

# Nova Scotia Health Authority Antimicrobial Stewardship Program



## **Symptom Free Pee: Let It Be An Approach to Asymptomatic Bacteriuria in Adults**

21<sup>st</sup> Annual IPAC NS Education Symposium  
October 17, 2019

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<https://library.nshealth.ca/ams>



# Objectives

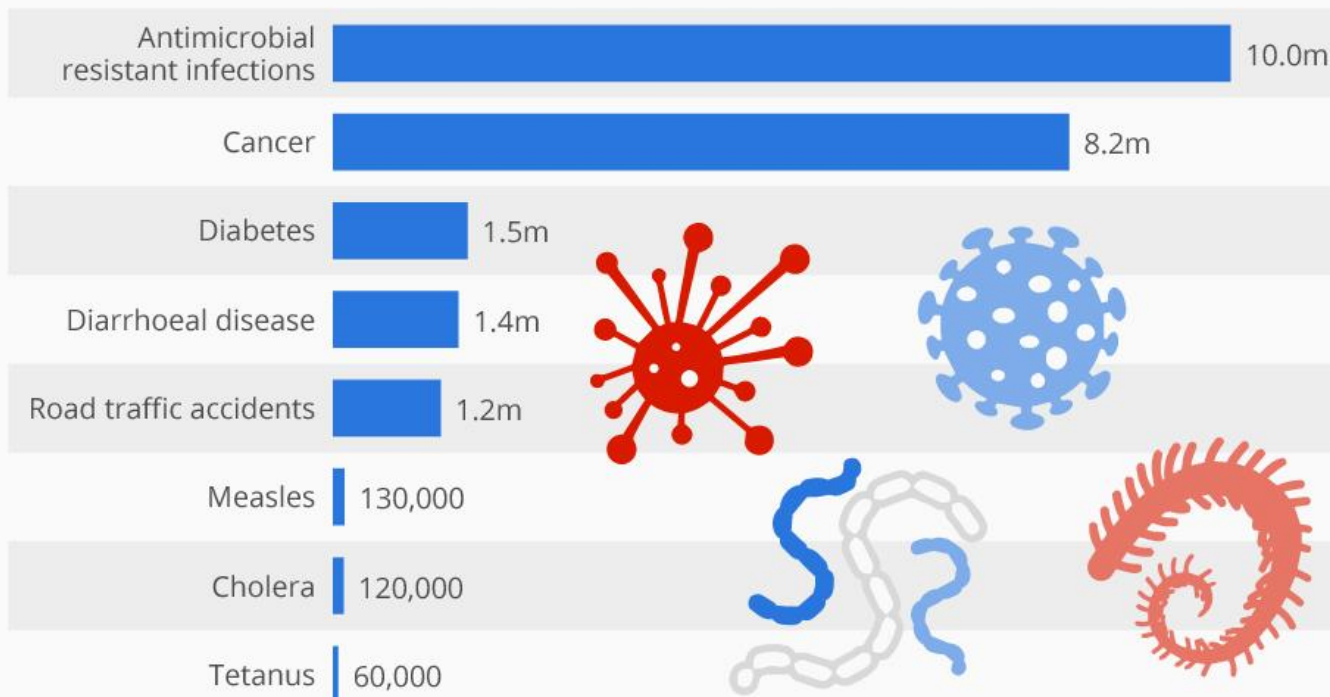
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- Quick overview of uncomplicated and complicated UTIs
- Review of Asymptomatic Bacteriuria: screening and management
- Review of NSHA Antimicrobial Stewardship Resources

# But first, a little background...

## Deaths From Drug-Resistant Infections Set To Skyrocket

Deaths from antimicrobial resistant infections and other causes in 2050



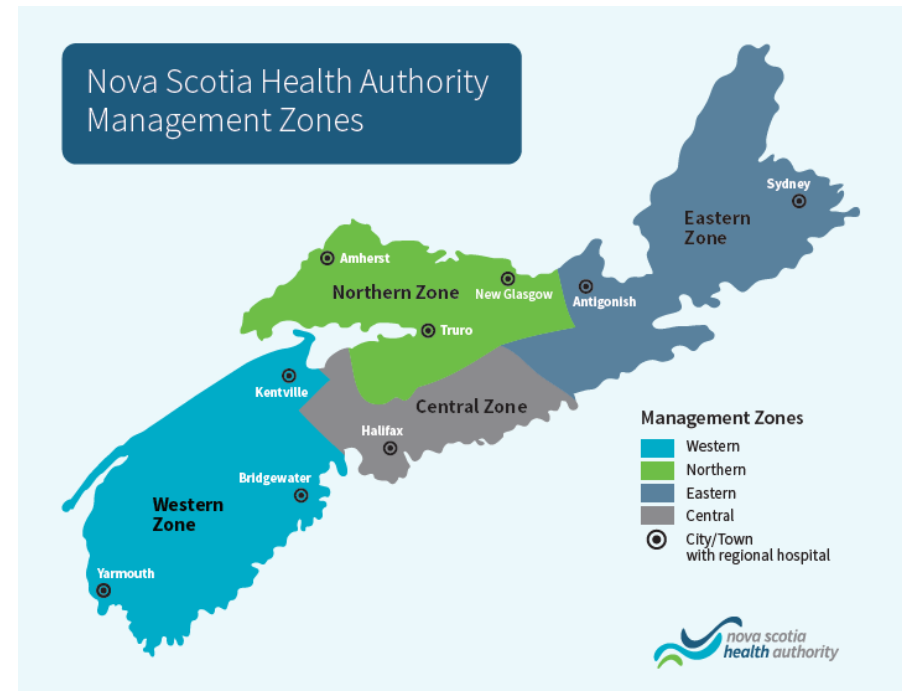
@StatistaCharts Source: Review on Antimicrobial Resistance

statista

# Antimicrobial Stewardship Team Members

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- **Andrea Kent**
- **Paul Bonnar**
- **Ian Davis**
- **Leah Day**



# Zonal Team Members

**Jason Reynolds**



**Stephen Smith**



**Kim Abbass**

**Valerie Murphy**



Nova Scotia Health Authority  
Management Zones



# New AMS Website!

The screenshot shows the homepage of the Antimicrobial Stewardship (AMS) website. At the top, there is a navigation bar with a home icon, a search dropdown, and links for 'Request', 'Staff & Physicians', and 'Patients'. Below the navigation bar, the main heading is 'Antimicrobial Stewardship (AMS)' with a sub-heading: 'Resources to help you ensure the safe and effective use of antimicrobials in NSHA patients.' A breadcrumb trail reads: 'Library / For Staff & Physicians / Antimicrobial Stewardship (AMS) / Home'. On the left side, there is a vertical menu with 'Home' selected, and other options: 'Antimicrobial Stewardship at NSHA', 'About', 'Formulary', 'Handbook', 'Antibiograms', 'Learning Opportunities', and 'Documents'. The main content area is divided into several sections: 1. 'About AMS' with an information icon and links for 'What is antimicrobial stewardship?' and 'Meet the team'. 2. 'Handbook' with a notebook icon and links for 'What is the NSHA Handbook?', 'Topics A-Z', and 'Drug Bug Chart'. 3. 'Antibiograms & Microbiology' with a microscope icon and links for 'What is an antibiogram?' and 'Antibiograms'. 4. 'Antimicrobial Formulary' with a pill icon and links for 'Learn about the Stoplight Formulary' and 'Consult: Colour coded formulary'. A yellow banner on the left says 'CHECK OUT OUR WEBINAR RECORDINGS' with a play button icon and three small icons below. At the bottom left, there is a red button that says 'Need help? Get in touch!'.

# Let's Talk About Pee...

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- Mostly water
- Urea Chloride
- Sodium
- Potassium
- Creatinine
- Proteins
- Hormones
- metabolites

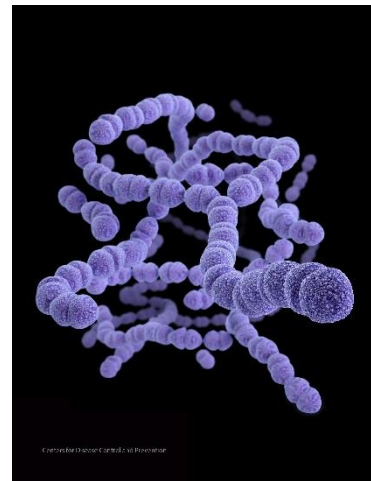
<https://courses.lumenlearning.com/boundless-ap/chapter/urine>. Accessed 09/19/

Nova Scotia Health Authority  
Antimicrobial Stewardship Program

# Common Bacteria...

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- Gram negative bacteria (*E.coli*, *Klebsiella* spp., *Proteus* spp.)
- Gram positive bacteria (*Enterococcus* spp.)





# Urinary Tract Infections

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- Cystitis
  - Infection of the bladder or lower urinary tract
- Pyelonephritis
  - Infection of the kidney or upper urinary tract
- Cystitis can be further divided:
  - Uncomplicated cystitis
  - Complicated cystitis
  - Asymptomatic Bacteriuria

Academic Detailing Service: Antibiotics - Why and Why Not 2018

# Symptoms:

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- Symptoms of a bladder infection can include:
- Pain or burning while urinating
- Frequent urination
- Feeling the need to urinate despite having an empty bladder
- Bloody urine
- Pressure or cramping in the groin or lower abdomen

<https://www.cdc.gov/antibiotic-use/community/for-patients/common-illnesses/uti.html>

## Nova Scotia Health Authority Antimicrobial Handbook

### Uncomplicated Cystitis

- Infection of the lower urinary tract
- No signs or symptoms that suggest an infection extending beyond the bladder (such as fever, chills, back pain, nausea, vomiting)
- No risk factors for complicated infection

### MOST COMMON MICROORGANISMS

- *Escherichia coli*
- Other Enterobacteriaceae (*Klebsiella* sp., *Proteus* sp.)

### RESISTANCE PATTERNS

- Increasing *E. coli* resistance to fluoroquinolones. These agents are **not** recommended for empiric or first line treatment of uncomplicated cystitis.
- Local uropathogens' susceptibilities should be considered when choosing empiric treatment:
  - Trimethoprim/sulfamethoxazole should not be used if resistance exceeds 20%
  - Ciprofloxacin should not be used if local resistance exceeds 10%

### DIAGNOSTIC CONSIDERATIONS

- Signs and symptoms: dysuria, urgency, frequency, suprapubic pain/tenderness
- No symptoms of upper urinary tract infection: fever, chills, flank pain, costovertebral angle tenderness
- No risk factors for complicated infection:
  - Pregnancy
  - Immunosuppression
  - Diabetes (especially if long term complications)
  - Indwelling catheter
  - Anatomical abnormality
  - Voiding dysfunction
  - Obstruction
  - Recent urogenital procedure
- Cystitis in men is often, but not always, considered complicated. Investigation for anatomical abnormalities or prostatitis should be considered.
- **Urine culture is not** generally recommended unless:
  - Antibiotic use or UTI in last 3-6month
  - Suspected UTI in a male
  - Travel outside North America in last 6 months
  - Recent hospitalization
  - History of a UTI caused by a multidrug resistant microorganism
  - Complicated UTI
  - Failure to respond to empiric therapy after 48hrs
- The reliability of the urine dipstick as a diagnostic tool for UTI is low due to an inability to differentiate between an infection and asymptomatic bacteriuria, and is not recommended as a test for diagnosing UTI.

# UNCOMPLICATED CYSTITIS: DIAGNOSTIC CONSIDERATIONS

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- Typical signs and symptoms
- No symptoms of upper urinary tract infection: fever, chills, flank pain, costovertebral angle tenderness
- No risk factors for complicated infection:
  - Pregnancy
  - Immunosuppression
  - Diabetes (especially if long term complications)
  - Indwelling catheter
  - Anatomical abnormality
  - Voiding dysfunction
  - Obstruction
  - Recent urogenital procedure

# UNCOMPLICATED CYSTITIS: DIAGNOSTIC CONSIDERATIONS

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- Cystitis in men is often, but not always, considered complicated. Investigation for anatomical abnormalities or prostatitis should be considered.
- **Urine culture is not generally recommended unless:**
  - Antibiotic use or UTI in last 3-6month
  - Suspected UTI in a male
  - Travel outside North America in last 6 months
  - Recent hospitalization
  - History of a UTI caused by a multidrug resistant microorganism
  - Complicated UTI
  - Failure to respond to empiric therapy after 48hrs

# EMPIRIC TREATMENT

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- **First line:**
  - Nitrofurantoin macrocrystals 100 mg twice daily x 5 days\*
- **Second line:**
  - Fosfomycin 3 g x 1 dose
  - Trimethoprim-sulfamethoxazole (TMP-SMX) 1 DS tablet twice daily x 3 days\*
  - Cephalexin 500 mg qid x 5-7 days\*
  - Amoxicillin-clavulanate 875/125 mg twice daily x 5-7 days\*

\*Treatment duration of 7 days is recommended **in males** with uncomplicated cystitis

# Special Considerations

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- Post treatment urine cultures are not recommended if adequate response to therapy
- **Ciprofloxacin is no longer recommended as first line treatment**
- Moxifloxacin should not be used as it does not attain sufficient concentration in the urine

# Special Considerations

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- Nitrofurantoin should not be used in patients with:
  - CrCl less than 30 ml/min
  - Infections outside lower urinary tract due to poor distribution into serum and tissue
- Staph aureus isolated in urine
  - check for bacteremia and other sources of infection



# Special Considerations

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## TMP-SMX (trimethoprim-sulfmethoxazole)

- Associated with higher risk of renal injury, hyperkalemia, and sudden death if
  - Patients aged 65 years and older
  - Patients on medications that can increase potassium: angiotensin converting enzyme inhibitor (ACEi), angiotensin receptor blocker (ARB), or K<sup>+</sup> sparing diuretic (e.g. spironolactone)
- Regular monitoring of kidney function and electrolytes are recommended for patients with risk factors for hyperkalemia or prolonged duration of therapy.

# Complicated UTI

## Underlying Factors

- Anatomical or functional abnormality
- Renal insufficiency
- Transplantation
- Uncontrolled diabetes
- Male
- Resistant organisms
- Recurrent UTI
- Pregnancy
- Presence of a foreign body (Catheter)
- Recent urologic procedure
- Immunocompromised host

# Special Consideration

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- Should have urine culture
- Much more individual
  - May require abdominal or CT or ultrasound
  - Referral to urology or ID
  - More likely to find resistant micro-organisms
  - Removal of catheter

# Treatment

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- Should receive empiric treatment based on local antibiograms
- Course of treatment 7-10days

But what if the patient has  
no symptoms?

# ASYMPTOMATIC BACTERIURIA (ASB)

**“Asymptomatic bacteriuria” (ASB), or asymptomatic urinary infection, is an isolation of a specified quantitative count of bacteria in an appropriately collected urine specimen obtained from a person without symptoms or signs referable to urinary infection.**

CID March 2005 (40:5) 643-654

*Clinical Infectious Diseases*

**IDSA FEATURES**



# Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America<sup>a</sup>

Lindsay E. Nicolle,<sup>1</sup> Kalpana Gupta,<sup>2</sup> Suzanne F. Bradley,<sup>3</sup> Richard Colgan,<sup>4</sup> Gregory P. DeMuri,<sup>5</sup> Dimitri Drekonja,<sup>6</sup> Linda O. Eckert,<sup>7</sup> Suzanne E. Geerlings,<sup>8</sup> Béla Köves,<sup>9</sup> Thomas M. Hooton,<sup>10</sup> Manisha Juthani-Mehta,<sup>11</sup> Shandra L. Knight,<sup>12</sup> Sanjay Saint,<sup>13</sup> Anthony J. Schaeffer,<sup>14</sup> Barbara Trautner,<sup>15</sup> Bjorn Wullt,<sup>16</sup> and Reed Siemieniuk<sup>17</sup>



*Asymptomatic Bacteriuria in Long-Term Care Residents and Elderly Patients in Acute Care*

<https://www.ammi.ca/?ID=127>



## Prevalence (%)

- **Diabetic**

- **Women: 10.8-16**

- **Men: 0.7-11**

- **Pts  $\geq$  70 years of age**

- **Women: 10.8-16**

- **Men: 3.6-19**

- **LTC**

- **Women: 25-50**

- **Men: 15-50**

- **Indwelling Catheter**

- **Short term: 9-23 (3 – 5 per day catheter**

- **Long term: 100**

## Asymptomatic Bacteriuria

More common in seniors > 65 years

- 20% in females / 10% in males
- (1 - 3% in younger population)

Increases with age > 80 years

- Up to 50% in females
- Up to 30% in males

Nicolle LE. Infect Dis Clin North Am 1997;11(3):647-62  
Nicolle LE. Infect Control Hosp Epidemiol 2001;22(3):167-75

# Predisposing Risk Factors for ASB

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- Diabetes
- Immobility
- Incontinence
- Prostatic enlargement
- Post-menopausal changes
- Dehydration

Nicolle LE. Infect Dis Clin North Am 1997;11(3):647-62  
Nicolle LE. Infect Control Hosp Epidemiol 2001;22(3):167-75



And Beatrice was never invited to a Halloween party ever again.

*Beatrice the Biologist*

[meet.ps/ipac](https://meet.ps/ipac)

**Symptom-  
Free Pee:  
LET IT BE**



# MYTHS AND TRUTHS ABOUT URINARY TRACT INFECTIONS

**Symptom-  
Free Pee:  
LET IT BE**

## MYTH

**Cloudy or  
smelly urine  
= UTI**

## TRUTH

Changes in the appearance and/or odour alone should not be used to diagnose a UTI or as an indication for urine culture.

Colour, clarity and smell are often affected by diet, certain medications and hydration status.

Do not send urine for culture unless resident has symptoms of an infection

**Symptom-  
Free Pee:  
LET IT BE**

## MYTH

**Positive  
test for  
leukocyte  
esterase  
and/or  
nitrites  
= UTI**

## TRUTH

Positive leukocyte esterase and/or nitrites may indicate the presence of white blood cells (WBCs) or bacteria in the urine (bacteriuria), but it does not confirm that there is an infection.

Signs and symptoms of UTI are necessary for a diagnosis as pyuria (WBCs in the urine), bacteria and nitrites can also be present in a condition called asymptomatic bacteriuria which is a common colonization state in elderly patients.

**Note: A negative leukocyte esterase and negative nitrite test can rule out UTI in most residents.**

# Symptom- Free Pee: LET IT BE

## MYTH

**The urine  
should  
be sterile,  
therefore  
bacteria in  
the urine  
= UTI**

## TRUTH

**Bacteriuria is common**

**Incidence of bacteriuria is common in elderly patients:**

- elderly women up to 50%
- elderly men up to 40%
- patients with indwelling catheters -  
100% within 2-4 weeks

**In elderly patients, bacteriuria without signs and symptoms of infection should not be treated with antibiotics as it represents a colonization state, not an infection.**



# **Symptom- Free Pee: LET IT BE**

## **MYTH**

**Falls or  
change  
in mental  
status in  
the elderly  
= UTI**

## **TRUTH**

**A fall or a change in mental status in elderly patients without any other signs and symptoms of infection should be investigated for other causes. The diagnosis of a UTI in this case is a diagnosis of exclusion.**

**Even if urine cultures are positive, in stable elderly patients without any signs and symptoms of UTI, 24 hours of hydration (unless on fluid restriction) can be safely tried before starting an antibiotic.**

# Symptom- Free Pee: LET IT BE

## MYTH

**Fever and  
bacteriuria  
always  
indicates  
a UTI**

## TRUTH

**A fever in a non-catheterized elderly patient, with bacteria in the urine, and with no other signs and symptoms of UTI should be investigated for other sources of infection. The diagnosis of a UTI in this case is a diagnosis of exclusion.**

**Bacteriuria is common, especially in elderly patients and in residents of long term care facilities.**

**Symptom-  
Free Pee:  
LET IT BE**

## MYTH

**Candida  
or yeast in  
the urine  
should be  
treated**

## TRUTH

Candida or yeast in the urine often reflects colonization rather than infection.

Recent antibiotic use predisposes patients to colonization with Candida.

Treatment of Candida or yeast is rarely required and should only be considered if there are obvious signs and symptoms of a UTI and no alternate source is identified.

**Symptom-  
Free Pee:  
LET IT BE**

## MYTH

**Urine  
should be  
sent for  
culture prior  
to surgery**

## TRUTH

Urine cultures for pre-operative patients without signs and/or symptoms of UTI should **NOT** be sent for screening unless the patient is undergoing an invasive genitourinary procedure.

# Symptom- Free Pee: LET IT BE

## MYTH

**You must  
treat a  
UTI for  
7-14 days**

## TRUTH

**Cystitis (bladder infection) can be successfully treated with only 7 days of antibiotics in men.**

**Even uncomplicated pyelonephritis (kidney infection) in women can be successfully treated with only 5-7 days of antibiotics.**

**Unnecessarily long durations of treatment increase the risk for adverse effects allergies, drug interactions, gastrointestinal symptoms, *C difficile* infection, yeast infections and alteration of the gut microbiome.**

**Symptom-  
Free Pee:  
LET IT BE**

## MYTH

**You need to  
repeat urine  
cultures  
after  
treatment**

## TRUTH

**There is no reason to re-culture urine after treatment unless the patient is not improving clinically.**

**Bacteriuria can occur even after effective therapy and is not a reason to prolong therapy in an asymptomatic patient.**

## Signs and Symptoms Suggestive of Urinary Tract Infection

- Dysuria - pain or burning on urination
- Increased frequency of urination
- Urgency
- Suprapubic tenderness
- Costovertebral tenderness or pain

Non-specific signs/symptoms that may or may not indicate a urinary tract infection:

- Fever\*
- Hematuria- blood in urine\*
- Cognitive changes\*

\* These alone are insufficient to diagnose a urinary tract infection

CDC 2014: CDC/NHSN surveillance definitions for specific types of infections

## Signs that are NOT Suggestive of Urinary Tract Infection

- Change in urine colour – dark
- Change in urine odour – foul-smelling
- Change in urine turbidity – cloudy urine

Do NOT perform urinalysis or send urine culture



## Signs & Symptoms NOT Suggestive of Urinary Tract Infection

The following are NOT typically associated with a urinary tract infection:

- Dizziness
- New or increased falls
- Decreased appetite
- Altered behaviour:
  - New or increased verbal or physical aggression
  - Confusion/disorientation
  - New or increased wandering
  - Disorganized thinking

Nicolle LE. Clin Geriatr Med 2009;25:423–36.

Nicolle LEJ Am Geriatr Soc 2009;57:1113–4.

## Practice Points

- Asymptomatic bacteriuria is a colonization state **NOT** an infection
  - Antibiotics are **NOT** indicated
- Bacteriuria and pyuria are **expected** findings in the elderly
- Symptomatic UTI is much **less common** than asymptomatic bacteriuria

Nicolle LE. Infect Dis Clin North Am 1997;11(3):647-62  
Nicolle LE. Infect Control Hosp Epidemiol 2001;22(3):167-75

## Asymptomatic Bacteriuria

Asymptomatic bacteriuria is NOT associated with long term negative outcomes such as:

- Pyelonephritis
- Sepsis
- Renal failure
- Hypertension

Nicolle LE. Infect Dis Clin North Am 1997;11(3):647-62

# Asymptomatic Bacteriuria

Inappropriate antibiotic treatment will cause:

- Unnecessary adverse effects to the patient
  - *C. difficile* infection (CDI)
  - Drug interactions
- Increase in antibiotic resistance
- Increased healthcare costs

# Collateral Damage

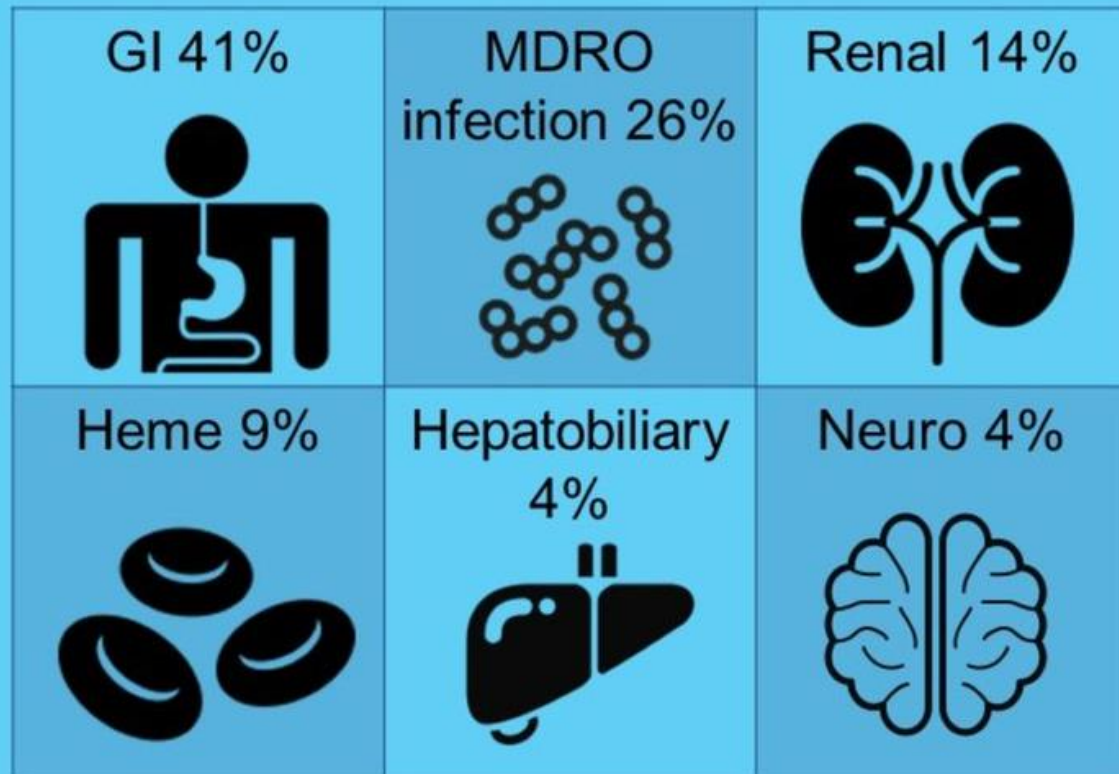
1 in 5 inpatients treated with antibiotics is harmed

Retrospective cohort study of 5,579 adult internal medicine inpatients at Johns Hopkins Hospital

- 27% received antibiotics
- 20% developed at least 1 adverse antibiotic event
- 19% of antibiotic regimens not clinically indicated



## 324 antibiotic adverse events:



Tamma PD et al. JAMA Int Med 2017; epub ahead of print.

This #VisualAbstract was created by Michael Edmond / @Mike\_Edmond

## Dipsticks

No longer recommended in long-term care facilities

Positive for both bacteriuria and pyuria:

- Approximately 50% non-catheterized
- Approximately 100% catheterized

Genao L, Buhr GT. Ann Long Term Care 2012;20(4):33-8  
Public Health Ontario- August 2016:UTI Program: Evidence to  
support discontinuing the use of dipsticks to diagnose urinary tract  
infections in residents of long term care homes – August 2016

## Urinalysis and Urine Cultures

### NOT recommended for:

- Change in colour / odour of urine in absence UTI symptoms
- Blocked catheter
- Replacement/insertion of catheter
- Test of cure - unless patient not responding to proven UTI
- Standing order
- Routine screen except:
  - During pregnancy
  - Prior to genital urinary procedure

## Urinalysis and Urine Cultures

Send only if strong clinical suspicion of UTI

UTI is **NOT** a laboratory based diagnosis

Urine culture is performed to:

- Identify uropathogen(s)
- Guide antibiotic therapy



## Urine Cultures

### Positive urine culture:

- Cannot differentiate between asymptomatic bacteriuria (ASB) and urinary tract infection (UTI)

### Asymptomatic bacteriuria:

- Should NOT be investigated or treated except:
  - During pregnancy
  - Prior to genitourinary instrumentation/surgery

## Seniors or Catheterized Patients with Non-Specific Symptoms / Signs

→ Essential to exclude all other potential causes

- Dehydration
- New medications/drug interactions
- Sleep disturbances
- Sensory deprivation
- Trauma
- Hypoxia
- Hypoglycemia
- Infection other than urinary tract infection

## Screening for or treatment of asymptomatic bacteriuria **NOT** recommended:

- Premenopausal, non-pregnant women
- Diabetic patients
- Older persons living in the community
- Elderly, institutionalized subjects
- Persons with spinal cord injury
- Catheterized patients while catheter remains in situ
- Solid organ transplant patients
- Kidney transplant patients (> 1 month since surgery)

## Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America<sup>a</sup>

Lindsay E. Nicolle,<sup>1</sup> Kalpana Gupta,<sup>2</sup> Suzanne F. Bradley,<sup>3</sup> Richard Colgan,<sup>4</sup> Gregory P. DeMuri,<sup>5</sup> Dimitri Drekonja,<sup>6</sup> Linda O. Eckert,<sup>7</sup> Suzanne E. Geerlings,<sup>8</sup> Béla Köves,<sup>9</sup> Thomas M. Hooton,<sup>10</sup> Manisha Juthani-Mehta,<sup>11</sup> Shandra L. Knight,<sup>12</sup> Sanjay Saint,<sup>13</sup> Anthony J. Schaeffer,<sup>14</sup> Barbara Trautner,<sup>15</sup> Bjorn Wullt,<sup>16</sup> and Reed Siemieniuk<sup>17</sup>

### Who should Be Screened and Treated

- In pregnant women, we recommend screening for and treating ASB (*strong recommendation, moderate-quality evidence*).
- In patients who will undergo endoscopic urologic procedures associated with mucosal trauma, we recommend screening for and treating ASB prior to surgery (*strong recommendation, moderate-quality evidence*).

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- **Older, Functionally or Cognitively Impaired with non-localizing symptoms?**
  - Bacteruria + acute mental changes no other systemic signs of infection – NO
  - A fall + Bacteruria but no other signs or symptoms – NO
- **Patients with Neutropenia – no recommendation**
- **Removal of indwelling catheters – no recommendation**

## Meet Sandy

- Dementia - mild cognitive impairment
- Diabetes
- Heart disease
- Increased confusion
- Difficulty standing



## Residents with Non-Specific Symptoms

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Hemodynamically stable resident:

No evidence of increased morbidity or mortality associated with waiting 24 hrs to reassess for:

- Non-specific symptoms improvement

**or**

- Development of typical symptoms

Beveridge LA et al Clin Interv Aging 2011;6:173–80.

Nicolle LE. CMAJ 2000;163:285–6.

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## Residents with Non-Specific Symptoms

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Non-specific symptoms:

- Acute mental status change
- Functional decline

→ Often resolve with good hydration

- Push fluids for 24 hours and reassess

Beveridge LA et al Clin Interv Aging 2011;6:173–80.

Nicolle LE. CMAJ 2000;163:285–6.

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**Symptom-Free Pee: LET IT BE**

# Weekly Fluid Intake Record

Amount of water per day (check one):


1000 mL per day     1500 mL per day     Other: \_\_\_\_\_ mL per day


Preferred Fluid (check all that apply):

Water ( ice    no ice    warm    thickened    Other: \_\_\_\_\_)

Juice: \_\_\_\_\_ ( ice    no ice)

Other: \_\_\_\_\_






 = 100 mL  
(approximately 1/2 cup)

 = 200 mL  
(approximately 1 cup)





Week of:

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
1							
2							
3							
4							
5							
6							
7							
8							
Total Volume							

**Tips to Promote / Encourage Fluid Intake**

-  Offer fluid with each hourly check-in.
-  Offer fluid with each interaction with the patient (like the med pass).
-  Provide a full glass of fluid with each med pass.
-  Encourage increased fluid intake with meals.
-  Family members to offer fluid each hour on the hour while awake.

**Hydration Information**

-  Increase fluid intake when patient is feeling unwell or has illness.
-  Increase fluid intake during warm weather.
-  Adequate fluid intake promotes regular bowel patterns.
-  Beverages that contain caffeine (tea/coffee/soda) are poor sources for providing hydration as they have diuretic properties and contribute to fluid loss (makes the patient void more).

**Quick Reference of Sample Volumes (volumes may vary)**



150 mL water glass (used to pass meds)



175 mL water glass



225 mL glass cup (coffee/tea)



200 mL plastic cup (coffee/tea)



225 mL soup/cereal bowl



70 mL small bowl (padding etc.)

For more directions and guidance:



www.ammi.ca  
#SymptomFreeLetItBe

## Asymptomatic Bacteriuria

- 80% of asymptomatic bacteriuria patient receive antibiotics
- 1/3 of antibiotics in LTC for asymptomatic bacteriuria

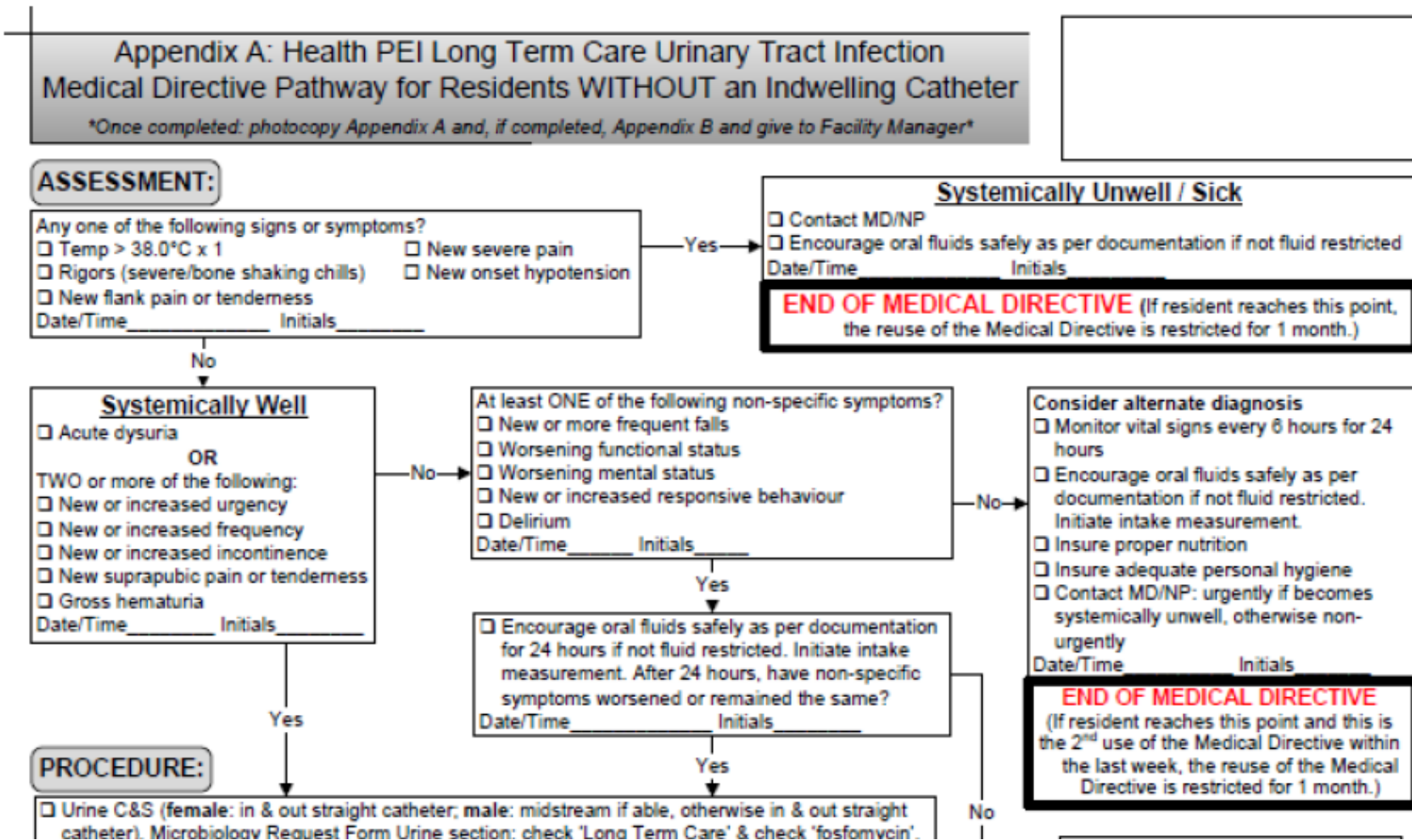
CDC study:

- Antibiotics for UTI avoidable in 39% of patients

Trautner BW. Asymptomatic bacteriuria: When the treatment is worse than the disease. *Nat Rev Urol*.2012;9:85-93

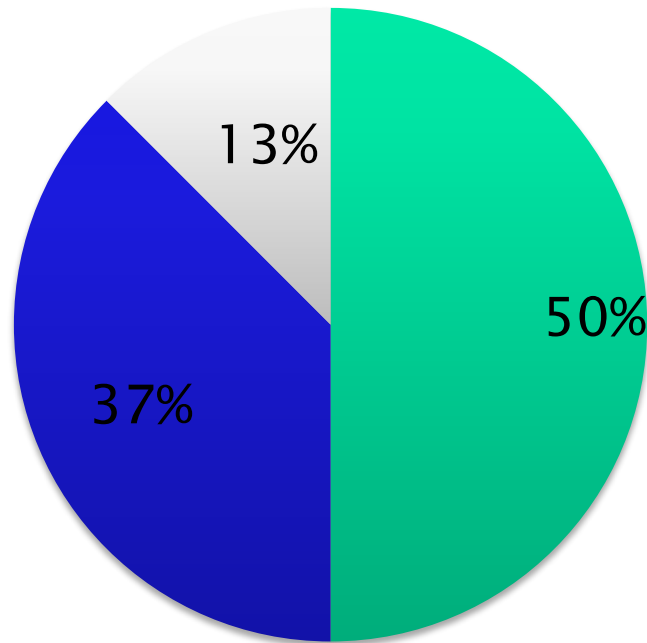
Fridkin S, Baggs J, Fagan R, et al. Vital signs: improving antibiotic use among hospitalized patients. *MMWR Morb Mortal Wkly Rep* 2014;63:194–200.

## Appendix A – Health PEI Long Term Care Urinary Tract Infection Medical Directive Pathway for Residents WITHOUT an Indwelling Catheter

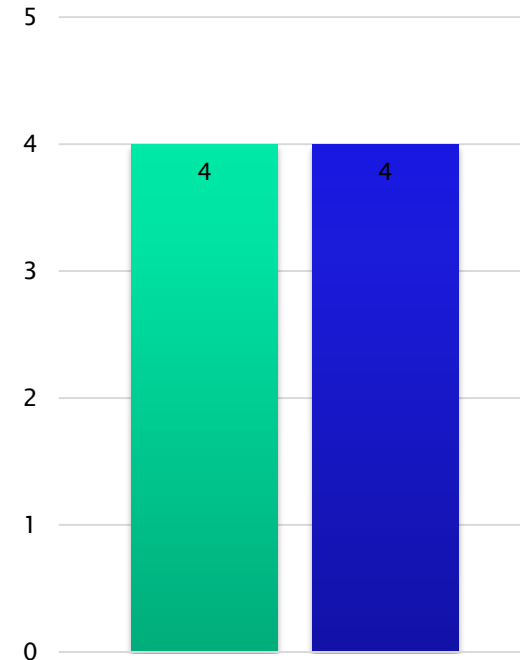


# Valley Regional PPS

VRH Bacteriuria DATA PAF

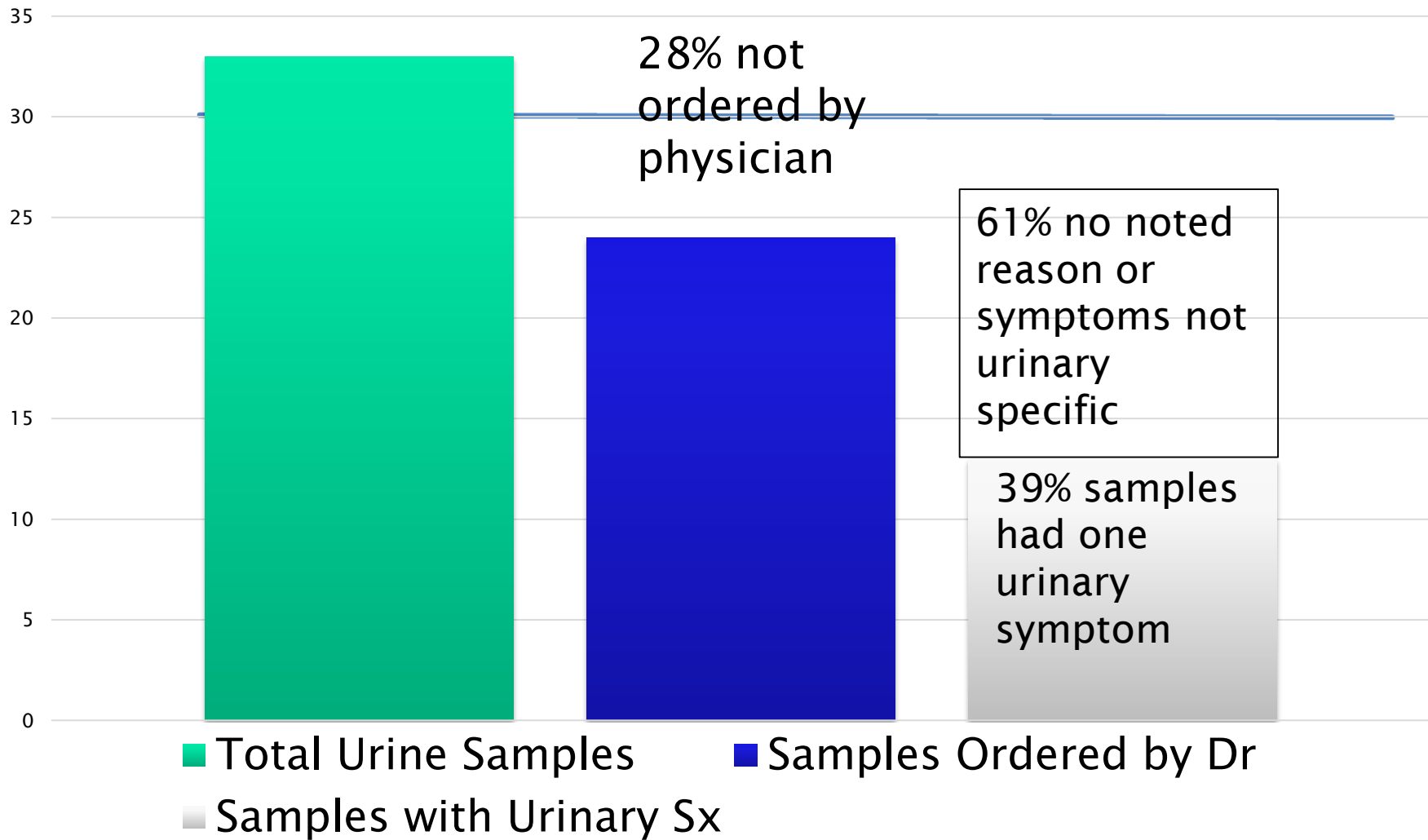


■ ASBU ■ SUTI ■ HA-CAUTI ■ Recommended ■ Accepted



Recommendations by AMS Pharmacist to D/C Antibiotics

# Urine Samples



## Reducing Antimicrobial Therapy for Asymptomatic Bacteriuria

### University of Toronto

- Stopped reporting urine cultures on hospitalized non-catheterized patients from medical/surgical floors
- 6 month period (Jan-Jun 2013)
- Catheterized patient- controls

### Antibiotic treatment for ASB:

#### Baseline

- Non-catheterized patient: 48% vs catheterized: 42%

#### After intervention of modified reporting:

- Non-catheterized: 12% vs catheterized: 41%
- 4 UTIs in non-catheterized patients- all started on empiric therapy
- Physician called for results: 5/37 reports
- 1/5 - UTI vs 4/5- ASB

Leis JA. et al. CID 2014;58(7);980-3

## Original Article

# The clinical impact of a urinary tract infection management bundle in a tertiary-care teaching hospital

Timothy D. MacLaggan BScPharm, PharmD, ACPR, BCPS<sup>1</sup>, Christopher P. Le BSc, MD, CCFP<sup>2</sup>, Kristen A. Iverson MB ChB, CCFP<sup>3</sup>, Chelsey L. Ellis MD, FRCPC<sup>4</sup>, Jacques Allard PhD<sup>5,a</sup>, Tammie J. Wilcox-Carrier HBS Sc RT<sup>4</sup> and Daniel J. Smyth BSc, MD, FRCPC, DTMH<sup>6</sup>

<sup>1</sup>Department of Pharmacy Services, Horizon Health Network, Moncton, New Brunswick, Canada, <sup>2</sup>Family Practice, Fraser Health, New Westminster, British Columbia, Canada, <sup>3</sup>Dalhousie University Department of Medicine, Halifax, Nova Scotia, Canada, <sup>4</sup>Department of Laboratory Medicine, Horizon Health Network, Moncton, New Brunswick, Canada, <sup>5</sup>Département de mathématiques et statistique, Université de Moncton, Moncton, New Brunswick, Canada (retired) and <sup>6</sup>Department of Internal Medicine, Horizon Health Network, Moncton, New Brunswick, Canada





# Symptom-Free Pee: LET IT BE

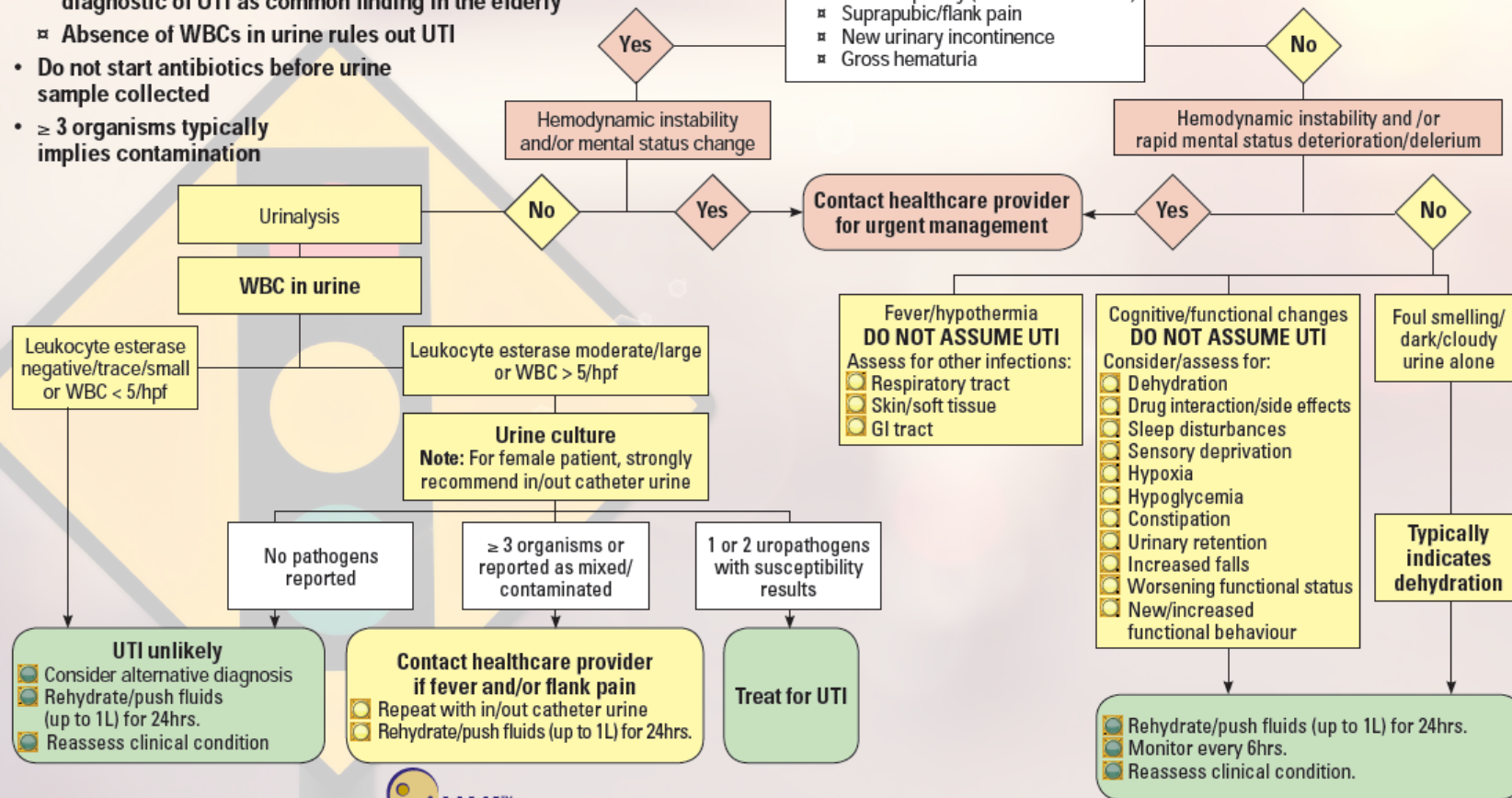
## Diagnosis of Suspected Urinary tract Infection (UTI) in Non-Catheterized Elderly Patients in Acute Care Setting

### PRACTICE POINTS:

- UTI is a clinical diagnosis, not a laboratory diagnosis
- Dipsticks not recommended - poor diagnostic accuracy
- Urinalysis:
  - Presence of bacteria/nitrites and/or WBC not diagnostic of UTI as common finding in the elderly
  - Absence of WBCs in urine rules out UTI
- Do not start antibiotics before urine sample collected
- $\geq 3$  organisms typically implies contamination

**TYPICAL URINARY TRACT INFECTION SIGNS/SYMPTOMS:**

- Acute dysuria and/or
- 2 or more of the following:
  - Fever
  - New urgency (or marked increase)
  - New frequency (or marked increase)
  - Suprapubic/flank pain
  - New urinary incontinence
  - Gross hematuria



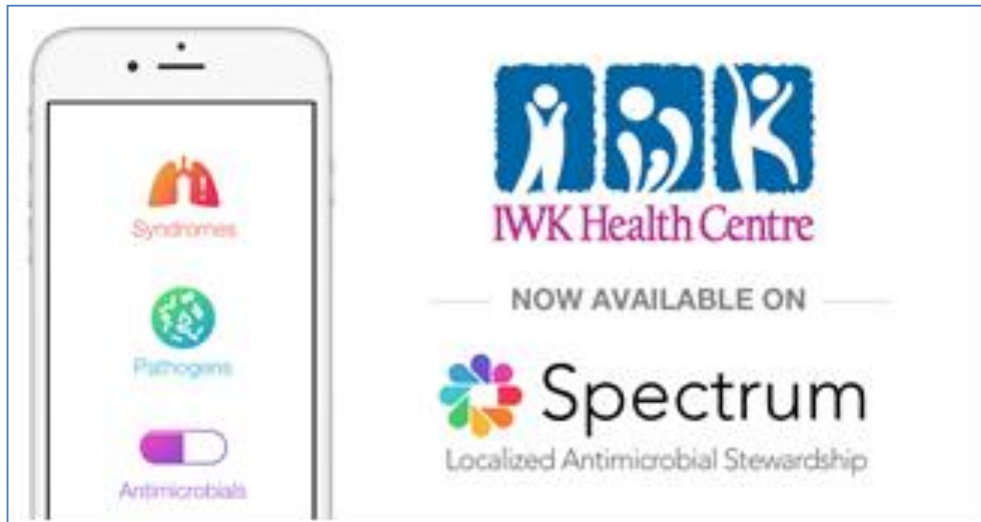
For more directions and guidance:



[www.ammi.ca](http://www.ammi.ca) | #SymptomFreeLetItBe

# Antimicrobial Stewardship: LTCF

# IWK Spectrum App (device or desktop)



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IWK INTRANET

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DEPARTMENTS/SERVICES > ANTIMICROBIAL STEWARDSHIP > GUIDELINES FOR EMPIRIC ANTIMICROBIAL THERAPY- WOMEN'S HEALTH

CATEGORIES

- All Categories
- ANTIMICROBIAL STEWARDSHIP PROGRAM
- ANTIBIOGRAM
- AMS Annual Report 2018
- B-LACTAM ALLERGY
- Bacteria Classification
- CENTRAL LINE INFECTION MANAGEMENT
- CLOSTRIDIUM DIFFICILE PEDIATRIC GUIDELINES
- CLOSTRIDIUM DIFFICILE ADULT GUIDELINES
- COST INPATIENT ANTIMICROBIALS
- ENDOCARDITIS Treatment and Prophylaxis -Pediatrics
- GASTROENTERITIS MANAGEMENT GUIDELINES PEDIATRICS
- GUIDELINES for EMPIRIC ANTIMICROBIAL THERAPY-PEDIATRICS
- GUIDELINES for EMPIRIC

**GUIDELINES for EMPIRIC ANTIMICROBIAL THERAPY- WOMEN'S HEALTH**

Last Updated: May 4, 2017 4:12 PM

[Guidelines via iOS or Android device \(link to Google Play/iTunes\)](#)

[Guidelines via desktop](#)

Print


**CONTENT MANAGERS**

Becky Chapman	Darius Graff	Erin Lynch	Jennifer Turple	Kathryn Slayter
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**ACCESS MANAGERS**

Web Administrator
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# NSHA Antimicrobial Handbook Chapters



Nova Scotia Health Authority  
Antimicrobial Handbook

## Treatment of Candidemia

### MOST COMMON MICROORGANISMS

- *Candida albicans*
- *C. glabrata*
- *C. parapsilosis*
- *C. tropicalis*
- *C. krusei*

### CURRENT RESISTANCE PATTERNS

- *C. glabrata* is usually considered resistant to fluconazole and should be treated with an echinocandin
- *C. krusei* is resistant to fluconazole and should be treated with an echinocandin

### DIAGNOSTIC CONSIDERATIONS

- If yeast suspected, draw a set of blood cultures from two different sites
- *Candida* in blood should generally **NOT** be considered a contaminant


### MANAGEMENT CONSIDERATIONS

- Infectious Diseases (ID) consultation is recommended; particularly if an endovascular or device-related infection suspected
- Replace all central lines as soon as possible
- Ophthalmology assessment is recommended to rule out ophthalmic disease within 1 week of therapy (or after neutrophil count recovery in neutropenic patient)
- Collect 2 aerobic blood culture bottles every 48 hours **until negative** to demonstrate sterilization

### EMPIRIC TREATMENT OF SUSPECTED OR CONFIRMED CANDIDEMIA

- Fluconazole if patient is **NOT** critically ill (i.e., is hemodynamically stable) and **unlikely** to have a fluconazole-resistant *Candida* (no azole exposure within 3 months):
  - Fluconazole 800 mg IV/PO x 1, then 400 mg IV/PO once daily (adjust for renal function)
- An echinocandin:
  - Caspofungin 70mg IV x initial dose on Day 1; subsequent dosing 50 mg IV daily
- Amphotericin B
  - Amphotericin B liposomal (AmBisome) 5 mg/kg IV daily

CONTINUED ON NEXT PAGE



Nova Scotia Health Authority  
Antimicrobial Handbook

## Adult Community-Acquired Meningitis

### MOST COMMON MICROORGANISMS

- *Streptococcus pneumoniae*
- *Neisseria meningitidis*
- *Listeria monocytogenes* (age >50 years, excessive alcohol consumption, pregnant, immunocompromised)
- *Haemophilus influenzae* (now very rare)
- Viruses: Enteroviruses most common

### RESISTANCE PATTERNS

- Local ceftriaxone resistance in *S. pneumoniae* is estimated to be ≤3%

### DIAGNOSTIC CONSIDERATIONS

- Collect 2 sets of blood cultures
- Head CT prior to lumbar puncture if focal neurological signs, papilledema, altered mentation, new onset seizures, impaired cellular immunity
- Lumbar puncture
  - Defer if high bleeding risk (INR >1.4, platelets < 50 x 10<sup>9</sup>/L)
  - Cell count, glucose, protein, Gram stain, culture, opening pressure
  - Negative Gram stain does not exclude bacterial meningitis: sensitivity 60-90%, lower for *Listeria* (<50%)
  - Typical CSF findings: elevated WBC (predominately neutrophils; may be predominantly lymphocytes and/or monocytes with *Listeria*), elevated protein, low glucose
    - Predictors of bacterial infection: WBC ≥500 x 10<sup>6</sup>/L, CSF-blood glucose ratio ≤ 0.4
  - CSF PCR if suspect viral causes (e.g. Enteroviruses)

### MANAGEMENT CONSIDERATIONS

- Delay of antibiotics increases mortality. Do not delay antibiotics if neuroimaging and/or LP is delayed.
- Initiate droplet and contact precautions and notify Infection Prevention and Control
- Contact Public Health
- Repeat LP if poor clinical response after 48 hours OR resistant *S. pneumoniae* confirmed



# Asymptomatic Bacteriuria Workshop - Thursday, March 07, 2019 12.02.46 PM

from Nova Scotia Health Authority

## Cystitis/Pyelonephritis

Greater than 30% women will have a UTI

50 times greater in women than men

Most common healthcare associated infection worldwide

### Signs and Symptoms

#### Cystitis

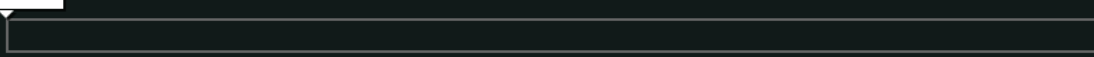
- Acute or resent onset
- Urinary frequency, pain/burning on urination, urgency, dysuria

#### Pyelonephritis

- Flank pain and fever



58:09



vimeo

- **Asymptomatic Bacteriuria/UTI AMS workshop - March 7, 2019**

Steve Smith, BSc (Pharm)  
Western Zone AMS Pharmacist

**What is Nursing's Role in Antimicrobial Stewardship**  
 from Nova Scotia Health Authority

INVITED ARTICLE

CLINICAL PRACTICE: Ellie J. C. Goldstein, Section Editor

**The Critical Role of the Staff Nurse in Antimicrobial Stewardship—Unrecognized, but Already There**  
 Richard N. Olans,<sup>1</sup> Rita D. Olans,<sup>2</sup> and Alfred DeMaria Jr<sup>3</sup> CID 2016;62(1):84-9

the latter, the itemized secondary drivers are not explicitly assigned or attributed to nurses, and in the 2 infection control journal articles, the interventions are described as "should be implemented" [14] or "could impact" [13] antimicrobial stewardship efforts. We assert that staff nurses are *already participating in these activities, albeit not in an acknowledged or integrated fashion*. Because of this exclusion, they cannot contribute most effectively to the diverse goals of ASPs. The unintentional mischaracterization of the participation of nurses in ASPs as only potential rather than actual has the additional unintended consequence of divorcing nursing from those very activities that nurses need to understand as critical attributes of antimicrobial stewardship.

18:17

Nova Scotia Health Authority  
 Antimicrobial Stewardship Program

vimeo

## What is Nursing's Role in Antimicrobial Stewardship? 2017

Dr. Andrea Kent and Dr. Paul Bonnar  
 Co-leads for the NSHA Antimicrobial Stewardship Program

## Nova Scotia Health Authority Antimicrobial Stewardship Program:

<b>Duration Recommendations</b>		
<b>Syndrome</b>	<b>Recommended duration of therapy</b>	<b>Possible exceptions / caveats</b>
Community acquired pneumonia	5 days (if afebrile x 48h & stable*) - 7 days	Lung abscess, empyema, cystic fibrosis patients
Hospital acquired pneumonia	7 days	
Exacerbations of COPD	<b>Only if</b> antibiotics indicated: 5 (mild/moderate) - 7 days	
Cellulitis	5 - 7 days	Abscess, deep tissue infection, recurrent cellulitis, failed treatment
Uncomplicated Cystitis	Nitrofurantoin 5 days Fosfomycin 1 dose TMP-SMX 3 days Beta-lactam: 5-7 days Ciprofloxacin 3 days	In men: - 7 days of therapy, exception: fosfomycin 3g q 3 days X 2-3 doses
Pyelonephritis	- Ciprofloxacin: 7 days - TMP-SMX or beta-lactam: 14 days	Abscess, infected urinary stent, stone disease, obstruction
Complicated intraabdominal infection	4 days after adequate source control	Source control not achieved (ongoing abscess)
<i>C. difficile</i> first episode or first recurrence	10-14 days	

# 4 Moments of Antibiotic Prescribing

# 01

Does this patient have an infection that requires antibiotics?



Non-infectious?

Viral?

# 02

a) Have I ordered appropriate cultures before starting antibiotics?  
b) What empirical antibiotic therapy should I initiate?



Cultures

Empiric antibiotics

# 03

A day or more has passed. Can I optimize antibiotics?



Daily Timeouts

- Can I **STOP** antibiotics?
- Can I **NARROW**?
- Can I change to **ORAL**?

Document antibiotic plan

# 04

What duration of antibiotic therapy is needed for this patient's diagnosis?



Minimize treatment duration





Do not unnecessarily prolong on discharge or other transitions of care



# TIPS

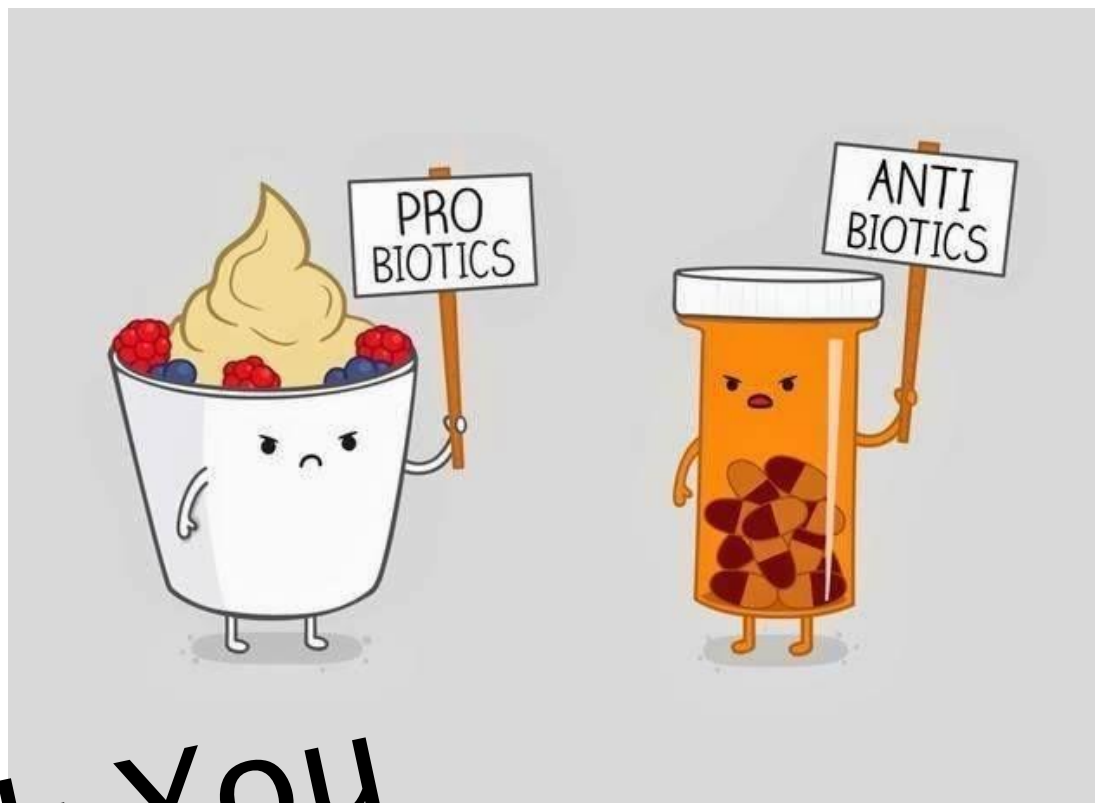
- Not all micro lab results are relevant
- Fever is not always infection; WBC/CRP is only part of the story
- Watch for sensitivity results
- Allergy is harmful
- ABX SE are common
- A complete prescription/order requires an **INDICATION & DURATION**
- Use resources: Academic detailing, NSHA ASP

### 4 Moments of Antibiotic Prescribing

# 01	# 02	# 03	# 04
Does this patient have an infection that requires antibiotics?	a) Have I ordered appropriate <u>cultures</u> before starting antibiotics? b) What <u>empirical</u> antibiotic therapy should I initiate?	A day or more has passed. Can I optimize antibiotics?	What <u>duration</u> of antibiotic therapy is needed for this patient's diagnosis?
 Non-infectious?  Viral?	 Cultures  Empiric antibiotics	 <b>Daily Timeouts</b> - Can I STOP antibiotics? - Can I NARROW? - Can I change to ORAL?  <u>Document antibiotic plan</u>	 Minimize treatment duration  Do not unnecessarily prolong on discharge or other transitions of care

Adapted from:  
Tamma PD, Miller MA, Cosgrove SE.  
doi: 10.1001/jama.2018.19509

# Let's Remember to Use Antibiotics Wisely!!



# Thank You