Teamwork for UTI diagnosis: Practical tools and skills

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Objectives

At the end of this presentation, attendees should be able to:

1. Differentiate between what is and what is not a UTI
2. Assess a patient for a UTI
3. Employ teamwork communication strategies to improve diagnosis and treatment of UTI.
Disclosures

Dr. Wald:

Colorado Hospital Association Acute Care Stewardship Collaborative
AHRQ LTC Safety: CAUTI
Infectious Diseases Society of America
Infections in NFs

Comprise 3 of the top 5 reasons for readmission to hospital from NF: UTI, pneumonia, sepsis (Ouslander, 2011)
UTI in NFs

Each year, UTIs are:
30-40% of all infections
affecting 3-5% of residents
(Mylotte, ICHE 2005)

The dreadful truth behind urinary tract infections
Case Presentation

Mr. M is an 85 yo LTC resident with bipolar disorder and dementia.

He has a chronic suprapubic catheter and h/o MDRO UTIs.

CC: Recent onset of falls. Urine with clumps of material in the drainage tube and smells bad.
What is a UTI?
How does one get a UTI?

Sterile Bladder → Asymptomatic Bacteriuria → UTI

- Host factors
  - Bladder function
  - Manipulation
  - Catheter insertion
  - Sexual Activity

- Host factors
  - Host response
  - Bacterial factors

- Urination
- Host response

- Host response
- Bacterial adaptation

Foxman, ID Clinics North America, 2014
ASB in NFs

23-50% of residents have asymptomatic bacteriuria (ASB) (Nicolle, ICHE 2000)

Screening for and treatment of ASB has no impact on mortality, development of UTI, or incontinence

- 5 RCTs, 31-75% of subjects with cognitive impairment
How does one get a UTI?

Sterile Bladder

Host factors
Manipulation
Host response
Bacterial factors

UTI

Asymptomatic Bacteriuria

Adapted from Foxman, ID Clinics North America, 2014
What is a UTI?
(Stone, Infect Control Hosp Epidemiol, 2012)

UTI or CAUTI diagnosis

Symptom Criteria

Culture Criteria

UTI or CAUTI diagnosis
Poor adherence to diagnostic criteria

10% mean adherence to criteria (range 0-39%) in 12 NHs in NC (Olsho, JAMDA, 2013)

40-75 % of patients not meeting the criteria still got antibiotics (D’Agata, JAGS, 2013; Rotjanapan Archives Int Med 2011.)
What are the Symptoms of UTI in frail elders?

YES – URINARY TRACT SYMPTOMS

CVA pain or tenderness
Suprapubic pain
New hematuria
New or marked increase in incontinence, urgency, frequency

NO – URINE APPEARANCE

Foul-smelling urine
Change in urine color
Cloudy urine
Urinary sediment

UTI is rare in the absence of lower urinary tract symptoms
How useful are other common symptoms in frail elders?

<table>
<thead>
<tr>
<th>Symptom</th>
<th>High Likelihood of Bacterial infection</th>
<th>High Likelihood of UTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional decline</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Weakness, falls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alteration in Mental Status</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fever/rigors</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Modified definition in elders more sensitive for detecting infection</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

These are all non-specific findings
Delirium and Bacteriuria

Often self-limited and short-lived
- Among hospitalized elders, 69% resolved in 1 day

Treatment of ASB ≠ better delirium outcomes

Treatment of “suspected” UTI in dementia ≠ mortality benefit (Dufour, JAGS, 2015)
Fever and Bacteriuria

8-10% = positive predictive value of bacteriuria for identifying a urinary source of fever

How to assess for UTI?
Case Presentation

Mr. M is an 85 yo LTC resident with bipolar disorder and dementia.

He has a chronic suprapubic catheter and h/o MDRO UTIs.

CC: Recent onset of falls. Urine with clumps of material in the drainage tube and smells bad.
What you see ....
What is really happening….

“gero-oculo-vesicular reflex”
And the urine shows...

<table>
<thead>
<tr>
<th>Date</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/17/2015</td>
<td>1712</td>
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<table>
<thead>
<tr>
<th>URINALYSIS</th>
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<tbody>
<tr>
<td>COLOR URINE</td>
<td>AMBER</td>
</tr>
<tr>
<td>APPEARANCE URINE</td>
<td>SL CLDY</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY URINE</td>
<td>1.021</td>
</tr>
<tr>
<td>PH URINE</td>
<td>6.0</td>
</tr>
<tr>
<td>PROTEIN URINE</td>
<td>30 mg/dL</td>
</tr>
<tr>
<td>GLUCOSE URINE IRIS</td>
<td>NEGATIVE</td>
</tr>
<tr>
<td>KETONES URINE</td>
<td>NEGATIVE</td>
</tr>
<tr>
<td>BLOOD URINE</td>
<td>NEGATIVE</td>
</tr>
<tr>
<td>NITRITE URINE</td>
<td>NEGATIVE</td>
</tr>
<tr>
<td>UROBILINOGEN URINE</td>
<td>4 mg/dL</td>
</tr>
<tr>
<td>LEUKOCYTE ESTERASE</td>
<td>LARGE *</td>
</tr>
<tr>
<td>WHITE BLOOD CELLS URINE</td>
<td>&gt;75</td>
</tr>
<tr>
<td>RED BLOOD CELLS URINE</td>
<td>0-3</td>
</tr>
<tr>
<td>Squamous Epithelia</td>
<td>OCCASNL</td>
</tr>
<tr>
<td>NON SQUAMOUS EPITHELIUM</td>
<td>OCCASNL</td>
</tr>
<tr>
<td>MUCUS</td>
<td>OCCASNL</td>
</tr>
<tr>
<td>BACTERIA URINE</td>
<td>MODERATE</td>
</tr>
<tr>
<td>AMORPHOUS CRYSTALS</td>
<td>PRESENT *</td>
</tr>
<tr>
<td>WBC CLUMPS URINE</td>
<td>OCCASNL</td>
</tr>
</tbody>
</table>
Utility of urinalysis in diagnosis of UTI

<table>
<thead>
<tr>
<th>Test</th>
<th>Emergency Department</th>
<th>Elderly Patients</th>
<th>Catheterized Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PPV</td>
<td>NPV</td>
<td>PPV</td>
</tr>
<tr>
<td>Pyuria (&gt; 5-10 WBCs/HPF)</td>
<td>56</td>
<td>95</td>
<td>--</td>
</tr>
<tr>
<td>Hematuria (&gt; 5 RBCs/HPF)</td>
<td>51</td>
<td>88</td>
<td>--</td>
</tr>
<tr>
<td>Nitrite</td>
<td>83</td>
<td>70</td>
<td>74</td>
</tr>
<tr>
<td>Leukocyte Esterase</td>
<td>50</td>
<td>83</td>
<td>46</td>
</tr>
<tr>
<td>Nitrite and LE</td>
<td>100</td>
<td>71</td>
<td>77</td>
</tr>
<tr>
<td>Bacteria (any amount)</td>
<td>60</td>
<td>74</td>
<td>--</td>
</tr>
</tbody>
</table>
# How to differentiate among common urinary tract infections

<table>
<thead>
<tr>
<th></th>
<th>Positive Urinalysis</th>
<th>Positive Culture</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic Bacteriuria (ASB)</td>
<td>✔️</td>
<td>✔️</td>
<td>Dysuria, frequency, urgency</td>
</tr>
<tr>
<td>Cystitis</td>
<td>✔️</td>
<td>✔️</td>
<td>Fever, flank pain, nausea</td>
</tr>
<tr>
<td>Pyelonephritis</td>
<td>✔️</td>
<td>✔️</td>
<td>Fever, Suprapubic or flank pain</td>
</tr>
<tr>
<td>CAUTI</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
</tbody>
</table>
The Culture of Culturing

Common practice of sending a urinalysis and urine culture every time a frail older patient has a change in condition, regardless of the likelihood of a UTI.
Search satisfying
Have you ever thought...

Mr. M has 50 wbc/hpf and many bacteria...I can’t ignore that “positive” result.

The bladder and urine are sterile; therefore, an abnormal u/a or culture must indicate infection

(Trautner, BMC Med Inform Decision Making, 2013)
Are you guilty of this?

*The Scapegoat*

by William Holman Hunt (1827-1910)
Have you ever done...

I’m not sure it’s a UTI, but let’s treat it just in case.

(Trautner, BMC Med Inform Decision Making, 2013)

The risk of withholding antibiotics is greater than the risk of delivering antibiotics.
Diagnostic Momentum
Have you ever said....

Why is Mr. M falling?
It must be those UTIs again.

Vague, non-urinary symptoms are commonly signs of urinary infection; particularly in the dementia patient

(Trautner, BMC Med Inform Decision Making, 2013)
The Texas 2-Step: Question 1

Does this patient have any localizing UTI symptoms?

- NO: Do not send urine studies. Work up other cause and Reassess.
- YES: Go to Question 2

Trautner, BMJ Med Inform Decis Making 2013
The Texas 2-Step: Question 2

Can a non-UTI diagnosis account for these symptoms?

- **YES**
  - Work up other cause
  - Reassess

- **NO**
  - Send urine culture
  - Consider Empiric antibiotics
  - Review urine culture results

Trautner, BMJ Med Inform Decis Making 2013
Urine Cultures Decreased 71% in Intervention Site (P<0.0001)
Inappropriate Treatment of ASB Decreased in Intervention Site

P<0.0001
What’s a clinician to do?

The “do nothing” protocol
1. Do not send urine culture
2. Do withhold antibiotics
3. Do a fall assessment
4. Do change the catheter
5. Dohydrate
Using teamwork communication to improve UTI diagnoses
Team STEPPS

• Developed by The Department of Defense (DoD) and the Agency for Healthcare Research and Quality (AHRQ)

• A teamwork system that offers a powerful solution to improving collaboration and communication within health care facilities.

• *Nursing homes will receive Team STEPPS training when you join the Clostridium difficile Component of the Telligen Nursing Home Quality Care Collaborative!*

Team STEPPS Long Term Care Version:

SBAR = a framework for team members to effectively communicate information to one another

- **Situation**—What is going on with the resident?
- **Background**—What is the clinical background or context?
- **Assessment**—What do I think the problem is?
- **Recommendation**—What would I recommend?
Communicating with Physicians

Use SBAR to help create a mutual understanding.

Recognize pressures on physicians that drive urine culturing and antibiotic overuse. Such as:

- Fear of missing urosepsis
- Fear of not doing what everyone else is doing
- Pressure to come up with a diagnosis
- Lack of awareness of the guidelines covered today

Acknowledge these pressures; point out your own.

Emphasize shared mission: resident care.

Share evidence-based literature to support your stance – Antibiotic Use brochure.
Using SBAR to Communicate with Residents and Families

• Some times residents and families are the ones pushing for urine cultures and antibiotics

• SBAR can also be used to improve communication with residents and families

When forming your SBAR make sure to consider

○ What residents and their families are really asking for

○ Discuss alternatives to ordering cultures and using antibiotics

○ Highlight the possible side effects of antibiotic use

○ Promote shared decision making.
Scenario 1

Situation—What is happening?
Mr. M had another fall today

Background—What is the background?
Mr. M. is our patient with a suprapubic catheter and multiple MDRO UTIs.

Assessment—What do I think the problem is?
He could have another UTI

Recommendation—What would I recommend?
I’m happy to send off a UA and Culture
Scenario 2

**Situation**—What is happening?
Mr. M had another fall today

**Background**—What is the background?
Mr. M is our patient with bipolar d/o, dementia, and a suprapubic catheter. He was started on Aricept last week. He does have a history of MDRO UTI.

**Assessment**—What do I think the problem is?
On my assessment, Mr. M has no symptoms referable to his urinary tract or catheter. He is non-tender on exam and his vitals are normal.

**Recommendation**—What would I recommend?
We can hydrate him, put him on the monitoring protocol, and review his fall risk factors. I don’t think we need urine testing at this time.
NF Course

U/A: 50 wbc/hpf and many bacteria.

Rx’d Imipenem x 14 d for h/o MDRO klebsiella.

UCx: 2 resistant GNRs

Day 9: Fall with facial laceration. Presents to ED with similar u/a; Admit to ACE for UTI and continued imipenim
ACE Course

Stopped imipenem
Changed catheter
Noted HR = 50; EKG sinus bradycardia
Completed med rec
Discontinued Donepezil
PT eval: rx walker
24 hr obs; D/C to NF
Mutual Support in Teamwork

- Assisting each other
- Providing and receiving feedback
- Exerting assertive and advocacy behaviors when patient safety is threatened
What types of behaviors constitute mutual support?

- Monitoring other team members' performance to anticipate assistance requests
- Offering or requesting assistance
- Filling in for a member who cannot perform a task
- Cautioning team members about potentially unsafe situations

- Self-correcting and helping others correct their mistakes
- Distributing and assigning work thoroughly
- Rerouting/delaying work so that the overburdened team member can recover
- Regularly providing feedback to each other
- Providing encouragement
Team members foster a climate in which it is expected that assistance will be actively sought and offered as a method for reducing the recurrence of error.
What can happen when we are overwhelmed and do not seek task assistance?
Important factors

Situation
Attitudes and beliefs
Communication style

http://9inningknowitall.com/2013/10/24/game-1-error/
Case Study

A nursing assistant is busy readying one resident for a doctor’s appointment and a second resident for a therapy session. The first resident is in a wheelchair with urinary catheter tubing on the ground and a full urine collection bag attached to the chair.

How would you offer task assistance in this example?
How would you request task assistance in this example?
The Nuts and Bolts of Task Assistance

Communicate clear and specific availability of time and skills when offering assistance
  ◦ Use please and thank you
  ◦ Close the loop on communication
  ◦ Account for experience level
  ◦ Foster a supportive climate – pay it forward
What is situation monitoring?
Situation monitoring is a process
Situational Monitoring: The status of the resident

What are important components to consider in monitoring the status of the resident?

✓ Resident History
✓ Vital Signs
✓ Medications
✓ Physical Exam
✓ Plan of Care
✓ Psychosocial Condition

An example:
How can the resident and their family participate?
Factors that undermine situation monitoring for teams

Failure to:

- Share information with the team
- Request information from others
- Direct information to specific team members
- Include resident or family in communication
- Use resources fully (e.g., status board, automation)
- Document
Gloria Valdez:
- New admission
- 87 years old
- Dementia diagnosis
- Confused x 1 day
- Involved daughter
Situation monitoring exercise

What information is needed to assess Mrs. Valdez?
Who needs to participate?
Who needs to know?
What happens next?
Conclusions

Overdiagnosis of UTI is

◦ related to prevalence of ASB and is due to a culture of culturing

◦ Can be understood in the context of the diagnostic error framework

◦ Safety culture approaches (teamwork communication) may be helpful

◦ Clinical decision support, communication tools might address important aspects of this problem in NFs

◦ Stay tuned!
Take home points

Symptoms
- Urinary tract symptoms are preferred for diagnosis of UTI
- Confusion and falls are non-specific symptoms; generally not signs of UTI

Urine tests:
- The predictive value of a U/A and culture is poor in the acute care population
- Do not send unless you have a high suspicion based on fever or localizing symptoms