URINE MATTERS:
A CLINICAL OVERVIEW OF UTIs

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At the end of this session the learner will be able to:

- State the challenges with diagnosis of UTIs in elderly
- Distinguish between UTI & Asymptomatic bacteriuria (ASB)
- State the definitions of UTIs
- Recognize risks of catheterization and using urinary drainage systems
- Identify the method of positioning of catheters and drainage tubing
- Describe appropriate urine specimen collection in LTCFs
WHAT IS A UTI?

- It is an invasion and multiplication of microorganisms of one or more structures in the urinary system, causing an infectious process
- Treatment depends on symptoms and lab results
- Most common bacterial infection in elderly
- UTI accounts for 25-30% of bacterial infections in older adults
- **Most common reason for antimicrobial prescriptions in LTC**
AGING & OTHER FACTORS THAT PREDISPOSE RESIDENTS TO UTIs

- Mucosal changes in menopausal females, decrease in prostatic secretions in males
- Vaginal, prostate or perineal (skin) infections
- Loss of pelvic support (prolapse)
- Mechanical – obstruction, e.g. prostatic hypertrophy, retention – causing residual urine
- Medications e.g. antidepressants
- Urine and fecal incontinence
- Poor hygiene
- Alkaline urine
- Poor hydration
- Diabetes
DEFINITIONS

• **Asymptomatic Bacteriuria (ASB)** - positive urine results with no symptoms of UTI – similar to colonization

• **Colonization** - bacteria present but no tissue breakdown, no elevation of temperature to be classed as infection

• **Multi Drug Resistant Organisms (MDROs)** – organisms found in clinical specimens that are resistant to the more common antibiotics that are usually used to treat them

• **Extensively Drug Resistant Organisms (XDROs)** - organisms that are resistant to 3 or 4 of the most commonly used oral classes of antibiotics used to treat UTIs
Prevalence of Asymptomatic Bacteriuria in Various Populations

Community – dwelling Clients:
- Women 60 – 70 years = 5 -10%
- Women > 70 years = 15 -20%
- Men > 65 years = 5 -10%

Long Term Care Residents:
- Women = 25 - 50%
- Men = 15 - 40%
- With chronic indwelling catheters = 100%
Prevalence of Asymptomatic Bacteriuria Cont’d

- 50% of antibiotic prescriptions not indicated
- 5-10% of LTC residents on antibiotics at any time

Canadian Study in LTC - Loeb, et al, Ontario – 49% of treated Clients did not fit standard definitions for infections (29% were for UTI)
No Benefit Treating ASB in the Elderly

• Large long-term studies of ASB in pre and postmenopausal women showed:
  – **NO ADVERSE OUTCOMES** if not treated

• Randomized studies (treatment vs no treatment) in elderly LTC residents showed:
  – **NO BENEFIT** to treatment
  – No decreased rate of symptoms
  – No improved survival rates

*Over treatment of ASB leads to drug resistant organisms*

CID2005;40:643-654
Recommendations

• Routine screening for and treatment of ASB in elderly residents in LTCFs is not recommended

• **Exception to this rule** – very difficult to assess residents when unable to determine alternate causes of symptoms or site of infection – urine for C&S maybe required
What is known...

Differentiating asymptomatic from symptomatic UTI is a challenge -

Many LTC residents have:

• Chronic urinary symptoms
• Multi comorbidities
• Communication barriers

Improvements in diagnosis is needed
Practice Points:

• Change in urine colour, characteristic or odour is not indication to do dipstick/C&S

• Urine C&S and/or drug therapy is not recommended without symptoms specific to UTI (exceptions: catheterized residents or very difficult to assess clients). **Note** previous response to treatment for UTI

• Use of dipstick is to be discouraged. Results are inconclusive in the elderly. Negative Pyuria usually rules out UTI but positive Pyuria is not diagnostic of UTI. Hematuria or Proteinuria not usually related to UTI

• Perform perineal care prior to all M/S urine collection. M/S urine may not be possible, may require I/O catheterization (standing order/obtain order)

• Observe residents closely if antibiotics prescribed while on coumadin

• Chart significant symptoms and use clinical pathway for decision making
When Antibiotics Are Not Prescribed (Monitoring Protocol)

• Monitor vital signs for several days
• Monitor for progression of symptoms or change in clinical status
• Encourage fluid intake
• Consider alternate diagnosis for nonspecific symptoms
• If symptoms resolve, no further intervention required
UTI PREVENTION - SOME STRATEGIES

❖ Handwashing
❖ Encourage fluids, especially acid juices such as cranberry (cranberry capsules are more concentrated and have less sugar content) and water
❖ Good hygiene, assist resident who is unable to do own care
❖ Pericare daily and prn if incontinent
❖ Perineal care with soap and water prior to obtaining specimen whether midstream or catheter
❖ Avoid catheter usage, use only if medically indicated, e.g. retention, neurogenic bladder
Maintain a closed system (if a leg bag is used during the day, maintain as sterile a system as possible with the large catheter bag, capped)

Do not lift catheter bag or allow urine to flow above the level of the bladder

Tape the catheter, to prevent friction on the meatus - lower abd (male), thigh (female)

Separate catheterized residents

Individual graduate for measuring output, labeled with resident’s name, changed weekly

Education of All Staff, Clients and Families
Catheter Use in LTCFs on PEI

- Rates vary from Home to Home. A recent email survey of IPC Nurses showed a total of 16 residents with catheters at the 10 sites.
- Some sites had **no** catheters in place; highest usage rate in a Home was 5 out of 75 residents (6.6%).
- The Goal is to have as few as possible urinary catheters.
Bacterial Colonization in catheterized residents

• Bacterial colonization is present in as many as 80% of residents with indwelling catheters, in place for more than 5 days, therefore only symptomatic infections are treated.
**Typical Symptoms/Criteria of UTI**

*(Resident Does Not Have an Indwelling Catheter)*

Indications (check all that apply):

- Acute Dysuria

**OR**

- Temp >38°C or 1.5° above baseline on 2 consecutive occasions

**PLUS one or more of the following:**

- New or increased urinary frequency, urgency, incontinence
- New flank or suprapubic pain or tenderness
- Hematuria

Date/Time ____________ Initials ______
Typical Symptoms of UTI
(Resident Has Indwelling Catheter)

Indications (check all that apply):

- Temp >38°C or 1.5° above baseline on 2 consecutive occasions
- New flank or suprapubic pain or tenderness
- Rigors (chills)
- New onset delirium
- New functional decline

Date/Time ___________ Initials _______
Background: Pathogenesis of CAUTI

* Source of microorganisms may be endogenous (meatal, rectal, or vaginal colonization) or exogenous, usually via contaminated hands of healthcare personnel during catheter insertion or manipulation of the collecting system.
Cleaning your hands is integral to patient safety.

Cleaning your hands **protects the resident** against harmful germs carried on your hands or is present on his/her own skin.

It is also an important measure to **protect yourself** and the healthcare environment from harmful germs.
Complications associated with indwelling urinary catheters:

- Urinary tract (bladder infections)
- Secondary bacteremia/sepsis
- Acute pyelonephritis
- Late onset infections

Other Adverse events:

- Formation of encrustations and obstruction to flow
- Reservoir for Multi-drug resistant organisms
- Urethral strictures: prostatitis and orchitis
BLOCKAGE/ENCRUSTATION
REASONS FOR CATHETERIZATION

- Urinary tract obstruction
- Acute or chronic retention
- Hypotonic/neurogenic bladder
- Accurately measure urine output

- Uncontaminated urine specimen
- Last method of choice for management of urinary incontinence
Core Prevention Strategies for Urinary Catheter

- Insert catheter only for appropriate indications
- Leave catheters in place only as long as needed; date/label tubing on insertion
- Ensure that only properly trained persons insert and maintain catheters
- Insert catheters using aseptic technique and sterile equipment – document date of insertion using smallest catheter and balloon sizes
- Following aseptic insertion, maintain a closed drainage system
- Maintain good hygiene at the catheter urethral interface
- Maintain tubing below the level of the bladder to prevent reflux into the bladder, and tubing should be above the level of the bag to prevent pooling of urine
“There’s Something Going On with Prince Phillip
MORE DOs & DON’Ts:

- Maintain a sterile closed drainage system
- A resident should be informed and education documented whenever there is deviation from a closed system (resident chooses to use day bag and night bag)
- Do not change indwelling catheters/bags at arbitrary fixed intervals
- Change urinary drainage bags using clinical indications such as infection, obstruction, or when the integrity of the closed system has been compromised
- Avoid irrigation of the catheter
- Do not allow the drainage bag spigot or tubing to touch floor, collection container, or other soiled surface
Review of Catheterization Procedure

✓ Assist/provide routine hygiene, cleansing of the meatal surface - with soap and warm water during daily bath or showering and as needed

✓ Wash the catheter tubing during perineal care of the meatus starting from the meatus outward

✓ Maintain unobstructed urine flow:
  • Keep the catheter and collecting tube free from kinking
  • Keep the collecting bag below the level of the bladder at all times. Do not rest the bag on the floor
SECURING CATHETERS

- Use 1 inch tape or a securement device
- Tape catheter to prevent friction and to decrease the risk of tension/trauma on the meatus
  - lower abd or upper thigh of male
  - Inner thigh of female

NOTE:
Bypassing occurs more often when catheters are not secured
CATH-SECURE

Original

New & Improved

The Multi-Purpose Medical Tube Holder
SOMETIMES THE BATHROOM SEEMS SO FAR AWAY!
Role of Dipstick Testing in the Evaluation of Urinary Tract Infection in Nursing Home Residents

Negative dipsticks tests for leukocyte esterase and nitrites do not support UTI BUT cannot completely rule it out

- Leukocyte esterase (LE)
  • Enzyme found in white blood cells has a predictive value of about 50%


- Nitrites
  • ONLY CERTAIN BACTERIA reduce urinary nitrates to nitrites

The accuracy of urine dipstick is requires good quality control for the product, the procedure and documentation
COLLECTING URINE SAMPLES

• Mid-stream or clean catch specimens are not usually successful even from cooperative and functionally capable individuals. A suggestion would be to:
  – **For males** to use freshly applied, clean condom (external) catheter and monitor bag frequently or in & out catheter
  – **For females** to perform an in-and-out catheterization
• Resident with indwelling catheter >14 days
  – **Change catheter prior to collection** (sterile technique/equipment)
• Resident with indwelling catheter ≤ 14 days
  – Obtain by **sampling through the catheter port** using aseptic technique
  – If port not present may puncture the catheter tubing with a needle and syringe
URINE CULTURE

- A urine culture **should always** be obtained when evaluating SYMPTOMATIC infections.
- Urine cultures will assist in appropriate antibiotic selection.
- A negative urine culture obtained prior to initiation of antibiotics **excludes** urinary tract infection.
- Repeat urine culture following treatment ("test of cure") **is NOT** recommended.
URINE SPECIMEN COLLECTION

• Culture specimens should be processed as soon as possible, preferably within 1-2 h

• If urine specimen cannot be processed within 30 minutes of collection, it should be refrigerated

• Refrigerated specimen should be cultured within 24 h

• Obtain specimens with your courier services schedule in mind so specimens are not sitting around for hours and then discarded at the Micro Lab for being too old
Urinary Tract

I CALLED THE INCONTINENCE HOTLINE...

THEY ASKED, "CAN YOU HOLD PLEASE?"
Key Points

Routine screening for and treatment of ASB is NOT recommended:
- In older individuals in the community
- In elderly residents in LTCFs, especially in catheterized residents

Get Smart About Antibiotics:
- Antibiotic resistance is one of the world’s most pressing public health threats.
- *Clostridium difficile* infections are on the rise and are associated with increased mortality especially among the elderly

Treat only symptomatic urinary tract infections in the elderly:
- Refer to clinical standards/care pathway to assist in making a diagnosis
CONCLUSION

✓ UTIs are the most common infection in older adults
✓ Major impact on resident outcomes, cost, antibiotic use & subsequent development of resistance
✓ Focus on prevention & accurate workup (algorithm)
✓ Charting to focus on assessment
✓ The nurse has a crucial role in identifying the subtle or atypical symptoms of a UTI
✓ Using an algorithm/clinical pathway to assist in the diagnosis of a UTI and not just a requisition to identify the signs and symptoms, can contribute to better resident care and management of UTIs
✓ Lastly, in my opinion and from the literature – dipsticks should not play a role in the diagnosis of UTIs since it can lead to over use of antibiotics
THANK YOU
Questions????????????

THANK YOU
References:

• Health PEI, LTC infection Control Standards (2012) under revision
• Draft Urinary Tract Infection in Long Term Care, Clinical