Urinary Tract Infections in Long-Term Care Facilities

Neelay Kothari, M.D.

Minnesota Department of Health
Overview

- Epidemiology of urinary tract infection (UTI) in long-term care facilities (LTCFs)
- Asymptomatic bacteriuria vs. symptomatic UTI
- Diagnosis of UTI in LTCFs
- Management of UTI in LTCFs
UTI in Long-Term Care

- Most common reason for antibiotic use
- Most common cause of bacteremia

UTI Risk Factors

- Indwelling urinary catheters
- Condom catheter use
- Benign prostatic hypertrophy or prostatitis in men
- Atrophic vaginitis or estrogen deficiency in women
- Diabetes mellitus
- Co-morbid illness with neurogenic bladder
  - Alzheimer’s disease
  - Parkinson’s disease
  - Stroke
- Dehydration
- Functional impairment
Asymptomatic Bacteriuria

- Presence of bacteria in a person’s urine without any symptoms of infection

- Much more common than symptomatic infection in LTCF residents
# Prevalence of Asymptomatic Bacteriuria

<table>
<thead>
<tr>
<th>Group</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-menopausal Women</td>
<td>1.0-5.0%</td>
</tr>
<tr>
<td>Post-Menopausal Women</td>
<td>2.8-8.6%</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>1.9-9.5%</td>
</tr>
<tr>
<td>Elderly females in LTCF</td>
<td>25-50%</td>
</tr>
<tr>
<td>Elderly males in LTCF</td>
<td>15-40%</td>
</tr>
<tr>
<td>Short-term catheter</td>
<td>9-23%</td>
</tr>
<tr>
<td>Chronic indwelling catheter</td>
<td>100%</td>
</tr>
</tbody>
</table>

Asymptomatic Bacteriuria: Treatment

Beneficial
- Pregnant women
- Before invasive urologic procedures

Possible Benefit
- Within 6 months of renal transplant

Not Beneficial
- Diabetics
- Non-renal organ transplant
- Persons with indwelling catheters
- Spinal cord injury patients
- Long-term care residents

Antibiotic Treatment of Asymptomatic Bacteriuria in Long-Term Care: Results of Randomized Trials

- No effect on
  - Morbidity or mortality
  - Symptoms of chronic incontinence
  - Acute episodes of urinary tract infection

- Negative consequences
  - Increased drug side effects
  - Increased future isolation of resistant organisms
  - Increased cost

Bacterial Interference

- Colonization with less virulent strains may protect against serious infection by more virulent bacteria

- Ongoing clinical trials in spinal cord injury patients

Darouiche et al. Clin Inf Dis 2005
Pyuria in Asymptomatic Bacteriuria

- Does pyuria help distinguish asymptomatic bacteriuria from “real” infection?
  - Over 90% of persons with bacteriuria will also have pyuria, so this is not generally helpful.
  - However, the absence of pyuria (indicative of a host response) in an immunocompetent host makes “true infection” unlikely.
Example: 500 Bed Facility

- Resident in Facility
- Resident with Bacteriuria
- Resident with UTI requiring treatment
The diagnosis of UTI is primarily clinical

- Based on symptoms and objective findings

- Urinalysis and culture can provide supportive evidence, but is meaningless without clinical information

- A negative urinalysis and culture can exclude UTI
Abnormal odor can be caused by a number of factors, including infection, dehydration, and diet.

In one study, using urine odor to identify bacteriuria resulted in error in 1/3 of cases (Midthun et al. J Gerontol Nurs 2004).

Even if urine odor is caused by bacteriuria, this does not indicate infection that needs to be treated unless other symptoms are present.
Fever + Bacteriuria ≠ UTI

- Most residents (90%) with fever and no urinary symptoms (without an indwelling catheter) have another explanation for fever

- Most residents with bacteriuria do not have a clinical urinary tract infection needing treatment

- The positive predictive value for a positive urine culture in such a patient is ~12% (Orr et al. Am J Med 1996)

Urinary Tract Infection is Primarily a Clinical Diagnosis
UTI: Clinical Diagnosis

- Acute genitourinary symptoms
  - Dysuria
  - Frequency or urgency
  - New incontinence (chronic incontinence ≠ UTI)
  - Suprapubic or costovertebral pain

- Fever
  - Present in most serious infections
  - May be absent in elderly
SHEA Minimum Criteria For Antibiotics
Patients without urinary catheter

- Acute Dysuria

OR

Fever

+ 

At least ONE of:

- Urgency
- Frequency
- Suprapubic pain
- CVA tenderness
- Gross hematuria
- New incontinence

Loeb et al. Inf Cont Hosp Epi 2001
SHEA Minimum Criteria For Antibiotics

Patients with urinary catheter

At least ONE of:

• Fever
• Rigors
• New CVA tenderness
• New delirium

Loeb et al. Inf Cont Hosp Epi 2001
Urinary Tract Infections: Treatment

- Do not treat asymptomatic infection
- Obtain urine culture prior to antibiotics
- Base antibiotic selection on:
  - Local susceptibility data
  - Prior culture data and antibiotic use in the patient
  - Potential for drug interactions or side effects
  - Patient drug allergies
- Re-assess antibiotic therapy when sensitivities available
- Use narrow-spectrum agents whenever possible
Infections are generally treated for 7-14 days.

Post-therapy urine cultures are not recommended unless the patient develops recurrent symptoms of infection.

Majority of patients with prior bacteriuria will re-acquire bacteriuria by 6 weeks after treatment.
Urinary Tract Infections: Summary

- Asymptomatic bacteriuria is much more common than symptomatic infection
- Asymptomatic bacteriuria should not be treated in long-term care residents
- Urinary tract infection is a clinical diagnosis, with laboratory testing providing supporting data
References

This presentation was created by Minnesota Antibiotic Resistance Collaborative on July 19, 2007 for use by physicians.

http://www.minnesotaarc.org