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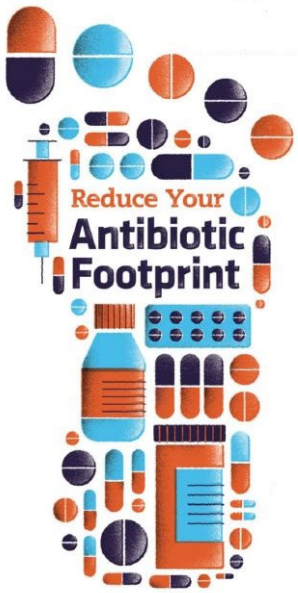
Antimicrobial Stewardship

Optimizing Urinary Tract Infection and Asymptomatic Bacteriuria Care

Appropriateness & Stewardship in Asymptomatic Bacteriuria (ASAB) Initiative

www.ahs.ca/ASAB



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Acknowledgements and Partners

Alberta Health Services Antimicrobial Stewardship Program

Physician Learning Program

UNIVERSITY OF ALBERTA

Covenant Health

DO BUGS NEED DRUGS?

AMMI™ Canada

* “Symptom-free pee: Let it Be” used with permission from Association of Medical Microbiology and Infectious Disease Canada

Objectives

Improve/optimize UTI care through:

- Emphasizing the importance of antimicrobial and diagnostic stewardship
- Implement and support clinical decision-making tools
- Provide education that shifts paradigms:
  - Differentiating asymptomatic bacteriuria and urinary tract infections
  - Assessing potential causes of non-specific symptoms
  - Proper urine sample collection
  - Interpreting urine test results
  - Communication with patients and caregivers

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ANTIMICROBIAL STEWARDSHIP – BACKGROUND INFORMATION

AHS Stewardship Philosophy

ACT LOCALLY

Patient care:

- **Patient Centered**
- **Safe**
- **Effective**

Evidence based

- **Positive outcomes**

THINK GLOBALLY

- Choices that are:
  - Sustainable
    - Selective resistance
    - Resource optimization
      - Pharmacy
      - Nursing
      - Lab
  - Addresses impact of collateral damage

Starts and ends on the frontline

Antimicrobial Stewardship

Infectious Disease Society of America

- coordinated interventions designed to improve and measure the appropriate use of antimicrobial agents by **promoting the selection of the optimal antimicrobial drug regimen including dosing, duration of therapy, and route of administration**

Antimicrobial Stewardship

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- "Using antibiotics wisely while preserving their value"
- **Antimicrobial stewardship is integrated into everyday practice** through routine evaluation of the indication, antibiotic selection, dose, route of administration and duration of treatment

Accreditation Canada - ROP

- An antimicrobial stewardship program has been implemented.
- The program includes interventions to optimize antimicrobial use, such as audit and feedback, a formulary of targeted antimicrobials and approved indications, **education**, antimicrobial order forms, **guidelines and clinical pathways for antimicrobial utilization**, strategies for streamlining or de-escalation of therapy, dose optimization, and parenteral to oral conversion of antimicrobials (where appropriate).

Need for Antimicrobial Stewardship

- No new antibiotics classes
- Resistance rates increasing
- Unlike other drugs, the use in one patient can compromise the efficacy in another
- Avoidable adverse effects, drug interactions
- Collateral damage:
  - *C. difficile* infections
- ~50% of antibiotic prescriptions are sub-optimal
- ~75% of inpatients receive antibiotics
- ~78% of LTC residents receive antibiotics every year
- **Influences on antibiotic use are multifactoral**

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What is in it for me?

- Less resistance = safer environment
  - Less antibiotic exposure = Healthier individuals
  - Resistance spreads – antibiotic use in one person can affect the care of others
  - Shorter duration of therapy or no therapy = less workload

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SAMPLE CASES

Sample c[illegible]se

- Mary - 87 year old la[illegible]ide
  - Vascular dementia (f[illegible] failure, ve[illegible]
  - Nurses no[illegible] perhaps more
- Her urine was "dippe[illegible]
- Previous urine [illegible]
  - E.coli strain #1 – 10^7
    - R Cipro, TMPSMX, [illegible]ra[illegible]ixi[illegible]
  - E coli strain #2 -10^8
    - R Cipro, TMPSMX, cefixime – [illegible]tamicin (E[illegible]L)

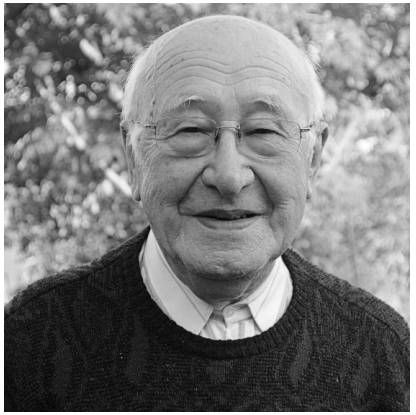
She does not have any specific urinary signs or symptoms, but seems dehydrated. You give her a litre of saline, and advise the staff to do fluid rounds to increase hydration. Monitoring for deterioration. She improves over 1-2 days.

You're asked to giv[illegible] her antibiotics – do you?

Sample Case

- George - 78 yo widower, who lives at his home with the assistance of occasional home care.
- His daughter notes he seems confused when she calls, although he insists that he feels fine.
  - She takes him to the local ER, where a urine “dip” is performed.
    - It shows positive to nitrates
  - Prescribed ciprofloxacin 500mg twice daily for 14 days
  - Th
    pa
  - Du
  - The physician notes that he is mildly dehydrated.
  - George is told to stop the zopiclone, drink more, and make sure to finish the course of antibiotics.
- 10 days later, George experiences stomach cramps and numerous bouts of watery diarrhea with incontinence, and is admitted to acute care with a positive C. difficile toxin and acute kidney injury.
- While in acute care his cognition declines and experiences several falls. After an extended period of recovery he is placed in LTC.

What could have been done differently?



https://pixabay.com/en/old-man-elderly-people-portrait-971889/

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UTI/ASB BACKGROUND INFORMATION

Why focus on Urinary Tract Infections?

- Over 61,000 urine cultures performed every month in Alberta:

40,000 community	10,000 ER
7,000 inpatient	1,200 LTC
3,000 home care	

- $15-25/urine culture test = >$15 million/year
- Alberta ER UTI audit data:
  - 63% of antimicrobial prescribing non-concordant to guidelines
  - 29% no follow-up for patients with negative urine cultures that received antibiotic prescriptions
  - 24% ASB treated with antibiotics

Treating the urine rather than the patient is a key stewardship issue

It can be hard to ***not*** treat a positive culture report

Clinical significance of majority of urine tests is questionable

>40% of samples are contaminated/not properly collected

Why focus on Urinary Tract Infections?

- Over 61,000 urine cultures performed every month in Alberta:
  - 40,000 community
  - 10,000 ER
  - 7,000 inpatient
  - 1,200 LTC
  - 3,000 home care
- $15-25/urine culture test = >$15 million/year
- UTIs account for at least 30% of infection in LTC
- Alberta LTC UTI audit data:
  - Non-catheter:
    - 87% of urine cultures did not meet UTI criteria
    - 54% of antibiotic Rx did not meet UTI criteria
  - Catheterized:
    - 63% of urine cultures did not meet UTI criteria
    - 60% of antibiotic Rx did not meet UTI criteria

Treating the urine rather than the patient is a key stewardship issue

It can be hard to ***not*** treat a positive culture report

Clinical significance of majority of urine tests is questionable

>40% of samples are contaminated/not properly collected

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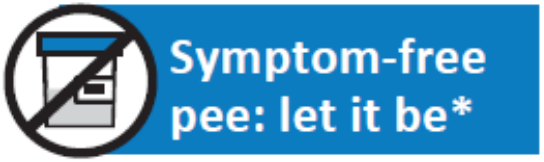
Asymptomatic Bacteriuria



Presence of bacteria in urine and/or abnormal urinalysis with the absence of UTI symptoms

Incidence:

- >70 years old (11-19%)
- LTC Residents (25-50%)
- Spinal Cord Injury (23-69%)
- Diabetes (11-16%)
- Catheterized:
  - short-term (< 30 days) indwelling: 17%
  - long-term (≥ 30 days) indwelling: 100%

- Treating ASB is <u>not</u> effective or safe
- **Number needed to harm in older adults = 3-10**
- There is no harm in not treating ASB
  - Except: screening in pregnancy and before invasive urologic procedures

Urinary Tract Infection

Presence of bacteria in the urine confirmed by C&S with bacterial count $>10^6$ cfu/L AND clinical symptoms

Localized / Typical Symptoms	
Dysuria / Pain	Frequency
Incontinence	Urgency
Fever	Hematuria

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ASB vs. UTI

Non-specific symptoms

- Odorous Urine
- Cloudy Urine
- Dizziness
- Weakness
- Lethargy
- Falls
- Aggression
- Confusion or disorientation

Dehydration

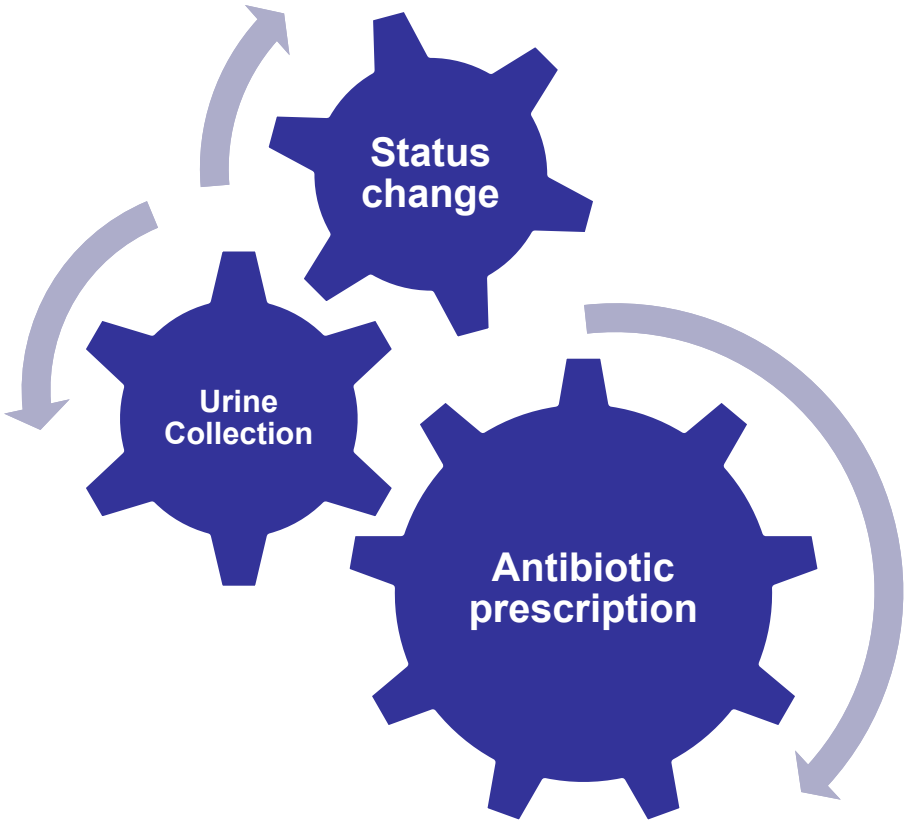
Could be any number of things

APPROPRIATENESS OF CARE: ANTIMICROBIAL STEWARDSHIP AND ASYMPTOMATIC BACTERIURIA (ASAB)

Goals of the ASAB Initiative

Change the “lore”:

- changes in urine colour, clarity, or smell ≠ UTI
- behaviour/status changes ≠ UTI
- “routine” urine testing does not improve patient care
- urine testing is for diagnosing symptomatic cases and directing antibiotic choice



ASAB Tools and Resources - www.ahs.ca/ASAB

- **Algorithms for Adults, Pediatrics and LTC/DSL**
- **When to Test Urines & Treat Patients,** Information for Health Care Professionals
- **Pocket card and Poster** promotional material
- **Interpreting Urine Test Results**, Key points
- **Information for Patients & Families**
- **Frequently Asked Questions**
- **MyLearningLink**, interactive course

Evidence-based criteria for urinary infection testing | Adults

Do not test urine for infection for • changes in colour, cloudiness or smell alone • catheter insertion or change

UTI symptoms

No catheter

- ☐ Acute dysuria (alone can justify a urine test)

Or

- ☐ Temperature >38°C or 1.1°C above baseline

Plus any new or increased

- ☐ Urinary frequency
- ☐ Urgency
- ☐ Incontinence
- ☐ Flank pain or tenderness
- ☐ Suprapubic pain or tenderness
- ☐ Gross hematuria

Catheter (indwelling)

- ☐ No other identifiable causes of infection

And 1 or more of the following

- ☐ Temperature >38°C or 1.1°C above baseline
- ☐ New flank pain or tenderness
- ☐ New suprapubic pain or tenderness
- ☐ Rigors/chills
- ☐ New onset delirium

Remove catheter if possible

Order urinalysis and urine culture

Obtain a good quality sample:
Midstream urine, in/out catheterization, or through a *new* catheter (of less than 2 weeks).

If above criteria not met (no UTI symptoms)

Do not test urine for infection

If more **severe** symptoms **or suspected pyelonephritis**

Start empiric therapy

For treatment recommendations refer to **Bugs & Drugs**

If **mild** symptoms

Await results of urine culture & susceptibility before starting treatment

When results are available ensure targeted therapy

Older adult without UTI symptoms

Any of the following

- ☐ Alteration of cognitive / mental status from baseline
- ☐ Lethargy
- ☐ Weakness
- ☐ Malaise
- ☐ Falls
- ☐ Irritable / aggressive behaviour

1. Assess/address causes

- ☐ Dehydration
- ☐ Drug interactions/side effects
- ☐ Sleep/Environment changes
- ☐ Pain
- ☐ Restraints
- ☐ Depression
- ☐ Constipation or urinary retention
- ☐ Hypoxia/Ischemia
- ☐ Hyper/Hypoglycemia
- ☐ Infections (respiratory, skin/soft tissue)
- ☐ Seizures/post seizure state

Use CAM STRAINED/DIMS tools to assess for other causes

2. Hydrate

Encourage increased fluid intake for 24 hours.

- ☐ Consider clysis or IV fluids if oral fluid intake is less than 1L/day
- ☐ Except if fluid restricted

3. Reassess in 24–48 hrs

Improvement or UTI not suspected?

Do not test urinalysis and urine culture

No improvement & suspected UTI?

Order urinalysis and urine culture

Urine culture testing may be indicated in...

Suspected Sepsis

As part of the sepsis investigation

Invasive urologic procedure

If mucosal bleeding or trauma is expected

Pregnancy

Routine urine testing in the first trimester, according to guidelines.

Refer to CMAJ Recommendations on screening for asymptomatic bacteriuria in pregnancy

Multiple Sclerosis

Patients may experience new or worsening neurological symptoms with UTI

Refer to Towards Optimized Practice Multiple Sclerosis & Management Of Urinary Tract Infection Clinical Practice Guidelines

Spinal cord injury

Patients with neurogenic bladder may not be able to express signs of UTI.

Refer to Alberta SCI Bladder Management Pathway

Resources & references: www.albertahealthservices.ca/info/Page15718.aspx

UTI Symptoms – No Catheter

- ❑ Acute dysuria (alone can justify a urine test)

  OR

- ❑ Temp >38°C or 1.1°C above baseline

PLUS any new or increased:

- ❑ Urinary frequency
- ❑ Urgency
- ❑ Incontinence
- ❑ Flank pain or tenderness
- ❑ Suprapubic pain or tenderness
- ❑ Gross hematuria

UTI Symptoms – with Indwelling Urinary Catheter

- ❑ No other identifiable causes of infection

AND 1 or more of the following:

- ❑ Temp >38°C or 1.1°C above baseline
- ❑ New flank pain or tenderness
- ❑ New suprapubic pain or tenderness
- ❑ Rigors/chills
- ❑ New onset delirium

Remove catheter if possible

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Assess/Address Causes:

- ❑ Dehydration
- ❑ Drug interactions/side effects
- ❑ Sleep/Environment changes
- ❑ Pain
- ❑ Restraints
- ❑ Depression
- ❑ Constipation or urinary retention
- ❑ Hypoxia/Ischemia
- ❑ Hyper/Hypoglycemia
- ❑ Infections (respiratory, skin/soft tissue)
- ❑ Seizures/post seizure state

Reassess in 24-48 hours

Urine culture testing may be indicated in:

- **Suspected Sepsis**
- **Multiple Sclerosis**
  - May experience new or worsening neurological symptoms with UTI
  - Refer to Towards Optimized Practice Multiple Sclerosis & Management Of Urinary Tract Infection Clinical Practice Guidelines
- **Spinal cord injury/neurogenic bladder**
  - Patients may not be able to express signs of UTI
  - Refer to Alberta SCI Bladder Management Pathway
- **Prior to invasive urological procedure**
  - Cystoscopy, TURP
  - If mucosal bleeding or trauma is expected
- **Pregnancy**

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LONG TERM CARE / DESIGNATED SUPPORTING LIVING

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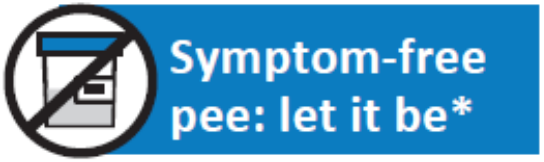

LTC/DSL and Risk of UTI

- Physiologic changes increase frequency of infections
- Communal living increases the chance of developing and spreading resistant organisms
- Established lore and routines influence over reliance on urine testing
- **Caregivers CARE – want to do the best for the residents**
  - **Identifying and treating infections is very important**
  - **Rapid treatment saves lives and healthcare**

Urine Testing Algorithm in LTC/DSL

Long Term Care - Designated Supportive Living | Older Adults

Do not test urine for infection for:
- changes in color, cloudiness & smell alone
- catheter insertion or change

- Multiple Sclerosis: see ACTT/TOP Multiple Sclerosis & Management Of Urinary Tract Infection
- CPG Neurogenic bladder: see Alberta SCI Bladder Management Pathway

If you suspect the resident has a UTI:

Assess for Delirium
- See Delirium, Seniors Knowledge Topic, or
- Site specific assessment tool

Push fluids for 24 hours
- Unless on fluid restriction
- Consider clysis or IV fluids if oral intake is less than 1 L/day

Assess non-specific changes such as:
- Alteration of cognitive/mental status from baseline
- Lethargy
- Weakness
- Malaise
- Falls
- Irritable and/or aggressive behaviour

By addressing these potential causes:
- ☐ Depression
- ☐ Infections (respiratory, skin/soft tissue)
- ☐ Constipation or urinary retention
- ☐ Hypoxia/Ischemia
- ☐ Hyper/Hypoglycemia
- ☐ Dehydration
- ☐ Drug interactions/side effects
- ☐ Sleep/Environment changes
- ☐ Seizures/post seizure state
- ☐ Pain
- ☐ Restraints

Review Goals of Care Designation / Align further treatment accordingly

Individualize assessment based on resident's ability to verbalize symptoms • Use physical assessment to determine following criteria:

☐ No catheter

At least one of the following:
- ☐ Acute dysuria / burning sensation with voiding

OR
- ☐ Temp >38°C or 1.1°C above baseline on 2 consecutive occasions (4-6 hr apart) Temp 1 _____ Temp 2 _____

PLUS one or more of the following:
- ☐ New or increased urinary frequency, urgency, incontinence
- ☐ New flank or suprapubic pain or tenderness
- ☐ Gross hematuria

☐ Catheter

- ☐ No other identifiable cause of infection

AND one or more of the following:
- ☐ Temp >38°C or 1.1°C above baseline on 2 consecutive occasions (4-6 hr apart) Temp 1 _____ Temp 2 _____
- ☐ New flank or suprapubic pain or tenderness
- ☐ Rigors/ Chills
- ☐ New onset delirium

Use SBAR to communicate all of the above to prescriber • Indicate urgent if required

Are above criteria met?

Yes — Order urinalysis and urine culture *
- The role of urine C&S is to guide selection of antibiotic therapy
- Complete all fields on laboratory requisition including signs & symptoms and current or recent antibiotic use
- Repeating C&S after antibiotic therapy is NOT necessary unless typical UTI signs and symptoms persist.

If mild symptoms — Await results of urine C&S before starting treatment

If moderate to severe symptoms start empiric antibiotic therapy — For treatment recommendations refer to Bugs & Drugs

No — If above criteria NOT met (no UTI symptoms) Do not test urine for infection
- Continue to monitor for 24-48 hours
- Apply interventions as per assessment above
- Document findings

Improvement or UTI not suspected? → Do NOT collect urine for urinalysis or urine culture

No improvement & suspected UTI? → Contact prescriber to order urinalysis and urine culture *

Discuss antibiotic therapy with pharmacist and health care team as needed:
- ☐ Verify antibiotic choice and duration of therapy is consistent with recommendations in guidelines / Bugs & Drugs
- ☐ When C&S results are available, ensure targeted antibiotic therapy ordered
- ☐ Verify antibiotic dosage is appropriate for kidney function
- ☐ Review allergies against antibiotic choice

*** C&S Results (From Lab or Netcare)**
- Bacteria in the urine (at any bacterial colony count) does not indicate a UTI unless there are signs or symptoms that are due to a UTI
- More than three organisms usually indicates contamination and the need to collect a new specimen
- The frequency of asymptomatic bacteriuria increases with age and is common among LTC/DSL residents

Urine Testing Algorithm in LTC/DSL

Long Term Care - Designated Supportive Living | Older Adults

Do not test urine for infection for:
- changes in color, cloudiness & smell alone
- catheter insertion or change

- Multiple Sclerosis: see ACTT/TOP Multiple Sclerosis & Management Of Urinary Tract Infection
- CPG Neurogenic bladder: see Alberta SCI Bladder Management Pathway

Resident Label

If you suspect the resident has a UTI:

Assess for Delirium
- Search Insite for: Delirium, Seniors Knowledge Topic, or
- Use site specific assessment tool

Push fluids for 24 hours
- Unless on fluid restriction
- Consider clysis or IV fluids if oral intake is less than 1 L/day

Assess non-specific changes such as:
- Alteration of cognitive/mental status from baseline
- Lethargy
- Weakness
- Malaise
- Falls
- Irritable and/or aggressive behaviour

By addressing these potential causes:
- ☐ Depression
- ☐ Infections (respiratory, skin/soft tissue)
- ☐ Constipation or urinary retention
- ☐ Hypoxia/Ischemia
- ☐ Hyper/Hypoglycemia
- ☐ Dehydration
- ☐ Drug interactions/side effects
- ☐ Sleep/Environment changes
- ☐ Seizures/post seizure state
- ☐ Pain
- ☐ Restraints

Date/Time:

Signature:

Review Goals of Care Designation / Align further treatment accordingly

Individualize assessment based on resident's ability to verbalize symptoms • Use physical assessment to determine following criteria:

☐ No catheter

At least one of the following:
- ☐ Acute dysuria / burning sensation with voiding

OR
- ☐ Temp >38°C or 1.1°C above baseline on 2 consecutive occasions (4-6 hr apart) Temp 1 _____ Temp 2 _____

PLUS one or more of the following:
- ☐ New or increased urinary frequency, urgency, incontinence
- ☐ New flank or suprapubic pain or tenderness
- ☐ Gross hematuria

☐ Catheter

- ☐ No other identifiable cause of infection

AND one or more of the following:
- ☐ Temp >38°C or 1.1°C above baseline on 2 consecutive occasions (4-6 hr apart) Temp 1 _____ Temp 2 _____
- ☐ New flank or suprapubic pain or tenderness
- ☐ Rigors/ Chills
- ☐ New onset delirium

Date/Time:

Signature:

Use SBAR to communicate all of the above to prescriber • Indicate urgent if required

Are above criteria met?

Yes — Order urinalysis and urine culture *
- The role of urine C&S is to guide selection of antibiotic therapy
- Complete all fields on laboratory requisition including signs & symptoms and current or recent antibiotic use
- Repeating C&S after antibiotic therapy is NOT necessary unless typical UTI signs and symptoms persist.

If mild symptoms — Await results of urine C&S before starting treatment

If moderate to severe symptoms start empiric antibiotic therapy — For treatment recommendations refer to www.BugsandDrugs.org

No — If above criteria NOT met (no UTI symptoms) Do not test urine for infection
- Continue to monitor for 24-48 hours
- Apply interventions as per assessment above
- Document findings

Improvement or UTI not suspected? → Do NOT collect urine for urinalysis or urine culture

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- ☐ When C&S results are available, ensure targeted antibiotic therapy ordered
- ☐ Verify antibiotic dosage is appropriate for kidney function
- ☐ Review allergies against antibiotic choice

Date/Time:

Signature:

*** C&S Results (From Lab or Netcare)**
- Bacteria in the urine (at any bacterial colony count) does not indicate a UTI unless there are signs or symptoms that are due to a UTI
- More than three organisms usually indicates contamination and the need to collect a new specimen
- The frequency of asymptomatic bacteriuria increases with age and is common among LTC/DSL residents

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Assess for Delirium

- AHS Knowledge Topic or Site-specific resources
- Catheterized patients have an increase prevalence and risk of negative outcomes
- STRAINED/DIMS assessment algorithm
- Test and treat delirium promptly

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Only Test Urine with a Strong Clinical Suspicion for Infection

Do not test urine for infection for:

- changes in color, cloudiness & smell alone
- catheter insertion or change

☐ No catheter

At least one of the following:

☐ **Acute dysuria / burning sensation with voiding**

OR

☐ **Temp >38°C** or 1.1°C above baseline on 2 consecutive occasions (4-6 hr apart) Temp 1 _____ Temp 2 _____

PLUS one or more of the following:

☐ **New or increased urinary frequency, urgency, incontinence**
☐ **New flank or suprapubic pain or tenderness**
☐ **Gross hematuria**

☐ Catheter

Remove catheter if possible

☐ **No other identifiable cause of infection**

AND one or more of the following:

☐ **Temp >38°C** or 1.1°C above baseline on 2 consecutive occasions (4-6 hr apart) Temp 1 _____ Temp 2 _____

☐ **New flank or suprapubic pain or tenderness**
☐ **Rigors/ Chills**
☐ **New onset delirium**

Only Test Urine with a Strong Clinical Suspicion for Infection

- Odorous Urine
- Cloudy Urine
- Dizziness
- Weakness
- Lethargy
- Falls
- Aggression
- Confusion or disorientation

Push fluids for 24 hours

By addressing these potential causes:

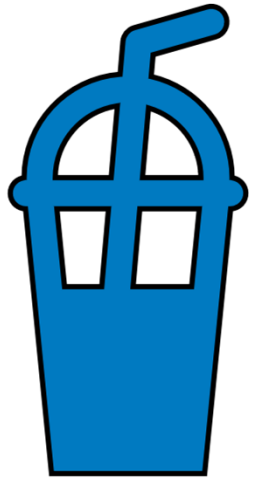
- ☐ Depression
- ☐ Infections (respiratory, skin/soft tissue)
- ☐ Constipation or urinary retention
- ☐ Hypoxia/Ischemia
- ☐ Hyper/Hypoglycemia
- ☐ Dehydration
- ☐ Drug interactions/side effects
- ☐ Sleep/Environment changes
- ☐ Seizures/post seizure state
- ☐ Pain
- ☐ Restraints

Hydrate:

Push fluids for 24 hours

- Unless on fluid restriction
- Consider clysis or IV fluids if oral intake is less than 1 L/day

- Increased fluid intake can resolve many non-specific symptoms
- Depending on care setting, development or adoption of a variety of strategies to ensure appropriate hydration:
  - Team hydration rounds
  - ‘clysis
- TIP: Ensure hydration before collecting or testing - concentrated or dilute urine can affect interpretation of urine tests



By addressing these potential causes:

D	Drugs Dementia Discomfort	BEERS Criteria (anticholinergic, benzodiazepines, hypnotics) Dose change Behavioral problems in dementia Pain, insomnia, depression
E	Eye Ears Environment	Sensory deprivation; vulnerability to environment Glasses/Hearing Aids Noise Level/Lighting
L	Low Oxygen States	Myocardial Infarction, Stroke, Pulmonary Embolus
I	Infection	Pneumonia, Sepsis, Symptomatic UTI, Cellulitis
R	Retention	Urinary retention, constipation Check PVR, Rectal Exam
I	Ictal States	Seizure Disorder
U	Under-hydration Nutrition	Dehydration Check blood glucose, electrolytes, serum creatinine
M	Metabolic	Low or high blood sugar, sodium abnormalities Check blood glucose, electrolytes, serum creatinine
S	Subdural Hematoma	Head Trauma Check neuro-vital signs

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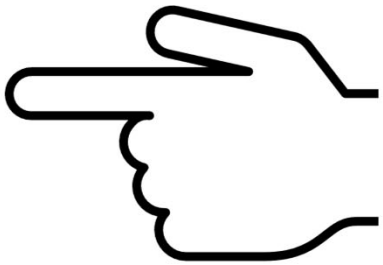
Are the criteria met to strongly suspect an UTI?

Order urinalysis and urine culture * **Yes**

- The role of urine C&S is to guide selection of antibiotic therapy
- Complete all fields on laboratory requisition including signs & symptoms and current or recent antibiotic use
- Repeating C&S after antibiotic therapy is NOT necessary unless typical UTI signs and symptoms persist.



If **mild** symptoms

Await results of urine C&S before starting treatment

If **moderate** to severe symptoms start empiric antibiotic therapy

For treatment recommendations refer to **Bugs & Drugs**

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Are the criteria met to strongly suspect an UTI?

No

If above criteria **NOT** met (no UTI symptoms)
Do not test urine for infection

- Continue to monitor for 24-48 hours
- Apply interventions as per assessment above
- Document findings

Improvement or UTI not suspected?

Do NOT collect urine for urinalysis or urine culture

No improvement & suspected UTI?

Contact prescriber to order urinalysis and urine culture *

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Urine culture testing may be indicated in:

- **Suspected Sepsis** - part of delirium work up
- **Multiple Sclerosis**
  - May experience new or worsening neurological symptoms with UTI
  - Refer to Towards Optimized Practice Multiple Sclerosis & Management Of Urinary Tract Infection Clinical Practice Guidelines
- **Spinal cord injury/neurogenic bladder**
  - Patients may not be able to express signs of UTI
  - Refer to Alberta SCI Bladder Management Pathway
- **Prior to invasive urological procedure**
  - Cystoscopy, TURP
  - If mucosal bleeding or trauma is expected

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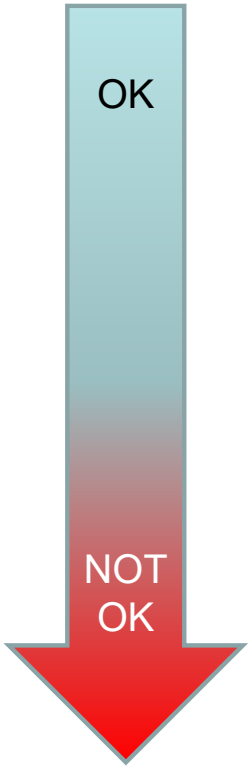
URINE COLLECTION

Urine collection

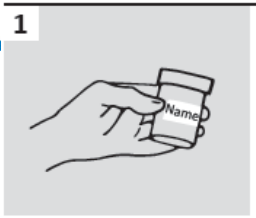
Quality urine samples are required to ensure quality results



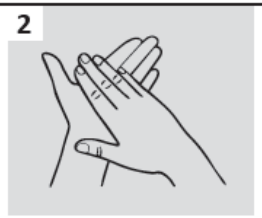
- **Mid-stream / Clean Catch**
  - Discard first of the urine. Stop urinating or continue to urinate, then collect the sample.
- **In-out catheter**
  - ensure decontamination of the urethral meatus before insertion of the catheter
- **Indwelling catheter**
  - collection from the catheter line with needle and syringe after decontamination of the line
  - Cultures should not be collected from the bag or the secondary spigot.
- "Hats' – in long term care centres
  - not sterile – poor quality samples.
- Nephrostomy samples
  - ensure the outlet is not contaminated with skin or other flora.
- Condom catheters
  - poor quality samples

MID-STREAM URINE COLLECTION

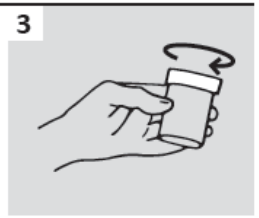
Mid-stream urine collection instructions



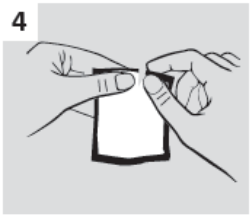
Check that your personal information on the label is **complete and correct**



Wash your hands with **soap** and **water**



Open the sterile container. Place it on a **clean** and **reachable** surface



Sit on the toilet. Open the anti-bacterial **napkin**

Spread the labia with your fingers. **Clean the vaginal area** with the napkin

Pull back the foreskin and **clean the tip of your penis** with the napkin

Begin to **pee** in the toilet and stop

Continue urinating in the container. Fill it up **half way**

Close the lid on the **container**. Wash your hands with **soap** and **water**

Designed by the Physician Learning Program at the University of Alberta

Mid-stream urine collection instructions

1. Check that your personal information on the label of the container is **complete and correct**
2. Wash your hands with **soap** and **water**
3. Open the sterile container. Place it on a **clean** and **reachable** place
4. Sit on the toilet
5. Open the anti-bacterial **napkin**. **Clean** the urinary opening

Females
- Spread the labia with your fingers
- Clean the vaginal area with the napkin
- Begin to pee and stop

Males
- Pull back the foreskin of your penis, exposing the head
- Clean the tip with the napkin
- Begin to pee and stop

6. **Continue urinating** in the container, filling it up just **half way.** Finish urinating into the toilet
7. Tightly **close** the lid on the **container**
8. Wash your hands with **soap** and **water**
9. **Return** the urine **container** to laboratory or triage staff

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INFORMATION FOR PATIENTS AND FAMILIES

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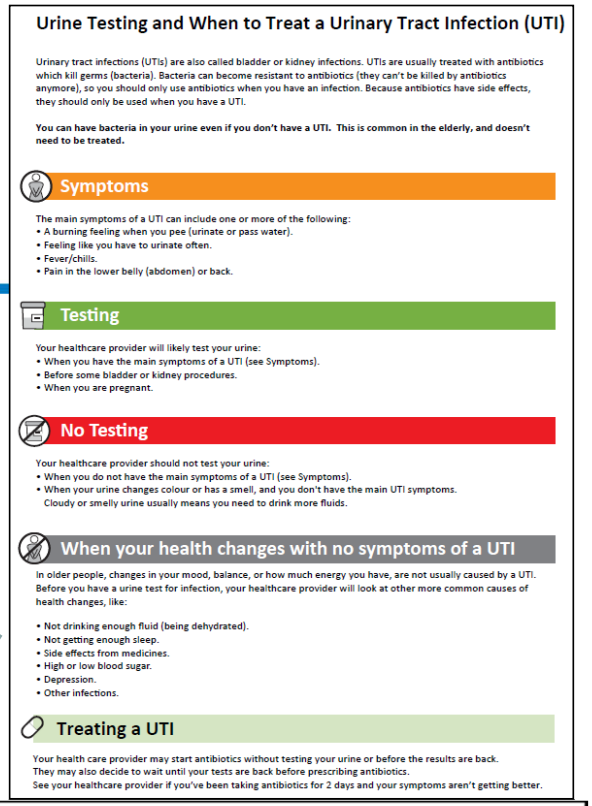
Information for Patients and Families

"*But – when grandma is like this she usually gets Cipro*"

Urine testing and when to treat a urinary tract infection (UTI) – MyHealth.Alberta.ca
https://myhealth.alberta.ca/health/pages/conditions.aspx?Hwid=custom.ab_urinetesting_utitreatment



Urine Testing and When to Treat a Urinary Tract Infection (UTI)

Urinary tract infections (UTIs) are also called bladder or kidney infections. UTIs are usually treated with antibiotics which kill germs (bacteria). Bacteria can become resistant to antibiotics (they can't be killed by antibiotics anymore), so you should only use antibiotics when you have an infection. Because antibiotics have side effects, they should only be used when you have a UTI.

You can have bacteria in your urine even if you don't have a UTI. This is common in the elderly, and doesn't need to be treated.

Symptoms

The main symptoms of a UTI can include one or more of the following:
- A burning feeling when you pee (urinate or pass water).
- Feeling like you have to urinate often.
- Fever/chills.
- Pain in the lower belly (abdomen) or back.

Testing

Your healthcare provider will likely test your urine:
- When you have the main symptoms of a UTI (see Symptoms).
- Before some bladder or kidney procedures.
- When you are pregnant.

No Testing

Your healthcare provider should not test your urine:
- When you do not have the main symptoms of a UTI (see Symptoms).
- When your urine changes colour or has a smell, and you don't have the main UTI symptoms. Cloudy or smelly urine usually means you need to drink more fluids.

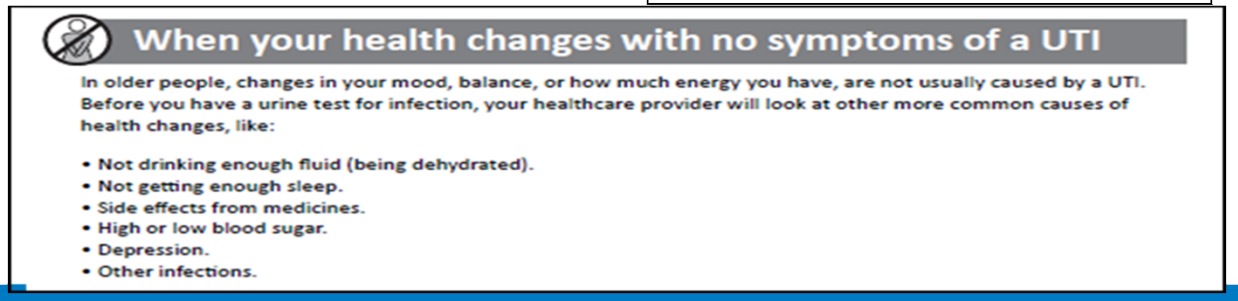
When your health changes with no symptoms of a UTI

In older people, changes in your mood, balance, or how much energy you have, are not usually caused by a UTI. Before you have a urine test for infection, your healthcare provider will look at other more common causes of health changes, like:

- Not drinking enough fluid (being dehydrated).
- Not getting enough sleep.
- Side effects from medicines.
- High or low blood sugar.
- Depression.
- Other infections.

Treating a UTI

Your health care provider may start antibiotics without testing your urine or before the results are back. They may also decide to wait until your tests are back before prescribing antibiotics. See your healthcare provider if you've been taking antibiotics for 2 days and your symptoms aren't getting better.



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- High or low blood sugar.
- Depression.
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URINE TEST INTERPRETATION

Key Points: Urine test results – Urinalysis (UA)

- Leukocytes – positive if ≥ 1+, or >5 WBC per hpf
  - Some labs report "Trace". Should not be considered positive without further investigation
- Nitrates – Any degree of pink on the strip is considered positive. No standard quality control test.
- Bacteria- Not very useful – depends on how the sample was collected

Nitrates and bacteria are not reliable for diagnosing infection

- Protein – May be helpful in combination with presence of leukocytes
- pH – In females pH may be reduced if significant contamination with vaginal flora

Negative UA = Not a UTI

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Culture & Sensitivity Results

- Bacteria in the urine (at any bacterial colony count) does not indicate a UTI unless there are signs or symptoms that are due to a UTI
- More than three organisms usually indicates contamination and the need to collect a new specimen

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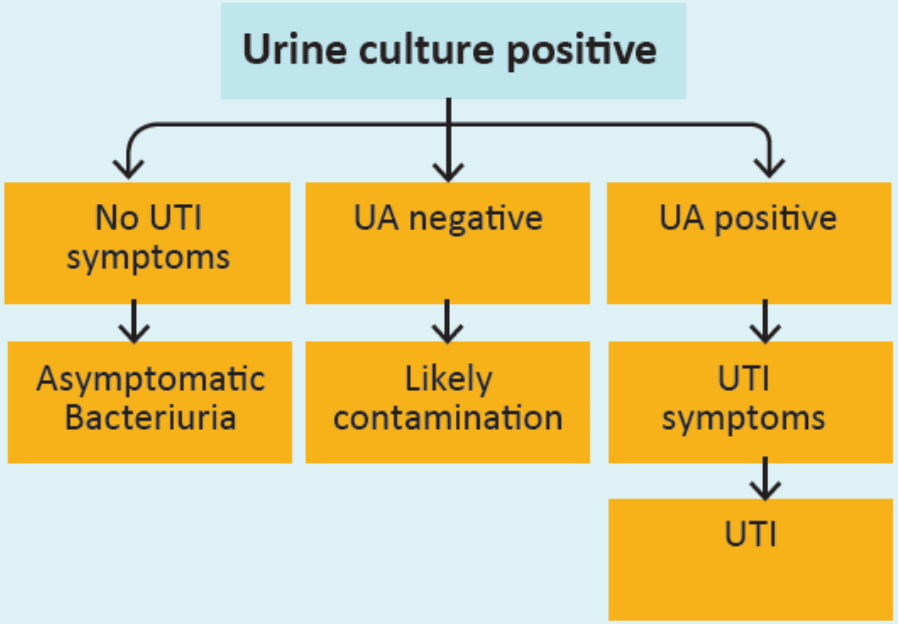
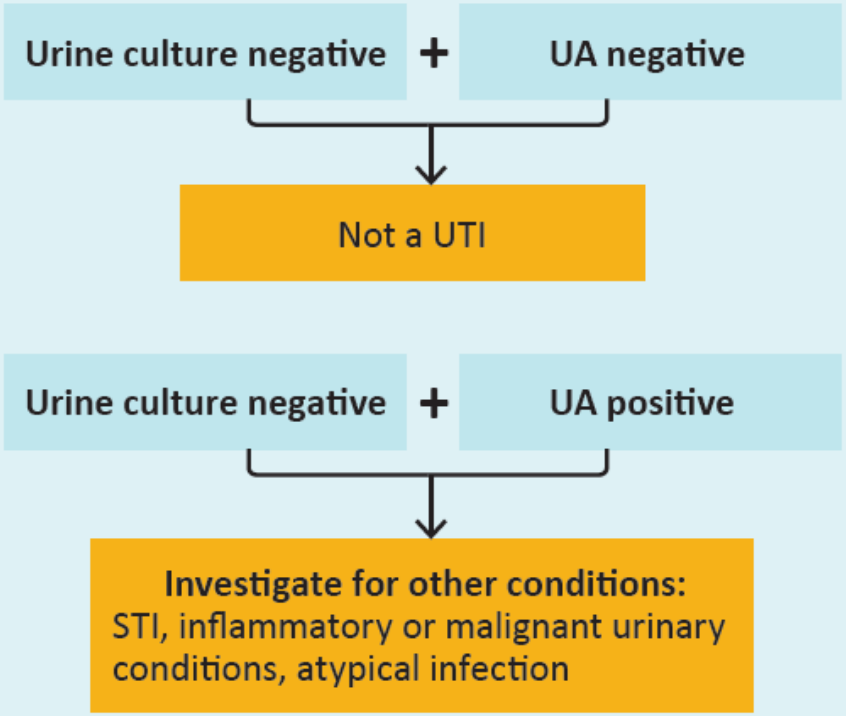
Key Points: Urine test results – Urine Culture

Positive urine culture

- ☐ 10^6 CFU/L: May be a significant colony count if patient has UTI symptoms.



Negative urine culture



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SUMMARY SLIDES

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Summary – Key Points

- Increasing resistance and inappropriate therapy lead to poor preservation of antibiotics and negative outcomes
- **UTI = presence of bacteria + typical symptoms**
- Non-specific symptoms have a wide range of causes
- Holistic approach helps to preserve antibiotics and guide appropriate and safe treatment
- Clinical decision making tools have impact on antibiotic prescribing

SUMMARY:

Evidence-based criteria for urine testing

- Strong clinical suspicion of UTI (localizing urinary tract symptoms/signs)
- Prior to invasive urologic procedure (e.g. cystoscopy)
- Suspected Sepsis

- Non-specific status or behavioural changes
- Routine (e.g., admission, pre-op)
- Cloudy, odorous urine
- Catheter insertion/changes
- After antibiotic therapy (i.e. test for cure)

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ANTIBIOTIC THERAPY SLIDES

Antibiotic Use for UTI

- First Line therapy of UTI
  - Nitrofurantoin 50mg -100mg qid (not if reduced CrCl)
  - Fosfomycin (somewhat expensive, may be useful for ESBL)
  - Cefixime - if antibiotic exposure in last 6 months or recurrence

No longer first line unless first episode UTI and no recent antibiotic exposure

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Thank you for your time!

What do you need to make the changes happen?

www.ahs.ca/ASAB

urinedxstewardship@ahs.ca

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Thank you for your time!

Questions/Feedback?