The UTI and Asymptomatic Bacteriuria Question!
Goals

• Identify the problem(s)
• Identify possible solutions

Image Credit: Public Health Ontario, 2013
The Problem

• According to the Public Health Agency of Canada (2014), developing antimicrobial resistance, as a result of inappropriate use of antibiotics is a public health concern.

• Antimicrobial use among residents of nursing homes is common and often inappropriate (Loeb et al, 2005)
Antibiotic Resistance

Many Antibiotic Prescriptions
5.9% of residents received at least one type of antibiotic (Daneman, 2011)

Antibiotics kill off the sensitive bacteria, leaving behind the resistant bacteria
Bacteria may also mutate

Increasing numbers of antibiotic resistant organisms
- Methicillin resistant *Staphylococcus aureus*
- Vancomycin resistant enterococci
- Extended-spectrum \(\beta\)-lactamase producing & Carbapenemase producing *Enterobacteriaceae*

Decreasing number of new antibiotics being developed
UTIs and the Problem

• UTI is the most common infection in Long-term Care (LTC) residents (PAACT, 2013)

• **Asymptomatic bacteriuria** is the presence of bacteria in the urine in the absence of urinary symptoms

• One third of prescribed antibiotics in LTC are given for asymptomatic bacteriuria (PAACT, 2013)

• Prevalence of asymptomatic bacteriuria in LTC residents is high (PAACT, 2013, p.71)
  • 15-30% of men
  • 25-50% of women
Risk factors for Asymptomatic Bacteriuria

- Age
- Diabetes
- Immunosuppression
- Pelvic prolapse or cystocoele
- Benign prostatic hypertrophy (BPH)
- Vaginal atrophy
- Fecal incontinence
- Dehydration
Current Recommendations

• Routine screening and treatment for asymptomatic bacteriuria in nursing home residents is **not** recommended. (PAACT, 2013, p. 69 & TOP, 2012)

• Without a minimum set of urinary symptoms or signs, urine **should not** be cultured and antimicrobials should not be prescribed for residents of nursing homes. (Loeb et al., 2005)
However, we continue the following inappropriate practices. . .

• Routinely collect urines
  • On admission, during annual physical, insertion and removal of urinary catheter

• Send specimens without proper assessment of the resident

• Inappropriately treat residents for asymptomatic bacteriuria
All of the following things can falsely lead you to believe the resident has a urinary tract infection.

On their own, without clinical signs of infection, they may not be the result of a UTI:

- Fever alone
- Hematuria
- Smelly or cloudy urine
- Falls
- Change in mental function, confusion

Often the problem is a simple as “the family wants it sent”

Further Assessment of the resident is required
Uncovering the Issues

• The issues
  • Testing UTIs on residents happens on admission and yearly
  • Treatment is based on a positive urine culture
  • Collection of a proper specimen needs clarification
  • Emergency Department assessments returns many residents to LTCH on an antibiotic and with a diagnosis of UTI
  • PIECES training says to check for UTI on residents with behaviour change
Asking the Questions

• How do we know when someone really has a UTI?
• How do you get a proper specimen?
• What do we do with families who insist on antibiotics “because Mum is behaving differently today and she is always like this when she has a UTI?”
• What information should we have **before** we contact the physician/nurse practitioner?
• How can we make UTIs less of a problem in our LTC homes?
Clinical definition of a UTI

Symptoms of UTI:

no catheter

- Acute dysuria alone (Difficult urination)

or

- Fever*
  - New or worsening urgency
  - Frequency
  - Suprapubic pain
  - Gross hematuria
  - Costovertebral angle tenderness
  - Urinary incontinence

with catheter

- Presence of at least one of the following:
  - Fever*
  - New costovertebral tenderness
  - Suprapubic pain
  - Gross hematuria
  - New onset of delirium

Fever* and one of the following
- New or worsening urgency
- Frequency
- Suprapubic pain
- Gross hematuria
- Costovertebral angle tenderness
- Urinary incontinence

* Fever is defined as oral temperature greater than 37.9°C or 1.5°C above baseline on 2 consecutive occasions within 12 hours
Assessment for UTI

• Take vital signs:
  • Fever? Change in blood pressure, pulse, respiratory rate?
  • Physical assessment for UTI symptoms

• Does the patient/resident have a urinary catheter?

• Rule out other causes
  • New medication?
  • Change in diet?
  • Drinking enough? Dehydrated?
    • Encourage fluids provided there are no contra-indications
    • Other infections?

• Discuss with physician or nurse practitioner
When to collect a urine culture?

Symptomatic urine
Yes
No Catheter / Catheter

Acute dysuria alone
(Difficult urination)

or

Presence of at least one of the following:
- Fever
- New costovertebral tenderness or
- Rigors with or without identified cause or
- New onset of delirium

Asymptomatic urine and other distractors
No

Pyuria or cloudy urine
Fever alone
Smelly urine
Change in colour
Dehydration
Change in mental status alone
Change in behaviour or function
Falls
Family want a urine sent

* Fever is defined as oral temperature greater than 37.9°C or 1.5°C above baseline on 2 consecutive occasions within 12 hours
Specimen Collection: What Can You Do?

- Quality specimen collection technique – avoid contamination
  - Sterile container
  - Storage
  - Transport
- Sufficient, relevant information
  - Catheter urine,
  - Midstream urine,
  - On antibiotics
- Quality microbiology report

PublicHealthOntario.ca
Urine Specimens (non-catheterized)

- Clean catch/mid-stream
- In and out catheterization for women
- Condom catheter for men (freshly applied)

“The use of bedpans or pedibags for collection of urine specimens from women is associated with substantial contamination and cannot currently be recommended. “


- Label appropriately and thoroughly – include date and time
- Refrigerate immediately/send immediately
Microbiology Results – Problem Solving!

- When do you receive the results?

- What is a significant result?
  - Catheter: greater than or equal to $10,000$ cfu/ml of urine ($10^4$/L)
  - Mid-Stream Urine: greater than or equal to $100,000$ cfu/ml of urine ($10^5$/L)

- Multiple organisms
  - 3 or more different bacteria almost always indicates the specimen is contaminated

- Are you looking at the sensitivity report?
  - Is/are the organism(s) susceptible to the antibiotic(s) ordered?
Bottom line

• Proper testing
  • No dipstick test
  • Urine for culture and sensitivity (C&S) only

• Urine specimens for C&S need to be sent at the right times
  • Based on clinical signs and symptoms
  • Policies that support admission and yearly C&S collection need to be discontinued
Educate, Educate, Educate . . .

• Provide education to all involved staff on:
  • clinical criteria for a UTI
  • assessment skills for UTI
  • when and how to collect urine culture based on criteria

• Provide education to families on:
  • asymptomatic bacteriuria
  • when to collect a urine culture based on criteria
  • when to treat based on criteria
  • risks of inappropriate antibiotic therapy
Measure it . . .

• If you want to change something...measure it

• The ICP should track:
  • Number of specimens sent for C&S
  • Number of specimens sent that meet the criteria
  • Number of residents treated with antibiotics for UTI
  • Number of residents that meet the criteria for UTI

• The ICP should review, analyze the data collected and present the findings
Outcomes

Anticipated outcomes may include a decrease in the number of:

- Specimens collected
- Residents treated with antibiotics
- “UTIs” reported
Summary of UTI and The Elderly

- UTIs are the most common infection in older adults
- Major impact on resident outcomes, costs, antibiotic use and resistance
- Causes and risk factors vary by age and gender
- Antibiotic therapy should be reserved for symptomatic UTIs and tailored to sensitivities
- Focus on prevention, not treatment – start the plan!
References


References


References


• Majid F Al, Buba F. The predictive and discriminant values of urine nitrites in urinary tract infection. Biomedical Research. 2010;21(3):297-299.


• Genao L, Buhr GT. Urinary Tract Infections in Older Adults Residing in Long-Term Care Facilities. Ann Longterm Care. 2012 April;20(4):33-38. Subtitle