When To Test?
When to Submit a Urine Specimen for Testing?

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When to Test

“Test the urine when there is a reasonable chance of a urinary tract infection being present based on the presence of signs and symptoms localizing to the urinary tract.”
What is a UTI?

- There is no gold standard definition of UTI, but several consensus definitions have been suggested and revised over time.

- These definitions differ slightly, but all require the presence of signs and symptoms localizing to the urinary tract.

Nace, et.al. JAMDA 15 (2014) 133-139
Urinary Tract Signs and Symptoms Include*

- Dysuria
- New onset
  - Frequency
  - Urgency, or
  - Incontinence
- Flank pain or tenderness
- Suprapubic pain
- Gross hematuria
- Focal tenderness or swelling of testis, epididymis or prostate
- Recent catheter trauma, obstruction, or purulent drainage around the catheter

*Nace, et. al.
What about Non-Communicative Residents?

- Residents frequently have non-specific geriatric symptoms and are unable to tell us what is bothering them.
- Non-specific symptoms are:
  - Fever
  - Functional decline
  - Aggressive behaviors
  - Mental status changes
- Unfortunately, these symptoms are just that: **non-specific**

Nace, et.al. JAMDA 15 (2014) 133-139
What about Non-Communicative Residents?

- For residents who cannot reliably self-report symptoms, the presence of fever, leukocytosis, or hemodynamic instability alone (without signs of infection in a site other than the urinary system) may be adequate to justify initiation of antimicrobial therapy, and therefore testing.

- AMDA Choosing Wisely Campaign (See Item 3) (https://www.amda.com/tools/ChoosingWisely_5Things.pdf)

Nace, et. al. JAMDA 15 (2014) 133 - 139
Is a Change in Mental Status, Fatigue, or a Fall a Symptom of a UTI?

• Sometimes, but most commonly NOT
• UTI is less likely without specific urinary symptoms
• Non-specific Geriatric Symptoms, such as change in mental status, fatigue, or a fall may be due to a variety of non-infectious causes including:
  o Constipation, Dehydration
  o Depression, Medication Side Effects
  o Pain, Poor Sleep
Non-specific Geriatric Symptoms May Accompany a UTI but...

Without another localizing urinary symptom or fever or leukocytosis and no other identified source of infection, these non-specific symptoms are unlikely a sign of UTI AND

A urine specimen should NOT be sent
Non-Specific Symptoms in Absence of Urinary Symptoms

- Should be evaluated to determine the correct cause of the symptom or behavior. So, update care plan...
  - Monitor vital signs and symptoms for several days
  - Review meds, bowel pattern, social milieu
  - Encourage fluids if appropriate
  - Perform ongoing assessments
  - Watch closely for progression of symptoms or change in clinical status
  - Consider blood work

- Wait and watch and re-evaluate... Notify provider as indicated
Non-Specific Symptoms in Absence of Urinary Symptoms

It is important to consider a range of possible causes for non-specific geriatric symptoms to prevent missing the real diagnosis because....
... Under Normal Condition

- The skin surface is not sterile...
- The mouth is not sterile...
- The colon is not sterile...
- And in many residents the bladder is not sterile
- Up to 50% of LTC residents have bacteria in their urine but no infection is present
Asymptomatic Bacteriuria ≠ UTI

- Asymptomatic bacteriuria is frequently mistaken for a UTI. It is important to understand this to avoid unnecessary testing and the error of inappropriate treatment with antibiotics.
**Treating Asymptomatic Bacteriuria: All harm, No Benefit**

**HIGH PREVALENCE OF ASYMPTOMATIC BACTERIURI**
- 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 Testing + Prevalent Colonization = Unnecessary prescriptions & missing the real diagnosis

**UNNECESSARY TREATMENT WITH ANTIBIOTICS HARM PATIENTS**
- Drug-drug interactions
- Renal & other complications
- Increase of multi-drug resistant bacteria
- C. difficile infection
- Nausea and vomiting
- Drug allergies

Prevalence of Asymptomatic bacteriuria in seniors over 70 (upper estimates)
No Localizing Urinary Tract Symptoms

DO NOT TEST
DO NOT TREAT
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 prevalence of asymptomatic bacteriuria
- Seek other causes

Specific UTI symptoms
- Test or treat as usual
Urine Characteristics

• Dark concentrated and / or strong smelling urine are **NOT** specific urinary symptoms suggesting UTI

• Without specific urinary tract signs and symptoms, concentrated urine or strong smelling urine **DOES NOT** require urine testing
When Symptoms are Absent:

- “Positive” urine dip is meaningless
- “Positive” urinalysis is meaningless
- “Positive” urine culture is just Asymptomatic Bacteriuria

Regardless of symptoms:
- Poor urine collection technique causes false-positive urinalysis
- See unit on proper urine collection technique
In other words...

Don’t think urine first in a resident with a change in condition and no localizing urinary tract signs and symptoms
How Do We Improve?

Sometimes there are systemic triggers to inappropriate urinalysis testing within systems and policies of the nursing home to include but not limited to **standing orders**

It is recommended that all such systemic triggers for inappropriate or automatic urine collection and testing be considered and eliminated
How Do We Improve?

Know the signs and symptoms of a UTI

Educate the Line Nursing Staff about the signs and symptoms of UTI

Develop minimum criteria to collect and test urine
How Do We Improve?

• Consider use of surveillance criteria* to guide the decision to test urine

• Alternatively, create your own consensus-based criteria** to guide decision to test

• Incorporate your criteria into a QAPI project to improve your rate of appropriate urine testing within your facility

*”Revisiting the McGeer Criteria” ICHE 2012;33(10):965-977
**Loeb, et al, ICHE 2001;22(2):120-124
For example, working criteria for sending a sample for urinalysis might consist of something like...
Revised McGeer: Without Indwelling Catheter

### (A) Clinical (At least one of the following must be met)

1. Either of the following:
   - Acute dysuria or
   - Acute pain, swelling or tenderness of testes, epididymis or prostate

2. If either FEVER or LEUKOCYTOSIS present need to include ONE or more of the following:
   - Acute costovertebral angle pain or tenderness
   - Suprapubic pain
   - Gross hematuria
   - New or marked increase in incontinence
   - New or marked increase in urgency
   - New or marked increase frequency

3. If neither FEVER or LEUKOCYTOSIS present INCLUDE TWO or more of the ABOVE (Box #2).

### (B) Lab (At least one of the following must be met)

1. VOIDED SPECIMEN: POSITIVE URINE CULTURE ($\geq 10^5$ CFU/ML) NO MORE THAN 2 ORGANISMS

2. STRAIGHT CATH SPECIMEN: POSITIVE URINE CULTURE ($\geq 10^2$ CFU/ML) ANY NUMBER OF ORGANISMS

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Stone et al. *Infect Control Hosp Epidemiol* 2012; 33:965-977
Wisconsin Healthcare-Associated Infections in LTC Coalition

Revised McGeer
Resident With Indwelling Catheter

<table>
<thead>
<tr>
<th>(A) Clinical (At least one of the following must be met with no alt. explanation)</th>
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<tbody>
<tr>
<td>☐ Fever</td>
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<tr>
<td>☐ Rigors</td>
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<tr>
<td>☐ New onset hypotension</td>
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<tr>
<td>☐ Either acute change in mental status or acute functional decline, with no alternate diagnosis AND leukocytosis</td>
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<tr>
<td>☐ New onset costovertebral angle pain or tenderness</td>
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<tr>
<td>☐ New onset suprapubic pain</td>
</tr>
<tr>
<td>☐ Acute pain, swelling or tenderness of the testes, epididymis or prostate</td>
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<tr>
<td>☐ Purulent drainage from around the catheter</td>
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+ | (B) Lab (Must be met) |
<table>
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<tr>
<td>☐ Positive urine culture (≥ 10^5 CFU/ML) of any Organism(s)</td>
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</table>

Stone et al. *Infect Control Hosp Epidemiol* 2012; 33:965-977
Loeb Minimum Criteria

**Note: Culture Results Not Part of Decision-Making**

**Without Indwelling Catheter**

- Acute dysuria alone OR
- Fever* plus 1 or more of the symptoms below (new or increased) OR
- If no fever, at least 2 of the symptoms below (new or increased)

| Costovertebral angle tenderness | Suprapubic Pain |
| Gross Hematuria                  | Urinary Incontinence |
| Urgency                         | Frequency |

*Fever > 100° or 2.4° F above baseline

Loeb Minimum Criteria

Note: Culture Results Not Part of Decision Making

With Indwelling Catheter

At least one or more of the symptoms below (new or increased)

- Fever > 100° or 2.4° F above baseline
- Costovertebral angle tenderness
- Rigors (shaking chills)
- New onset delirium
Summary – When to Test

• Establish facility criteria for testing urine

• Test the urine **only** when there are specific urinary tract signs or symptoms

• Perform assessment of facility rate of appropriate testing

• Improve appropriate testing rate to lower the avoidable harm of inappropriate treatment


“Clinical Uncertainties in the Approach to Long Term Care Residents With Possible Urinary Tract Infection” Nace, et.al. JAMDA 15 (2014) 133-139

“Treatment of Bacteriuria Without Urinary Signs, Symptoms, or Systemic Infectious Illness (S/S/S)” Drinka JAMDA 10 (2009) 516-519
References

