____/____ HR______ Resp. rate______ Temp.______ O₂ Sats.______</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resident <strong>WITH</strong> indwelling catheter</th>
</tr>
</thead>
<tbody>
<tr>
<td>The criteria are met to initiate antibiotics if one of the following are selected:</td>
</tr>
<tr>
<td><strong>No</strong></td>
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<td>□</td>
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<tr>
<td>□</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Resident <strong>WITHOUT</strong> indwelling catheter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria are met to initiate antibiotics if one of the three situations are met:</td>
</tr>
<tr>
<td><strong>No</strong></td>
</tr>
<tr>
<td>□</td>
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</table>

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Protocol criteria met. Resident may require UA and urine culture or an antibiotic.</td>
</tr>
<tr>
<td>□ Protocol criteria are NOT met. Resident <strong>DOES NOT</strong> need immediate antibiotic but may need additional observation.</td>
</tr>
</tbody>
</table>
When Should SBAR tool be used in LTCF?

A. When calling/ faxing a provider with concern for a UTI
B. When provider is evaluating a patient in the LTCF for concern of UTI
C. When patient is going to be seen in the clinic by his/her PCP for UTI concern
D. When patient is being transferred to ED with concern of UTI
E. When a patient has been started on an antibiotic for UTI regardless of who and where it was started

The correct answer is: ALL OF THE ABOVE

- SBAR tool helps in maintaining accurate documentation
- Provides the LTCF nursing staff an opportunity to make sure that any prescription for UTI written outside of LTCF is not for asymptomatic bacteriuria
- Providers in ED and Clinics should communicate with LTCF if they do not see the tool especially if patient is unable to provide reliable information
Management Algorithm for Suspected UTI in LTCF

Assessment

Criteria Met

Send UA and Urine cultures

Resident very sick, vitals unstable, or Pyelonephritis suspected

Start empiric Antibiotics while awaiting UA and culture

Follow UA and culture

Consider active monitoring including hydration and monitoring of vitals while awaiting UA and culture

Condition improved or other cause identified

Manage Accordingly. No need for UTI treatment

Consider re-evaluation. If meeting UTI criteria, manage accordingly

Complete treatment course for UTI

Look for other causes for presenting symptoms. Unlikely to be UTI

- Consider hydrating the patient and monitor vitals.
- Look for other causes for the current symptoms like:
  • Dehydration
  • Medication Changes
  • Hypoxia
  • Uncontrolled pain
  • Lack of sleep
  • Psychiatric conditions like depression

Criteria Met

Send UA and Urine cultures

Resident very sick, vitals unstable, or Pyelonephritis suspected

Start empiric Antibiotics while awaiting UA and culture

Follow UA and culture

Consider active monitoring including hydration and monitoring of vitals while awaiting UA and culture

Condition improved or other cause identified

Manage Accordingly. No need for UTI treatment

Consider re-evaluation. If meeting UTI criteria, manage accordingly

Complete treatment course for UTI

Look for other causes for presenting symptoms. Unlikely to be UTI
Active Monitoring

- Close monitoring of Vital Signs
- Check hydration status and maintain adequate hydration
- Monitor for development of any signs and symptoms

SBAR Tool has built in orders that can be used for active monitoring:

**Physician Orders/Response (Please check all that apply)**

- I have reviewed the above SBAR.
- Urine culture (if indicated)
- Encourage 4oz of cranberry juice or another liquid (___________) TID, until symptoms resolve
- Record fluid intake & output until symptoms resolve (output can also be measured from urinal or by weighing diapers, etc.)
- Assess vital signs, including temp; every ________ hours for ________ hours
- Monitor and notify PCP if symptoms worsen or unresolved in ________ hours
- Other: ____________________________________________

For antibiotic orders (if needed) please complete script below:

- Drug: _______________ Dose: _____ Route: ____ Frequency: _______ Duration: _______ Indication: ______________________

**Physician Signature:**  
**Date/Time:**
Choosing Empiric Antibiotic Coverage

Points to Consider when choosing antibiotic coverage in addition to allergies:

- Type of UTI being treated
- Any previous urine culture results in the recent past
- Antibiotic susceptibility pattern (Antibiogram) of the facility (specifically sensitivity for *E. coli*)
- Renal/ Hepatic function
- Drug-drug interactions
- Other comorbidities
## Use of Antibiogram

Antibiograms for Most Frequently Isolated Pathogens, with Summary Comments

[Facility Logo]

### Antibiotic Susceptibility Report for Most Frequently Isolated Gram-Negative Organisms (January 2015 to December 2016)

| Pathogen              | Isolate Tested | Ampicillin | Ampicillin/Sulbactam | Piperacillin/Tazobactam | Cefazolin | Cefepime | Cefotaxim | Ceftriaxone | Cefxidine | Ceftazidime | Ceftazidime/Avibactam | Aztreonam | меропenem | Meropenem | Amikacin | Gentamicin | Tobramycin | Capreomycin | Levofloxacin | Trimethoprim/Sulfamethoxazole | Nitrofurantoin | Pyrimethamine |
|-----------------------|----------------|------------|----------------------|-------------------------|-----------|----------|----------|------------|-----------|-------------|------------------------|------------|-------------|-----------|----------|-----------|-----------|-------------|-------------|----------------|-----------------------------|----------------|----------------|
| *Escherichia coli*    | 111            | 53         | 59                   | 99                      | 86        | 92       | 98       | 97         | 91        | 98          | 100                    | 100        | 100         | 91        | 91       | 58        | 99        | 77          | 76          | 99          | 77                        |                |              |
| *Klebsiella pneumoniae* | 41             | --         | 78                   | 98                      | 93        | 95       | 98       | 93         | 98        | 98          | 100                    | 100        | 100         | 98        | 95       | 58        | 95        | 95          | 93          | 63          | 83                        |                |              |
| *Proteus mirabilis*   | 41             | 98         | 98                   | 100                     | 100       | 100      | 100      | 100        | 100       | 100         | 100                    | 100        | 100         | 75        | 75       | 75        | 75        | 75          | 75          | 50          | 75                        |                |              |
| *Pseudomonas aeruginosa* | 31            | --         | 97                   | --                      | 97        | --       | 97       | --         | --        | --          | 84                     | --         | --          | 90        | 100      | 74        | 77        | 71          | 71          | --          | --                        |                |              |

-- Denotes organism has intrinsic resistance to this antimicrobial
1. Nitrofurantoin is reported for urine sources only

### Summary for Gram-Negative Organisms

During the 2-year period between January 2015 and December 2016, a total of 111 *E. coli* were identified, making it the most commonly identified Gram-negative pathogen. Antibiotic susceptibility of these *E. coli* can be summarized as follow:

1. Oral antibiotics with the highest susceptibilities (in descending order) were:
   a. Nitrofurantoin (99%)
   b. Cefuroxime (91%)
   c. Cephalexin (86%, as indicated by cefazolin susceptibility)
   d. Trimethoprim/sulfamethoxazole (76%)

Choosing Antibiotics Based On Culture Results

**Minimum Inhibitory Concentration:** Lowest concentration of a particular antibiotic required to inhibit the growth of bacteria.

**Urine Clean Catch: Result:** >100,000 Escherichia coli

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>MIC</th>
<th>Susceptibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amikacin</td>
<td>&lt;=8</td>
<td>Susceptible</td>
</tr>
<tr>
<td>Amp-Sulbactam</td>
<td>&gt;16</td>
<td>Resistant</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>&gt;16</td>
<td>Resistant</td>
</tr>
<tr>
<td>Cefazolin</td>
<td>&lt;=4</td>
<td>Susceptible</td>
</tr>
<tr>
<td>Levofloxacin</td>
<td>&lt;=1</td>
<td>Susceptible</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>&lt;=32</td>
<td>Susceptible</td>
</tr>
<tr>
<td>Trimethoprim-Sulfa</td>
<td>&gt;2/38</td>
<td>Resistant</td>
</tr>
</tbody>
</table>

Points to consider when choosing antibiotic based on culture is the same as when choosing empiric antibiotic except:

- No need to consider facility antibiogram
- Choose the narrowest spectrum antibiotic suitable for the type of UTI being treated

Should never compare MIC of one antibiotic from another when choosing antibiotic coverage.

Even though Levofloxacin MIC is lower than what is reported for Nitrofurantoin, it does not mean Levofloxacin is better or worse as compared to Nitrofurantoin in this case.
Optimal duration of Antibiotic Therapy in uncomplicated UTI in Elderly Woman: A Double Blind Randomized Control Trial

UTI in older adult is not necessarily complicated

**Table 2: Therapeutic efficacy at 2 days and 6 weeks after completion of treatment**

<table>
<thead>
<tr>
<th>Measure of efficacy</th>
<th>No. (and %) of subjects</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3-day group</td>
<td>7-day group</td>
</tr>
<tr>
<td>2 days after treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacterial eradication</td>
<td>91/93 (98)</td>
<td>83/89 (93)</td>
</tr>
<tr>
<td>Symptom improvement*</td>
<td>64/73 (88)</td>
<td>57/69 (83)</td>
</tr>
<tr>
<td>Nocturia (≥ 1/night)</td>
<td>35/48 (73)</td>
<td>43/49 (88)</td>
</tr>
<tr>
<td>Urgency</td>
<td>24/33 (73)</td>
<td>27/35 (77)</td>
</tr>
<tr>
<td>Frequency</td>
<td>31/31 (100)</td>
<td>33/34 (97)</td>
</tr>
<tr>
<td>Burning on micturation</td>
<td>12/14 (86)</td>
<td>21/25 (84)</td>
</tr>
<tr>
<td>6 weeks after treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinfection</td>
<td>13/93 (14)</td>
<td>16/89 (18)</td>
</tr>
<tr>
<td>Relapse</td>
<td>14/93 (15)</td>
<td>12/89 (13)</td>
</tr>
</tbody>
</table>

*Among subjects who presented the symptom at baseline (time of entry into the study) and who also provided information on symptom relief at follow-up.

**Table 3: Proportion of subjects reporting adverse events on day 5 and day 9**

<table>
<thead>
<tr>
<th>Adverse event</th>
<th>No. (and %)† at day 5</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3-day group</td>
<td>7-day group</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>14 (15)</td>
<td>30 (35)</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>3 (3)</td>
<td>16 (19)</td>
</tr>
<tr>
<td>Nausea or vomiting</td>
<td>11 (12)</td>
<td>19 (22)</td>
</tr>
<tr>
<td>Headache</td>
<td>19 (21)</td>
<td>25 (29)</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>15 (16)</td>
<td>25 (29)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>8 (9)</td>
<td>8 (9)</td>
</tr>
<tr>
<td>Insomnia</td>
<td>10 (11)</td>
<td>12 (14)</td>
</tr>
<tr>
<td>Mean no. of events (and SD)</td>
<td>0.9 (1.1)</td>
<td>1.6 (1.5)</td>
</tr>
</tbody>
</table>

*The adverse events listed are those most commonly associated with ciprofloxacin.
†Except where indicated otherwise.

No significant difference in reinfection or relapse between 3- day or 7-day groups

More adverse effects when treated for 7 days

Vogel T et al CMAJ. 2004 Feb 17;170(4):469-73
### Table 1. Recommended Duration of Therapy

<table>
<thead>
<tr>
<th>Infection Syndrome</th>
<th>Typical Duration of Therapy</th>
</tr>
</thead>
</table>
| Uncomplicated cystitis<sup>1,2</sup> | 5 days for Nitrofurantoin  
3 days for TMP/SMX  
1 dose for Fosfomycin  
3 days for Fluoroquinolones  
3-7 days for Beta-Lactams |
| Pyelonephritis<sup>1</sup> | 7 days for Fluoroquinolones  
14 days for TMP/SMX  
10-14 days for Beta-Lactams |
| Catheter-associated urinary tract infection<sup>3</sup> or complicated* UTI<sup>2,4</sup> | 7 days if prompt resolution of symptoms  
10-14 days if delayed response to therapy |

[https://asap.nebraskamed.com](https://asap.nebraskamed.com)
Conclusions

• Diagnosis of UTI involves detailed investigation of signs and symptoms along with urine testing.

• Appropriate antibiotic choice for treatment of UTI depends on many variables including patient history, location of the infection in the GU tract, and complicating factors.

• Active monitoring is an option in some cases and can be utilized where there is suspicion but the criteria for UTI is not being met.

• Providers in the ED and the community should consider communicating with nursing staff at LTCF to obtain all the needed information when evaluating patients from LTCF for infections.
Questions

Press *5 on your telephone if you have a question you would like to ask.

You may also use the chat function.
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