Change in Condition, Head-to-Toe Assessment: Urinary Tract Infections in Nursing Home Residents

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September 27, 2017
Pre-Webinar Knowledge

1. I have a general knowledge of urinary tract infections (UTIs).
   A. Strongly agree
   B. Agree
   C. Neither agree nor disagree
   D. Disagree
   E. Strongly disagree
2. I have an understanding of UTI pathophysiology.

A. Strongly agree
B. Agree
C. Neither agree nor disagree
D. Disagree
E. Strongly disagree
3. I am comfortable communicating a change in condition to a physician using the situation, background, appearance, review, and notify (SBAR) format, as it relates to UTIs.

A. Strongly agree
B. Agree
C. Neither agree nor disagree
D. Disagree
E. Strongly disagree
Agenda

Introductions

Learning Objectives

It’s NOT Always a UTI: Diagnosing Infections in Nursing Home Residents

Change in Condition

SBAR: Situation, Background, Appearance, Review, and Notify
Presenters

**Michael Wasserman, MD, CMD**, chief medical officer, Rockport Healthcare Services, has more than 25 years of experience in the senior healthcare service industry with expertise in the long-term care continuum, practice management, and geriatric medicine. He was the co-founder of Senior Care of Colorado, one of the largest primary care geriatric private practices in the country, before selling it to IPC in 2010. Dr. Wasserman is fellowship trained in geriatric medicine from the University of California, Los Angeles, and is board certified in both internal medicine and geriatric medicine.

**Ulysses Tayocnog, MSN, RN**, director of case management at Antelope Valley Hospital in Lancaster, California, has 20 years of clinical and case management experience. He has successfully mentored and coached employees, leaders, and nursing students to help improve their competencies, communication, accountability, and team interactions.
Learning Objectives

• Determine appropriate diagnosis of urinary tract infection (UTI) in nursing home (NH) residents
• Appropriate labs and use of antibiotics (ABX)
• Defining a fever
• Asymptomatic bacteriuria versus UTI
• What to do next? Relaying UTI symptoms to the physician:
  – Change in Condition
  – SBAR
It’s NOT Always a UTI: Diagnosing Infections in Nursing Home Residents

Michael R. Wasserman, MD
Chief Medical Director, Rockport Healthcare Services
Case Example
Case Example: Background

• Sadie Smith, 106-year-old woman
• Resides in Shady Acres Nursing Home
• Ambulates with use of a walker, but recently started demonstrating cognitive impairment
• Incontinent of urine, wears adult diapers
• Responded well to toileting program
• Not on medications
• Suffers from macular degeneration and is hard of hearing
Does Sadie have a POLST*?

• Do not hospitalize?
• No antibiotics?
• Comfort care?
• What would Sadie want?
• Respecting resident’s autonomy and dignity

*POLST=Physician Orders for Life-Sustaining Treatment
Case Example: Change in Condition

• Two days ago, Sadie complained of feeling tired and achy
• Temperature 97.5° F and blood pressure 180/60
• Urinalysis and complete blood count (CBC) were ordered
Case Example: Lab Results

Urinalysis
25–50 WBCs and bacteria

CBC
WBCs: 6.5K
50% neutrophils
0% bands
Case Example: Treatment

**Scenario 1:**
Over the next few days, Sadie was monitored and began feeling better.

**Scenario 2:**
Sadie was started on Amoxicillin 500mg POx7 days. Two weeks later, she began developing watery stools, four times daily.
Why Focus on UTI?

4.1 MILLION
Americans are admitted to or reside in nursing homes during a year\(^1\)

UP TO 70% of nursing home residents received antibiotics during a year\(^2,3\)

UP TO 75% of antibiotics are prescribed incorrectly\(^2,3\)

Why Focus on UTI?

- **30–60%** of antibiotics used in skilled nursing facility are for suspected UTIs.\(^1\)
- **40–75%** of antibiotics used may be unnecessary or inappropriate.\(^2\)
- The point prevalence of asymptomatic bacteriuria in long-term care residents range from **25–50%**.\(^3\)

Sources:
Diagnosing UTIs in the NH: Flipping a Coin
Create a Baseline: Assess Your Patients

• What is their activity level?
• Are they fatigued?
• What is their temperature?
• What is their cognitive status?
• Are they having pain?
• Has anything changed?
Detecting an Infection: Change in Condition

- New or increased confusion
- Incontinence
- Falls
- Deteriorating mobility
- Reduced food intake
- Failure to cooperate with staff
Fever
Defining a Fever

A single oral temperature >100° F

Repeated oral temperatures >99.5° F

Increase of >2° F above baseline temperature
Most Useful Diagnostic Labs to Identify Infection

- An elevated white blood count (WBC) count of >14K.
- A left shift >6 percent is indicative of a bacterial infection.
- The higher the WBC count and/or the higher the bandemia (bands), the greater the likelihood of a bacterial infection.

Pyuria
“Pyuria Among Chronically Incontinent but Otherwise Asymptomatic NH Residents”

**Design:** Prospective, descriptive case series

**Setting:** Six NHs

**Participants:** 214 chronically incontinent, but otherwise asymptomatic, NH residents who were enrolled in a clinical intervention trial for urinary incontinence
Objective

To determine the prevalence of pyuria and its relationship to bacteriuria in a representative sample of chronically incontinent NH residents

Accessed on: March 15, 2016
Measures

214 urine specimens were collected by a validated, clean-catch technique. Each specimen underwent dipstick testing for leukocyte esterase, microscopic urinalysis to determine the number of WBCs per high-power field of centrifuged urine, and quantitative urine culture using standard laboratory techniques.
Results

- **Prevalence of pyuria:** 45 percent, (> 10 WBC/high power field [HPF])
- **Prevalence of bacteriuria:** 43 percent, (>100,000 colony forming units [CFUs])
- **Bacteriuria:** 59 percent with pyuria
- **No bacteriuria:** 34 percent with pyuria
- **Pyuria:** 56 percent had bacteriuria
- **No pyuria:** 31 percent had bacteriuria
- **Leukocyte esterase positive:** sensitivity of 83 percent and a specificity of 52 percent for pyuria on microscopic urinalysis


Accessed on: March 15, 2016
Conclusions

- Pyuria is common among incontinent NH residents
- Must be cautious in interpreting pyuria
- Using pyuria can result in unnecessary use of antibiotics
- Bacteriuria has similar issues

Accessed on: March 15, 2016
Asymptomatic Bacteriuria
Asymptomatic Bacteriuria

• A positive urine culture does not equal a UTI.
• *Asymptomatic bacteriuria* (ASB) **only** denotes bacteria in the urine.
• A UTI requires bacteriuria associated with specific symptoms arising from the urinary tract.
ASB does not always equal UTI!

Physicians must be thorough in their testing and diagnosis.

The elderly, especially those residing in NHs, have a higher incidence of ASB than other populations.
Warning!

Never Assume Anything
Is Urine the Answer? What to Look for…

Acute dysuria?

Yes

Fever, ↑ WBC/bands?

Yes

CVAT
Suprapubic pain
Hematuria
New or increased incontinence
New or increased urgency
New or increased frequency

Yes

No UTI

No

No

No UTI

No

Yes

UTI

No

Yes

Two of the following

Yes

No

Yes

No

No
Other Infectious Etiologies That May Cause Fever and Elevated WBC

- Pneumonia: hypoxemia or tachypnea; abnormal chest x-ray
- Viral respiratory infection
- Skin or soft tissue infection
- Gastrointestinal infection
Antibiograms

• Result of an antibiotic sensitivity test
• In vitro sensitivity
• Correlation of in vitro to in vivo sensitivity is often high enough for the test to be clinically useful
• Facility specific!
# Antibiogram

## Antibiogram for dd/mm/yyyy to dd/mm/yyyy

### Your Nursing Home Name / Clinical Lab Name

### Gram Negative

<table>
<thead>
<tr>
<th>Antibiotic Tested</th>
<th>Escherichia coli</th>
<th>Klebsiella pneumoniae</th>
<th>Proteus mirabilis</th>
<th>Pseudomonas aeruginosa</th>
<th>Oral or Oral Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin</td>
<td>46%</td>
<td>0%</td>
<td>62%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Amox / Clav</td>
<td>77%</td>
<td>96%</td>
<td>100%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Cefazolin</td>
<td>70%</td>
<td>93%</td>
<td>88%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Ceftoxitin</td>
<td>82%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>85%</td>
<td>79%</td>
<td>92%</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>58%</td>
<td>79%</td>
<td>62%</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>Levofloxacin</td>
<td>59%</td>
<td>79%</td>
<td>62%</td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>TMP / SMX</td>
<td>64%</td>
<td>79%</td>
<td>54%</td>
<td>67%</td>
<td></td>
</tr>
<tr>
<td>Tetracycline</td>
<td>64%</td>
<td>60%</td>
<td>0%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Oxacillin</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Clindamycin</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Erythromycin</td>
<td>50%</td>
<td>50%</td>
<td>100%</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>Linezolid</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

### Gram Positive

<table>
<thead>
<tr>
<th>Staphylococcus aureus</th>
<th>Oral or Oral Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>non-MRSA</td>
<td>10%</td>
</tr>
<tr>
<td>MRSA</td>
<td>35%</td>
</tr>
<tr>
<td>Staphylococcus coag. Neg</td>
<td>18%</td>
</tr>
<tr>
<td>Enterococcus sp</td>
<td>68%</td>
</tr>
</tbody>
</table>

### IV Only

<table>
<thead>
<tr>
<th>Pip / Taz</th>
<th>Cefepime</th>
<th>Ceftazidime</th>
<th>Gentamicin</th>
<th>Imipenem</th>
<th>Vancomycin</th>
</tr>
</thead>
<tbody>
<tr>
<td>98%</td>
<td>96%</td>
<td>96%</td>
<td>92%</td>
<td>91%</td>
<td>100%</td>
</tr>
<tr>
<td>89%</td>
<td>95%</td>
<td>95%</td>
<td>92%</td>
<td>91%</td>
<td>100%</td>
</tr>
<tr>
<td>85%</td>
<td>83%</td>
<td>83%</td>
<td>92%</td>
<td>91%</td>
<td>100%</td>
</tr>
<tr>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>71%</td>
<td>100%</td>
</tr>
</tbody>
</table>

- *Organisms with fewer than 30 isolates should be interpreted with caution, as small numbers may bias the group susceptibilities
- †MRSA = Methicillin-resistant Staph aureus, represents a subset of all Staph aureus isolates
- ‡N= pooled isolates by species from urine, wound, sputum and blood specimens
- Abbreviations: PIP/TAZ = Piperacillin/Tazobactam; TMP/SMX = Trimethoprim/sulfamethoxazole; Amox/Clav = Amoxicillin/Clavulanate

Please direct questions to: [insert program champion name, phone, e-mail]


Accessed on: March 15, 2016
Risk of *Clostridium difficile*

- One of the largest risks from inappropriate ABX
- Significant morbidity and mortality in NHs
- Endemic pathogen in NHs
- Prevention and treatment evolving
  - Appropriate ABX treatment
  - Use of probiotics
  - Infection control precautions
  - Fecal transplantation
Probiotics as Prevention and Treatment of *C. diff*

- Evidence is mixed
- Core common benefits
- Prevention during antibiotic treatment
  - *Saccharomyces boullardii*
- Treatment after antibiotics
  - *Lactobacillus* should be okay
- Monitor for side effects (e.g., constipation)
- Benefits seem to outweigh risks
Conclusion
Conclusion

UTI and ASB are not mutually exclusive

Antibiotic stewardship and the use of probiotics may be effective in the treatment and prevention of \textit{C. diff}

Assessing your patient properly and using appropriate labs are essential to diagnostics

It is \textit{rarely just one diagnosis} in frail elderly!
Change in Condition
SBAR
Change in Condition: When to report to the MD/NP/PA

Immediate Notification

Any symptom, sign or apparent discomfort that is:
- Acute or Sudden in onset, and:
  - A Marked Change (i.e. more severe) in relation to usual symptoms and signs, or
  - Unrelieved by measures already prescribed

Non-Immediate Notification

- New or worsening symptoms that do not meet above criteria

This guidance is adapted from: AMDA Clinical Practice Guideline – Acute Changes in Condition in the Long-Term Care Setting 2003; and Ouslander, J, Osterweil, D, Morley, J. Medical Care in the Nursing Home. McGraw-Hill, 1996

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Before Calling the Physician / NP / PA / other Healthcare Professional:

☐ Evaluate the Resident: Complete relevant aspects of the SBAR form below
☐ Check Vital Signs: BP, pulse, and/or apical heart rate, temperature, respiratory rate, O₂ saturation and finger stick glucose for diabetics
☐ Review Record: Recent progress notes, labs, medications, other orders
☐ Review an INTERACT Care Path or Acute Change in Condition File Card, if indicated
☐ Have Relevant Information Available when Reporting
   (i.e. medical record, vital signs, advance directives such as DNR and other care limiting orders, allergies, medication list)
SBAR: Situation

**SITUATION**

The change in condition, symptoms, or signs observed and evaluated is/are __________________________________________

This started on _______ / _______ / _______. Since this started it has gotten:  □ Worse  □ Better  □ Stayed the same

Things that make the condition or symptom worse are _______________________________________________________

Things that make the condition or symptom better are _______________________________________________________

This condition, symptom, or sign has occurred before:  □ Yes  □ No

Treatment for last episode (if applicable) _________________________________________________________________

Other relevant information ________________________________________________________________
SBAR: Background

BACKGROUND

Resident Description
This resident is in the facility for:  □ Long-Term Care  □ Post Acute Care  □ Other: ________________________________

Primary diagnoses ____________________________________________________________

Other pertinent history (e.g., medical diagnosis of CHF, DM, COPD) ____________________________________________________________

Medication Alerts
□ Changes in the last week (describe) ___________________________________________

□ Resident is on Warfarin/Coumadin Result of last INR: ___________ Date _____/_____/_____

□ Resident is on other anticoagulant (direct thrombin inhibitor or platelet inhibitor)

Resident is on:  □ Hypoglycemic medication(s) / Insulin  □ Digoxin

Allergies ________________________________

Vital Signs
BP _______ Pulse _______ (or Apical HR _______) RR _______ Temp _______ Weight _______ lbs (date _____/_____/_____

For CHF, edema, or weight loss: last weight before the current one was ___________________________ on ________/_____/_____

Pulse Oximetry (if indicated) _______% on □ Room Air  □ O₂ (_______)

Blood Sugar (Diabetics) ________________________________

Resident/Patient Name __________________________________________ (continued)
**Resident Evaluation**

*Note: Except for Mental and Functional Status evaluations, if the item is not relevant to the change in condition check the box for “not clinically applicable to the change in condition being reported”.*

1. **Mental Status Evaluation (compared to baseline; check all changes that you observe)**
   - [ ] Decreased level of consciousness *(sleepy, lethargic)*
   - [ ] New or worsened delusions or hallucinations
   - [ ] Other (describe)
   - [ ] Increased confusion or disorientation
   - [ ] Other symptoms or signs of delirium *(e.g. inability to pay attention, disorganized thinking)*
   - [ ] No changes observed
   - [ ] Memory loss *(new or worsening)*
   - [ ] Unresponsiveness

Describe symptoms or signs ____________________________________________

2. **Functional Status Evaluation (compared to baseline; check all that you observe)**
   - [ ] Decreased mobility
   - [ ] Needs more assistance with ADLs
   - [ ] Falls *(one or more)*
   - [ ] Swallowing difficulty
   - [ ] Weakness *(general)*
   - [ ] No changes observed

Describe symptoms or signs ____________________________________________

3. **Behavioral Evaluation**
   - [ ] Danger to self or others
   - [ ] Depression *(crying, hopelessness, not eating)*
   - [ ] Social withdrawal *(isolation, apathy)*
   - [ ] Suicide potential
   - [ ] Verbal aggression
   - [ ] Physical aggression
   - [ ] Personality change
   - [ ] Other behavioral changes *(describe)*
   - [ ] No changes observed

Describe symptoms or signs ____________________________________________

- [ ] Not clinically applicable to the change in condition being reported

**SBAR: Background (cont.)**

### 4. Respiratory Evaluation
- [ ] Abnormal lung sounds (*rales, rhonchi, wheezing*)
- [ ] Asthma (*with wheezing*)
- [ ] Cough (*Non-productive, Productive*)
- [ ] Inability to eat or sleep due to SOB
- [ ] Labored or rapid breathing
- [ ] Shortness of breath
- [ ] Symptoms of common cold
- [ ] Other respiratory changes (*describe*)
- [ ] No changes observed

Describe symptoms or signs __________________________

[ ] Not clinically applicable to the change in condition being reported

### 5. Cardiovascular Evaluation
- [ ] Chest pain/tightness
- [ ] Edema
- [ ] Inability to stand without severe dizziness or lightheadedness
- [ ] Irregular pulse (*new*)
- [ ] Resting pulse >100 or <50
- [ ] Other (*describe*)
- [ ] No changes observed

Describe symptoms or signs __________________________

[ ] Not clinically applicable to the change in condition being reported

### 6. Abdominal / GI Evaluation
- [ ] Abdominal pain
- [ ] Abdominal tenderness
- [ ] Constipation
  - (date of last BM ____ / ____ / ____)
- [ ] Decreased/absent bowel sounds
- [ ] Distended abdomen
- [ ] Decreased appetite/fluid intake
- [ ] Diarrhea
- [ ] Gl bleeding (*blood in stool or vomitus*)
- [ ] Hyperactive bowel sounds
- [ ] Jaundice
- [ ] Nausea and/or vomiting
- [ ] Other (*describe*)
- [ ] No changes observed

Describe symptoms or signs __________________________

[ ] Not clinically applicable to the change in condition being reported

**SBAR: Background (cont.)**

7. **GU/Urine Evaluation**
   - [ ] Blood in urine
   - [ ] Decreased urine output
   - [ ] Lower abdominal pain or tenderness
   - [ ] New or worsening incontinence
   - [ ] Painful urination
   - [ ] Urinating more frequently or urgency with or without other urinary symptoms

Describe symptoms or signs

- [ ] Not clinically applicable to the change in condition being reported

8. **Skin Evaluation**
   - [ ] Abrasion
   - [ ] Blistar
   - [ ] Burn
   - [ ] Contusion
   - [ ] Discoloration
   - [ ] Itching
   - [ ] Laceration
   - [ ] Pressure ulcer
   - [ ] Puncture
   - [ ] Rash
   - [ ] Skin tear
   - [ ] Splinter/silver
   - [ ] Wound (describe)
   - [ ] Other (describe)
   - [ ] No changes observed

Describe symptoms or signs

- [ ] Not clinically applicable to the change in condition being reported

9. **Pain Evaluation**
   - [ ] No
   - [ ] Yes (describe below)

Is the pain?
   - [ ] New
   - [ ] Worsening of chronic pain

Description/location of pain:

**Intensity of Pain** (rate on scale of 1-10, with 10 being the worst):

Does the resident show non-verbal signs of pain (for residents with dementia)?
   - [ ] No
   - [ ] Yes (describe)  
     - restless, pacing, grimacing, new change in behavior

Other information about the pain

- [ ] Not clinically applicable to the change in condition being reported

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10. Neurological Evaluation
☐ Abnormal Speech   ☐ Seizure
☐ Decreased level of consciousness  ☐ Weakness or hemiparesis
☐ Dizziness or unsteadiness

Describe symptoms or signs __________________________________________________________

☐ Not clinically applicable to the change in condition being reported

Advance Care Planning Information *(the resident has orders for the following advanced care planning)*
☐ Full Code   ☐ DNR   ☐ DNI *(Do Not Intubate)*   ☐ DNH *(Do Not Hospitalize)*   ☐ No Enteral Feeding   ☐ Other Order or Living Will *(specify)*

________________________________________________________

Other resident or family preferences for care ______________________________________________________

________________________________________________________
SBAR: Appearance

APPEARANCE

Summarize your observations and evaluation: ___________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

SBAR: Review and Notify

**REVIEW AND NOTIFY**

Primary Care Clinician Notified: ____________________________ Date __/__/__ Time (am/pm) __________

Recommendations of Primary Clinicians (if any) ____________________________________________________________

____________________________________________________________________________________

b. Check all that apply

**Testing**
- [ ] Blood tests
- [ ] EKG
- [ ] Urinalysis and/or culture

**Interventions**
- [ ] New or change in medications
- [ ] Increase oral fluids
- [ ] Oxygen (if available)
- [ ] IV or subcutaneous fluids
- [ ] Other (describe)

[ ] Transfer to the hospital (non-emergency) (send a copy of this form)
- [ ] Call for 911
- [ ] Emergency medical transport

**Nursing Notes (for additional information on the Change in Condition)**

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Name of Family/Health Care Agent Notified: ____________________________ Date __/__/__ Time (am/pm) __________

**Staff Name (RN/LPN/LVN) and Signature**

____________________________________________________________________________________
INTERACT Tools

For information on INTERACT tools visit:

http://www.pathway-interact.com/
Questions?
Thank you!

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