



**INFECTION MANAGEMENT AND antibiotic stewardship**  
**Hot Topic Session #5:**  
**UTIs and UA challenges**

November 8, 2023

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- ▶ These slides contain materials from a variety of colleagues including those from UNC Health.

# Outline of today's session

1. Review purpose of Urinalysis (UA) and components of UA
2. Review the McGeer Criteria
3. Discuss prevention of UTIs
4. Discuss treatment for UTIs

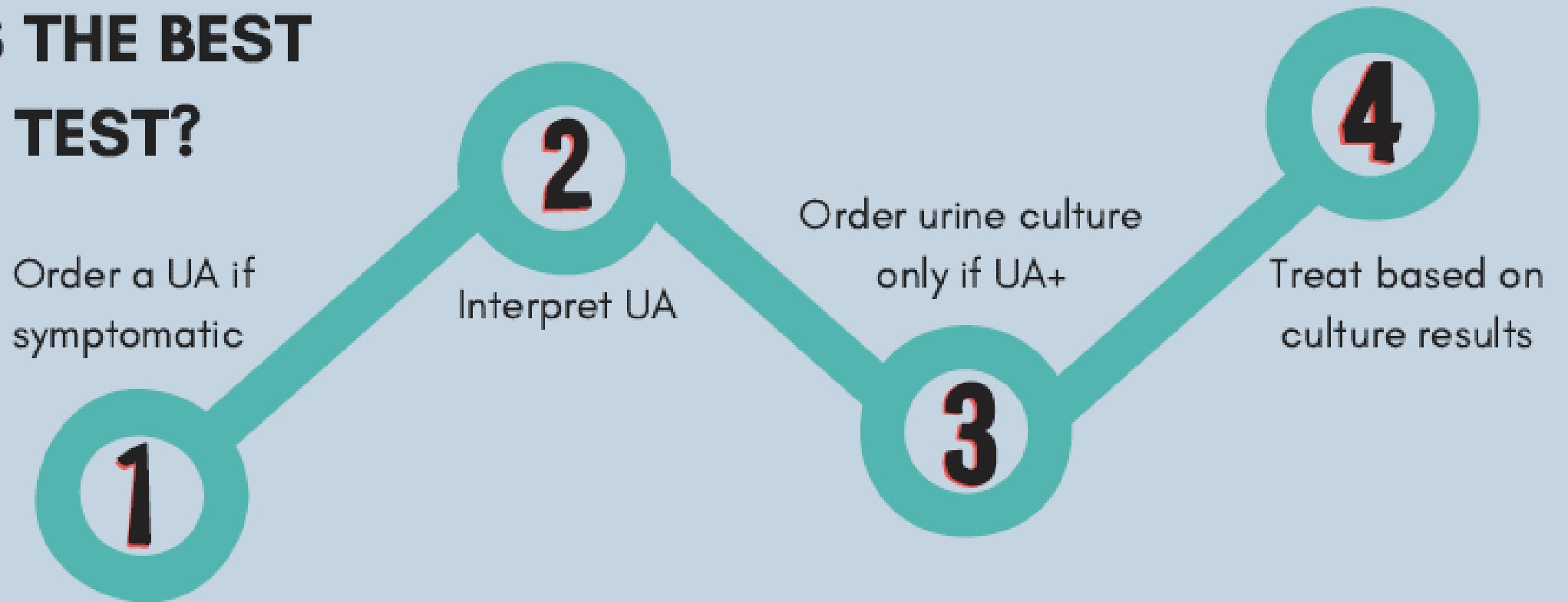


# Who needs a UA?

Poll: Which of these needs a UA (poll or type in chat?)

- ▶ Foul-smelling urine
- ▶ Patient is unusually sleepy
- ▶ Worsening or new incontinence
- ▶ New burning with urination

# WHAT IS THE BEST WAY TO TEST?



## Who Needs a UA?

- ▶ Burning
- ▶ Frequency
- ▶ Irritation
- ▶ Urgency
- ▶ New Blood in the Urine

# Dipstick Urinalysis

- ▶ Leukocyte esterase
- ▶ Nitrites
- ▶ Protein
- ▶ Blood



# Dipstick Urinalysis

- ▶ Leukocyte esterase positive (pyuria)
- ▶ Nitrites: positive (bacteriuria)
- ▶ Protein: small amount may be present
- ▶ Blood: small amount may be present

**Leukocyte positive: 50–75% specific; 80-90% sensitive**

Pyuria alone not an indication for treatment.





# Using the UA



At 8pm, a urine is drawn on a resident who has had poor po intake and some additional urinary frequency. This resident has cognitive impairment, therefore it is unclear if she has burning or pain with urination.



The UA shows no leukocyte esterase and negative nitrites.



How should this result be utilized?

# UA: Hematuria

- ▶ Blood is not common with UTIs in older adults.
- ▶ Frank hematuria should be evaluated promptly!
- ▶ Causes:
  - ▶ Stones
  - ▶ Cancer
  - ▶ Trauma
  - ▶ **Infection**
  - ▶ Hemorrhage

# McGeer Criteria

- ▶ Must fulfill both 1 AND 2
  - ▶ 1. At least 1 of the following signs/symptoms
    - ▶ Acute dysuria or pain, swelling, or tenderness of testes, epididymis, or prostate
    - ▶ Fever or leukocytosis and  $\geq 1$  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 in frequency
    - ▶ If no fever or leukocytosis, then  $\geq 2$  or the following:
      - ▶ • Suprapubic pain • Gross hematuria • New or marked increase in incontinence • New or marked increase in urgency • New or marked increase in frequency
  - ▶ 2. At least 1 of the following microbiological criteria:
    - ▶  $\geq 10^5$  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

# UTIs

- ▶ Primary cause of bacteremia in LTC residents is due to UTIs!
- ▶ Incidence of **symptomatic UTIs** in elderly in LTC around 10%
- ▶ **Asymptomatic bacteriuria** prevalence:
  - ▶ 30% Females/ 10% Males

## UTI: CDC Definitions

- ▶ Urinary Tract Infection (UTI)/Cystitis
  - ▶ infection of the bladder (lower urinary tract).
- ▶ Pyelonephritis –
  - ▶ infection of the upper urinary tract (ureters / renal collecting system / kidneys).
- ▶ Asymptomatic Bacteruria:
  - ▶ the presence of bacteria in the properly collected urine of a patient that has no signs or symptoms of a urinary tract infection
- ▶ “Mixed flora” is not considered an organism and cannot be reported.\*

# UTIs : WHY?

## Physiologic changes of bladder with aging:

### Women:

Elevation of vaginal pH due to estrogen deficiency

Results in increased ability of bacteria to adhere to the mucosal cells of the bladder.

Bladder may be chronically colonized, no longer a sterile organ.

### Men:

Decreased bactericidal activity of prostatic secretions

Increased post-void residual volume of urine due to prostate size

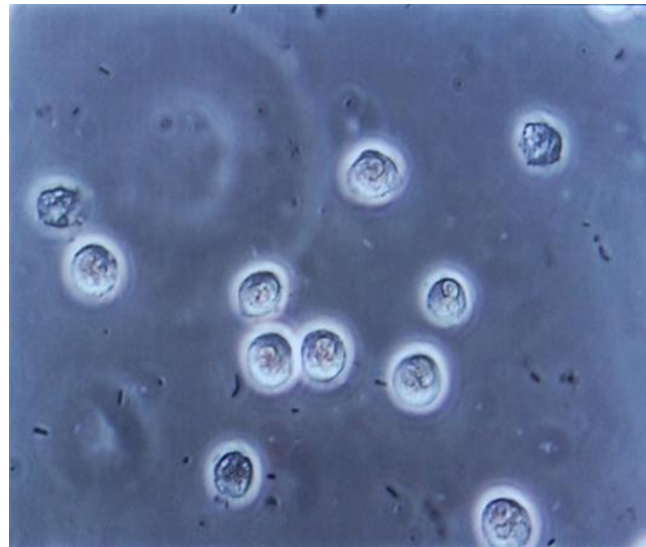
Prostate hypertrophy

### Both:

Neurogenic bladder from comorbidity

# Microbiology of UTI

- ▶ 80% are caused by **gram negative bacilli**
  - E.coli, Klebsiella, Enterobacter, Proteus, and Serratia
  - Gram positive bacilli - Staphylococcus



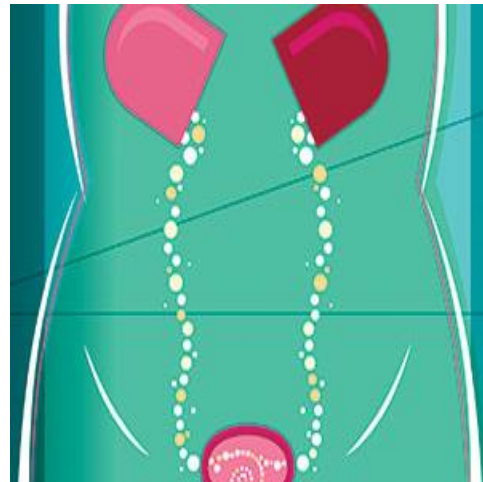
# Urine Culture

- ▶ Gold STANDARD to guide appropriate treatment
- ▶ Results : >100,000 colonies of one species
- ▶ Treatment can be delayed until culture results available.
- ▶ Positive culture (bacteriuria) alone **not** a reason to treat.



# Treatment /NO Treatment

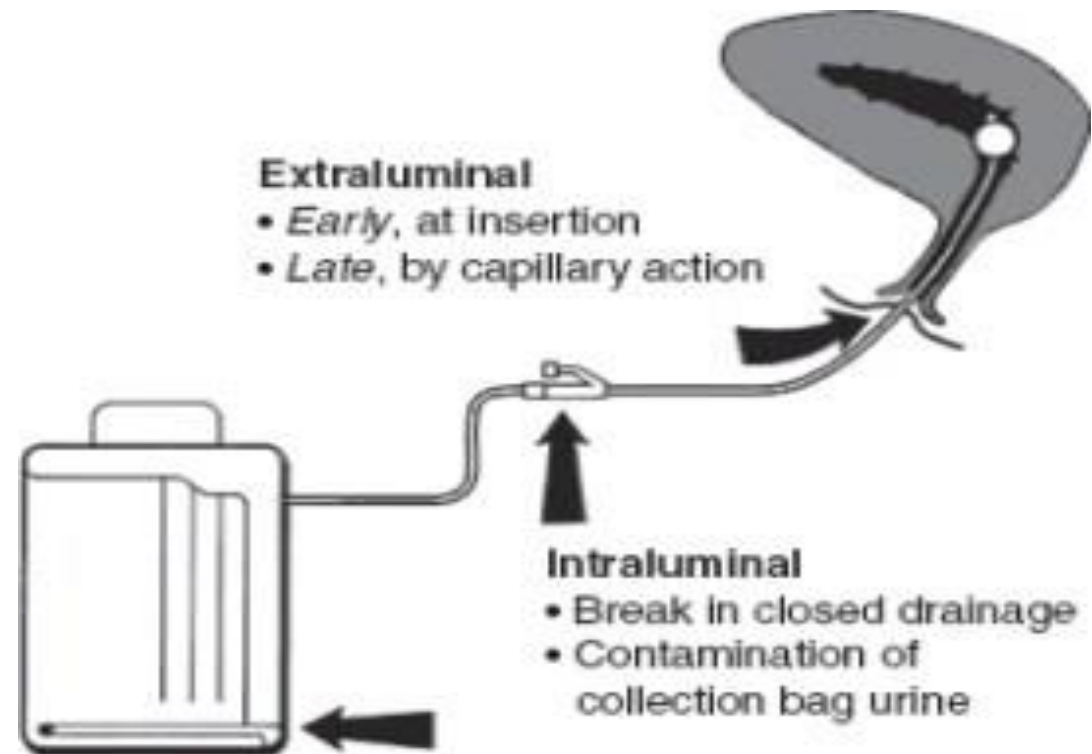
- Asymptomatic bacteriuria should **NOT** be treated.
- Routine or post-treatment screening for bacteriuria is not recommended. (Infectious Diseases Society of America)
  - ▶ No benefits in decreasing rates of subsequent UTIs
  - ▶ Increased risk of resistance and uropathogens



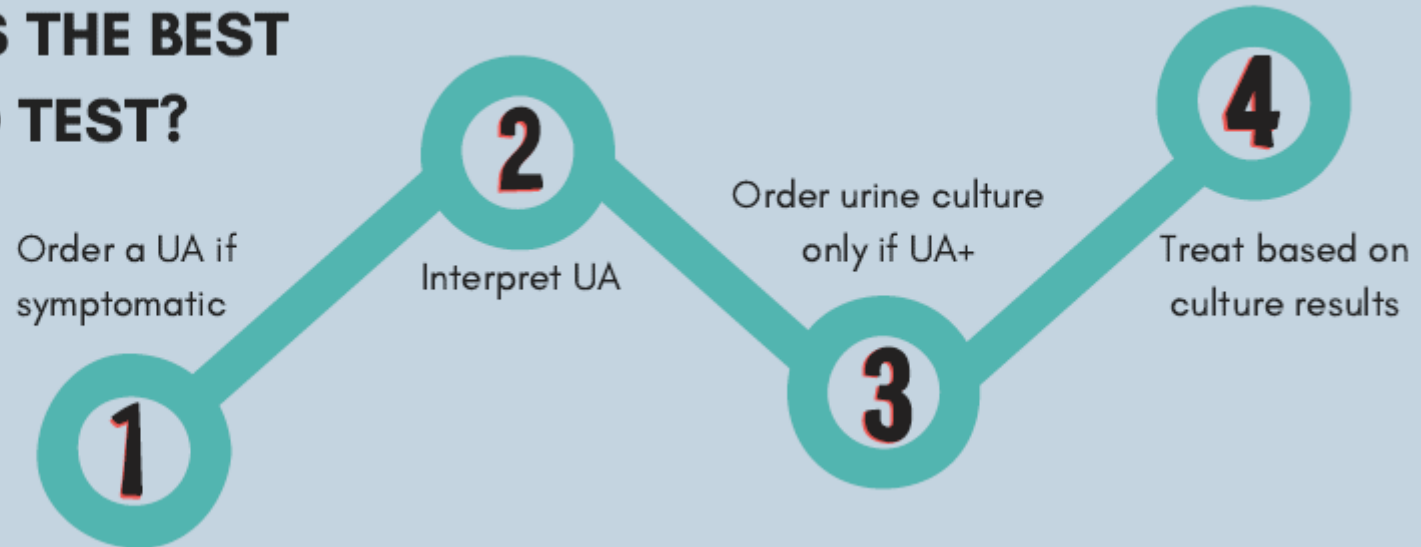
# Prevention of UTIs

- ▶ Hand Hygiene – both residents and staff
- ▶ Adequate hydration – 30cc/kg of body weight/day
- ▶ Perineal hygiene after toileting
- ▶ Routine toileting
- ▶ *Removing urinary catheter as early as possible.*

*\*\*More to come from Dr. Kistler in another hot topic*







## WHAT IS THE BEST WAY TO TEST?



# Resources, Questions, and Discussion

**DO I REALLY NEED TO TREAT MY PATIENT FOR A UTI?**

**TREATING ASYMPTOMATIC BACTERIURIA HAS NO BENEFITS AND CAUSES HARM.**

-  Costs for Patients
-  Lengthened Hospital Stays
-  *C. difficile* infections
-  Antibiotic resistance



**MY PATIENT IS SICK AND I SUSPECT A UTI. SHOULD I SEND A UA?**

<b>A May Be Helpful When Patient Has</b>	<b>No UA Needed</b>
✓ Urination frequency	✗ Foul-smelling urine
✓ Burning or pain during urination	✗ Urine color or cloudiness
✓ Urgency	✗ Altered mental status <b>alone</b> (sleepiness, confusion)
✓ New blood in urine	✗ Fever or leukocytosis <b>without urinary symptoms</b>

**DECISION POINTS**

- 1 Order a UA if symptomatic
- 2 Interpret UA
- 3 Order urine culture if UA+
- 4 Treat or adjust treatment based on culture results

For more information, review the 15-minute refresher on using UA and urine cultures in older adults.

<https://spice.unc.edu/ncclasp>

- ▶ Find session slides & more at <https://spice.unc.edu>
- NC CLASP → nursing homes

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Communication with Families  
from Diverse Backgrounds**

November 29, 2023 | 11:30 AM-12:30 PM

To register, visit: [spice.unc.edu/upcoming-nc-clasp-sessions/](https://spice.unc.edu/upcoming-nc-clasp-sessions/)

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