

Approach to Urinary Tract Infections (UTIs): Judicious use of antibiotics is important to prevent adverse events & antibiotic resistance

- ❑ Ensure the older adult is symptomatic prior to culture. Do not culture if asymptomatic. Differentiate symptomatic versus asymptomatic bacteriuria by looking for symptoms (see "Criteria for Symptomatic Bacteriuria", right).

ASYMPTOMATIC Bacteriuria:

- Routine screening & treatment is **NOT recommended in asymptomatic older adults** except for individuals undergoing genitourinary surgery/ procedures. Choosing Wisely
- A positive urinalysis or culture in the absence of symptoms (see below) indicates **colonization, not infection** (i.e. asymptomatic bacteriuria).
- Changes in the urine (e.g. smell, cloudiness) **or** mental status alone, without localized genitourinary symptoms, does **NOT** indicate a UTI.
- There is a high prevalence of asymptomatic bacteriuria in older adults (the bladder is normally colonized in many older adults).
 - The prevalence of asymptomatic bacteriuria in adults >70 years: ^{1,2}
 - In the community: up to 19%
 - In long-term care: up to 50%
 - Individuals with a **long-term indwelling catheter: 100%**
- Asymptomatic bacteriuria does not ↑ risk of mortality, & treatment does not ↓ risk of symptomatic UTI but can ↑ risk of adverse events & antimicrobial resistance. Choosing Wisely

The Many Risks Associated with Unnecessary Antibiotic Use

- ↑ Risk of adverse effects (e.g. *C. difficile*-associated diarrhea).
- ↑ Risk of antibiotic resistance.
 - Antibiotic resistance results in difficult to treat individuals:
 - Individuals will likely be ill or require treatment for a longer period of time
 - ↑ chance antibiotic resistance and/or illness will spread to others (especially in LTC homes via residents, staff, family or other visitors)
- ↑ Risk of drug interactions (e.g. SMX/TMP + warfarin = ↑ INR).
- Unnecessary medication cost (~\$20 to \$40/course for oral treatment).

It's HARD to Ignore a Positive (Culture & Sensitivity) C&S Test Result!

- Asymptomatic bacteriuria will produce a positive urine C&S (and urinalysis may be positive, too) despite the absence of an active infection.
- In individuals with a **long-term indwelling catheter**, a urine culture loses its diagnostic abilities as the prevalence of asymptomatic bacteriuria nears 100%. **The presence of symptoms must be relied upon for diagnosis**, and a urine culture only serves to direct antibacterial selection.
- Over-testing (testing when symptoms are not present) combined with the prevalent colonization of the bladder in older adults will not only result in unnecessary antibiotics but may result in clinicians overlooking the real diagnosis of a non-specific symptom.

Criteria for SYMPTOMATIC Bacteriuria (i.e. UTI) in LTC Residents (*What to look for*)

No Indwelling Catheter, Intermittent Catheterization, Condom Catheter

ONE of the following:

- ❑ Acute dysuria (pain on urination) **OR** acute pain, swelling or tenderness of the testes, epididymis or prostate
- ❑ Fever (oral temperature >37.8°C or 1.1°C above baseline)* **OR** chills **OR** leukocytosis **AND** at least one of the following:
 - New or increased urinary urgency **OR** frequency **OR** incontinence
 - New gross hematuria
 - New flank/costovertebral angle **OR** suprapubic pain/tenderness
- ❑ At least 2 or more of the following symptoms:
 - New or increased urinary urgency **OR** frequency **OR** incontinence
 - Gross hematuria
 - New flank/costovertebral angle **OR** suprapubic pain/tenderness

Indwelling Catheter (≥1 of the following):

ONE of the following:

- ❑ Fever (oral temperature >37.8°C or 1.1°C above baseline)* **OR** new onset hypotension with no alternate site of infection **OR** rigors
- ❑ Leukocytosis **AND** acute change in mental status **OR** acute functional decline
- ❑ New flank/costovertebral angle **OR** suprapubic pain/tenderness
- ❑ Purulent discharge from around the catheter **OR** acute pain, swelling or tenderness of the testes, epididymis or prostate

* **Fever:** older adults may not present with a fever, & may instead even be hypothermic. Assess if the individual recently received any medication(s) that can mask a fever or lower baseline temperature (e.g. acetaminophen ^{TYLENOL}, NSAIDs).

Clinical Challenge: Residents with impaired communication or dementia may be unable to report symptoms. In very old or frail or long-term care residents, cognitive impairment, delirium, falls, urinary incontinence, anorexia, or malaise may be the only initial or only clinical manifestation of UTI. If no other reason(s) for such clinical changes can be determined, the individual may need to be treated with antibiotics as they may have systemic effects of bacteriuria.³

Do not let non-specific symptoms complicate the assessment as these symptoms may be due to a variety of causes other than a UTI.

- **Foul smelling or cloudy urine** are not symptoms of a urinary tract infection but rather may be related to diet, dehydration, medication or hygiene.
- A **change in mental status, fatigue, or a fall** may be due to: pain, depression, constipation, dehydration, poor sleep, pneumonia, metabolic imbalance (e.g. low sodium), head trauma, environmental change or medication side effects.

It is important to consider a range of possible causes to prevent missing the real diagnosis. Causes of non-specific symptoms may be evaluated by doing the following:

- Monitor vital signs and symptoms for several days; encourage fluid intake if appropriate
- Watch closely for progression of symptoms or change in clinical status

Urinary Tract Infections (UTI) in Older Adults

❑ In a **symptomatic** individual, send a urine sample for culture & sensitivity (C&S) prior to starting empiric antibiotic therapy, to guide antibiotic selection.

- If the resident has had an indwelling catheter ≥ 14 days, **change catheter prior** to obtaining urine sample (often, removal of catheter & hydration all that is required).
 - When symptoms of a UTI develop in a catheterized individual, changing the catheter before collecting urine improves the accuracy of urine culture results. Changing the catheter may also improve the response to antibiotic therapy by removing the biofilm that likely contains the infecting organisms and that can serve as a nidus (or source) for reinfection.⁴ Biofilms can also cause persistent infections that are resistant to antimicrobial therapy.⁵
- If the resident has had an indwelling catheter < 14 days, collect urine via aspiration of the catheter tubing port (i.e. do not collect from the urine/collection bag).
- If unable to obtain a urine sample from a resident that does not have an indwelling catheter, use a condom catheter in men & in-and-out catheterization in women.

Dip stick: A negative dip stick result **rules out a UTI**; a positive dip stick result for leukocyte esterase, blood or nitrite is **NOT diagnostic for a UTI** but may assist in directing further testing (e.g. urine for C&S). **The regular use of dip sticks is not recommended.**

❑ **Consider starting empiric antibiotic therapy.** Base empiric therapy on the following:

- UTI treatment algorithms (see following pages)
 - Short-term indwelling catheters (< 30 days): *E. coli* is the most common pathogen
 - Long-term indwelling catheters (≥ 30 days): usually polymicrobial
- Local antibiograms/resistance rates, when available
- Presence of antibiotic allergies
- Recent antibiotic use (note any antibiotic therapy used over the past 3 months, and avoid using these agents to minimize the risk of resistance)
- Estimated calculated CrCl, e.g. $CrCl = [(140 - \text{age}) \div \text{SCr}] \times 90$ (and $\times 0.85$ for females)
 - If the most recent SCr was taken > 3 months ago, then obtain a more current SCr
- Consider drug-drug interaction potential (caution: sulfonyleureas or insulin fluoroquinolone associated hypoglycemia, warfarin SMX/TMP associated \uparrow bleed risk, or $K^+/\text{ACEI}/\text{ARB}$ TMP associated $\uparrow K^+$)
- Local LTC drug formulary or the individual's drug coverage

❑ **Determine the antibiotic duration of treatment (see below).** ^{6, 7, 8, 9, 10, 11, 12, 13}

- Lower UTIs in LTC: 7 days, then review symptoms to ensure resolution of UTI
- Pyelonephritis or complicated urinary tract infection: 7 to 10 days, then review to determine if treatment needs to be extended.
- **All elderly men:** treat for 10 days, then review symptoms to ensure resolution of UTI
- Considered complicated UTIs due to potential prostate involvement. *Note: Chronic prostatitis may require prolonged therapy (see alternate reference for treatment regimens).*
- **Older females living independently in the community with uncomplicated UTIs:** Treat with short courses of antibiotics, providing local resistance rates to empiric therapy are low (e.g. nitrofurantoin x 5 days, SMX/TMP x 3 days, cipro x 3 days)

❑ **Review urine C&S results once available.**

- If bacteria is present in the urine, use the narrowest spectrum antibiotic as per C&S
- If bacteria is not present in the urine, discontinue empirically started antibiotics
- A urine sample is contaminated if the urine C&S shows ≥ 3 organisms (will be reported as "mixed flora on C&S")
- DO NOT repeat C&S (i.e. "test of cure") after treatment completion when the older adult is asymptomatic Choosing Wisely

Recurrent Uncomplicated UTIs in Women ^{14,15 - SOGC 2017, 16 - European 2015}

- **Recurrent UTIs:** ≥ 2 culture positive UTIs in 6 months or ≥ 3 in 12 months (same or different organism) in **women** with no structural/functional abnormalities or other complicating factors (e.g. urinary catheters, nephrolithiasis, neuropathic bladder voiding disturbances).
- **Antibiotics:** Individualize prophylaxis options based on patient characteristics. ^{SOGC¹⁷}
 - ***Rule out structural and functional abnormalities.**
 - **Acute self-treatment:** Consider in those able to recognize symptoms. Prescribe 1st line regimen for uncomplicated UTIs (see below) to have on hand at home. High concordance between self-diagnosis & culture in appropriately selected individuals.
 - **Post-coital prophylaxis:** Consider in those where UTI routinely presents within 24 to 48 hours of intercourse. Single dose (e.g. nitrofurantoin 50 to 100mg x 1, TMP/SMX 200/40mg x 1, TMP 100mg x1) should be taken within 2 hours of coitus.
 - **Continuous prophylaxis:** Is effective for UTI prophylaxis (NNT=2 to 8) but may result in AEs (NNH=14). Repeat culture 1 to 2 weeks after acute treatment completion to ensure UTI eradication prior to initiating prophylaxis (e.g. TMP/SMX 200/40mg daily or 400/80mg 3 times weekly, TMP 100mg daily, and cephalexin 50 to 100mg daily). **Beers** recommends avoiding long-term use of nitrofurantoin in those ≥ 65 years of age due to risk of adverse effects (e.g. pneumonitis). ^{Beers¹⁹} Consider stopping antibiotic in 6 to 12 months to reassess. No studies were > 1 year. However, if the older adult becomes symptomatic on prophylaxis, culture urine, & treat accordingly including discontinuing prophylactic antibiotic.
- **Cranberry Products:** ¹⁷ Cranberry products inhibit adherence of *Escherichia coli* to the urogenital mucosa in pre-clinical trials; however, clinical utility is uncertain. ^{18,19} Current evidence **does not support** the use of cranberry juice/tablets for the prevention of UTIs; ^{20 21} *however, opinions vary.* ^{SOGC¹⁷}
 - A Cochrane review of 24 RCTs that looked at both the juice/concentrate ^{13 RCTs} & tabs/caps ^{10 RCTs - 1 looked at both} found no significant difference in the number of recurrent UTIs (including the elderly and catheterized patients). ²² Another meta-analysis of 13 RCTs looked at both the juice/concentrate ^{8 RCTs} & tabs/caps ^{4 RCTs - 1 looked at both} found a NNT of 12 to avoid a recurrent UTI over ~ 6 months. ²³
 - **Other considerations:** Cranberry juice/cocktail costs $\sim \$0.45$ - $\$0.66$ & contains 120 to 150 calories/250mL. Assuming 2 cups/day & the most positive data: ²⁴ A 1 in 12 chance of avoiding an UTI over 6 months would cost $\sim \$180$ & $\sim 45,000$ calories (5.8kg potential weight gain). ²⁵ Also, check sugar content \rightarrow risk of hyperglycemia.
- **Vaginal Estrogen:** May be of benefit in postmenopausal women with recurrent UTIs and guidelines recommend offering for these individuals. ^{SOGC¹⁷} Vaginal estrogens (creams, tabs, ring) reduced UTIs by up to ~ 35 to 75% in 2 RCTs. The optimal duration of treatment is unknown (trial durations were 8 and 9 months) and vaginal irritation occurred in $\sim 20\%$ of women. Other routes (e.g. oral, transdermal) are not recommended (oral estrogens did not reduce UTIs compared to placebo). ²⁶
- **Probiotics:** Not recommended as further research is required. ^{SOGC¹⁷} Probiotics did not reduce UTIs vs placebo in meta-analyses, but data is limited. ^{27, 28-Cochrane 2017, 2005}

Empiric Therapy for UNCOMPLICATED UTIs

- **Treatment duration typically 7 days;** however may treat with shorter course if older female living independently in the community (e.g. nitrofurantoin x 5 days).
- Note: All UTIs in **men** are considered complicated UTIs due to potential prostate involvement (see following page for Complicated UTIs).

1ST LINE THERAPY

| | |
|---|---|
| Nitrofurantoin ^B <small>MACROBID / IMACRODANTIN / NITROFURANTOIN</small> | 100mg BID ^{MACROBID} or 50 to 100mg QID ^{MACRODANTIN} CrCl <30mL/min: not recommended. Historically avoid if <60mL/min; <i>Beers</i> '15 update changed recommendation to avoid if <30mL/min. ²⁹ |
| <i>Give with food</i> | |
| Sulfamethoxazole & Trimethoprim (SMX/TMP)* ^B <small>BACTRIM / SEPTRA / COTRIMOXAZOLE</small> | 1 DS (double strength) tablet 800/160mg BID, or 2 single strength tablets of 400/80mg BID CrCl 15 to 30mL/min: ½ the dose CrCl <15mL/min: not recommended |
| Trimethoprim (TMP) ^{PROLOPRIM} ^B | 200mg daily or 100mg BID CrCl 15 to 30mL/min: ½ the dose CrCl <15mL/min: not recommended |
| Fosfomycin ^{MONUROL} <i>Take on an empty stomach</i> | 3g powder sachet x <u>1 dose</u> (dissolve powder in ½ cup of water; orange flavoured); ^B no dose ↓ required for 1 dose |
| Amoxicillin ^{AMOXIL} * <i>In SK, not for empiric use due to high resistance rates for E.coli</i> | 500mg TID or 1 gram BID CrCl <50mL/min: 500mg BID |
| Cephalexin ^{KEFLEX} * | 250 to 500mg QID CrCl 10 to 50mL/min: 250 to 500mg BID to TID CrCl <10mL/min: 250 to 500mg daily to BID |

2ND LINE THERAPY

| | |
|---|---|
| Amoxicillin/Clavulanate <small>CLAVULIN</small> | 875/125mg BID or 500/125mg TID CrCl <30mL/min: 500/125mg BID |
| Ciprofloxacin ^{CIPRO, CIPRO XL} * | 250mg BID or 500mg XL daily no dose ↓ required for uncomplicated UTI |
| Levofloxacin ^{LEVAQUIN} * | 250mg daily no dose ↓ required for uncomplicated UTI |
| Norfloxacin ^{NOROXIN} * | 400mg BID CrCl 10 to 50mL/min: 400mg daily - BID CrCl <10mL/min: 400mg daily |

* See column to the right regarding concerns with resistance rates to *E.coli*.

Additional Potential Antibiotics Options for Uncomplicated UTIs:

- **Cefixime** ^{SUPRAX} 400mg daily (^B **CrCl <20mL/min:** 200mg [½ tablet] daily)

Antibiotics to AVOID for UTIs:

- **Moxifloxacin** ^{AVELOX}: **DOES NOT CONCENTRATE IN THE URINE;** do NOT use to treat UTIs.




Antibiotics for UNCOMPLICATED UTIs (listed alphabetically)


| Antibiotic | Considerations for Older Adults |
|---|--|
| Amoxicillin ^{AMOXIL} ^B | When the medication may be an option: • 1st Line: for an UNCOMPLICATED UTI when susceptibility is confirmed with a C&S (ideal) or local % susceptibility is high When the medication may be problematic: • Caution with empiric use in regions with HIGH RESISTANCE RATES – Saskatchewan amoxicillin resistance rates for <i>E.coli</i> : ~40 to 50% |
| Amoxicillin/Clavulanate ^{CLAVULIN} ^B | When the medication may be an option: • 2nd Line: for an UNCOMPLICATED UTI When the medication may be problematic: • Not recommended as 1ST LINE FOR AN UNCOMPLICATED UTI – SK amoxicillin/clavulanate resistance rates for <i>E.coli</i> : ~15% |
| Cephalexin ^{KEFLEX} ^B | When the medication may be an option: • 1st Line: for an UNCOMPLICATED UTI when susceptibility is confirmed with a C&S (ideal) or local % susceptibility is high When the medication may be problematic: • Caution with empiric use in regions with HIGH RESISTANCE RATES – SK cephalexin resistance rates for <i>E.coli</i> : ~18% *includes non-urine isolates – Cefazolin susceptibility does not predict cephalexin susceptibility to <i>E.coli</i> , <i>Proteus mirabilis</i> or <i>Klebsiella spp.</i> |
| FLUOROQUINOLONES Ciprofloxacin ^{CIPRO, -XL} Levofloxacin ^{LEVAQUIN} Norfloxacin ^{NOROXIN} ^B | When the medication may be an option: • 2nd Line: for an UNCOMPLICATED UTI • Ciprofloxacin: UTI caused by <i>Pseudomonas spp.</i> When the medication may be problematic: • Not recommended as 1 st line therapy for an UNCOMPLICATED UTI • Caution with empiric use in regions with HIGH RESISTANCE RATES – SK ciprofloxacin resistance rates for <i>E.coli</i> : ~15-20% & ~40-50% LTC |
| See below note on moxifloxacin | |
| Fosfomycin ^{MONUROL} | When the medication may be an option: • 1st Line: for an UNCOMPLICATED UTI , however... – Consider reserving as an option for ESBLs & <i>Pseudomonas spp.</i> , or UTIs that have not responded to other antibiotic treatments • Note: Not routinely reported on C&S in SK |
| Nitrofurantoin ^{MACROBID / MACRODANTIN / NITROFURANTOIN} ^B | When the medication may be an option: • 1st Line: for an UNCOMPLICATED UTI with a CrCl >30/min When the medication may be problematic: • ^B for LONG-TERM SUPPRESSION – Potential for pulmonary, hepatic, & peripheral nerve toxicity, especially with long-term use. Safer options available. <i>Beers (Low, Strong)</i> |
| ^B Avoid if CrCl <30mL/min | |
| Sulfamethoxazole & Trimethoprim (SMX/TMP) ^{BACTRIM / SEPTRA / COTRIMOXAZOLE} ^B ^B (see trimethoprim below) | When the medication may be an option: • 1st Line: for an UNCOMPLICATED UTI When the medication may be problematic: • CrCl <15mL/min: not recommended • Avoid in individuals with a SULFA ALLERGY (SMX component) • ^B Caution if high K ⁺ or taking medications that ↑ K ⁺ (e.g. ACEI, ARB) – Saskatchewan SMX/TMP resistance rates for <i>E.coli</i> : ~20-30% |
| Trimethoprim (TMP) ^{PROLOPRIM} ^B | When the medication may be an option: • 1st Line: for an UNCOMPLICATED UTI , patient with a SULFA ALLERGY When the medication may be problematic: • Note: TMP resistance not routinely assessed in Canada • If C&S shows resistant to SMX/TMP, then assumed resistant to TMP |


Empiric Therapy for COMPLICATED or PYELONEPHRITIS

- Treatment duration typically 7 to 10 days. May extend up to 14 days in some cases.
- **Complicated UTIs:** any UTI in older males or females with a structural abnormality, urinary catheter, kidney stone, urinary retention, renal or perinephric abscess formation, diabetes, or who are immunosuppressed.
- **Upper UTIs:** any UTI with constitutional symptoms (e.g. fever, chills, flank pain).


1ST LINE THERAPY


Sulfamethoxazole & Trimethoprim (SMX/TMP)*
BACTRIM / SEPTRA / COTRIMOXAZOLE  1 DS (double strength) tablet 800/160mg BID, or 2 single strength tablets of 400/80mg BID
 **CrCl 15 to 30mL/min:** ½ the dose
 **CrCl<15mL/min:** not recommended




Ciprofloxacin CIPRO, CIPRO XL * 500mg BID or 1 gram XL daily
 **CrCl ≤30mL/min:** max 500mg/day

Levofloxacin LEVAQUIN * 500 to 750mg daily
 **CrCl 20 to 49mL/min:** 500mg x 1, then 250mg daily
CrCl 10 to 19mL/min: 500 to 750mg x 1, then 250 to 500mg every 48 hours

2ND LINE THERAPY


Amoxicillin/Clavulanate
CLAVULIN 500/125mg TID or 875/125mg BID
 **CrCl <30mL/min:** 500/125mg BID

Norfloxacin NOROXIN * 400mg BID
 **CrCl 10 to 50mL/min:** 400mg daily to BID
CrCl <10mL/min: 400mg daily

Trimethoprim (TMP) PROLOPRIM  200mg daily or 100mg BID for upper UTI
 200mg BID for complicated UTI
 **CrCl 15 to 30mL/min:** ½ the dose
 **CrCl<15mL/min:** not recommended

* See column to the right regarding concerns with resistance rates to *E. coli*.











Additional Potential Antibiotic Options for Complicated UTIs:

- **Cefixime** SUPRAX 400mg daily ( **CrCl <20mL/min:** 200mg [½ tablet] daily)
- **Cephalexin** KEFLEX: not recommended empirically
 – May use as step down therapy if sensitivity confirmed with C&S (**Cephalexin** KEFLEX 500mg QID)

Antibiotics to AVOID for Complicated UTIs:

- **Amoxicillin** AMOXIL: not recommended for a **COMPLICATED UTI** or **UPPER TRACT UTI** (unless combined with clavulanate)
- **Fosfomycin** MONUROL: not recommended for a **COMPLICATED UTI** or **UPPER TRACT UTI**
- **Moxifloxacin** AVELOX: **DOES NOT CONCENTRATE IN THE URINE**; do NOT use to treat UTIs.
- **Nitrofurantoin** MACROBID / MACRODANTIN / NITROFURANTOIN: **DOES NOT CONCENTRATE IN THE KIDNEY OR PROSTATE**; not recommended for a **COMPLICATED UTI** or **UPPER TRACT UTI**

Antibiotics for COMPLICATED or PYELONEPHRITIS (listed alphabetically)

| Antibiotic | Considerations for Older Adults |
|--|---|
| Amoxicillin/Clavulanate <small>CLAVULIN</small>  | <p>When the medication may be an option:</p> <ul style="list-style-type: none"> • 2nd Line: for UNCOMPLICATED UTI, COMPLICATED UTI, PYELONEPHRITIS or for a UTI IN SYMPTOMATIC CHRONIC CATHETERIZED individuals <p>When the medication may be problematic:</p> <ul style="list-style-type: none"> • Not recommended as 1ST LINE FOR AN UNCOMPLICATED, COMPLICATED UTI OR PYELONEPHRITIS (broad spectrum antibiotic) |
| FLUOROQUINOLONES Ciprofloxacin <small>CIPRO, -XL</small>  Levofloxacin <small>LEVAQUIN</small>  Norfloxacin <small>NOROXIN</small>  | <p>When the medication may be an option:</p> <ul style="list-style-type: none"> • 1st Line: for COMPLICATED OR PYELONEPHRITIS when low resistance levels or UTI IN SYMPTOMATIC CHRONIC CATHETERIZED individuals • 2nd Line: for an UNCOMPLICATED UTI • Ciprofloxacin: UTI caused by <i>Pseudomonas aeruginosa</i> <p>When the medication may be problematic:</p> <ul style="list-style-type: none"> • Not recommended as 1st line therapy for an UNCOMPLICATED UTI. • Avoid empiric use in regions with HIGH RESISTANCE RATES – SK ciprofloxacin resistance rates for <i>E. coli</i>: ~15-20% & ~40-50% LTC |
| See below note on moxifloxacin | |
| Sulfamethoxazole & Trimethoprim (SMX/TMP) <small>BACTRIM / SEPTRA / COTRIMOXAZOLE</small>   (see trimethoprim below) | <p>When the medication may be an option:</p> <ul style="list-style-type: none"> • 1st Line: for UNCOMPLICATED, COMPLICATED UTI OR PYELONEPHRITIS <p>When the medication may be problematic:</p> <ul style="list-style-type: none"> •  CrCl <15mL/min: not recommended • Avoid in individuals with a SULFA ALLERGY (SMX component) • Avoid empiric use in regions with HIGH RESISTANCE RATES •  Caution if high K⁺ or taking medications that ↑ K⁺ (e.g. ACEI, ARB) – Saskatchewan SMX/TMP resistance rates for <i>E. coli</i>: ~24% |
| Trimethoprim (TMP) <small>PROLOPRIM</small>   | <p>When the medication may be an option:</p> <ul style="list-style-type: none"> • 1st Line: for an UNCOMPLICATED UTI • 2nd Line: COMPLICATED UTI OR PYELONEPHRITIS • Can be used in an individual with a SULFA ALLERGY <p>When the medication may be problematic:</p> <ul style="list-style-type: none"> • Note: TMP resistance not routinely assessed in Canada • If C&S shows resistant to SMX/TMP, then assumed resistant to TMP |

Why is it important to obtain a urine culture & sensitivity (C&S) in older adults?

- A urine C&S confirms the pathogen and antibiotic susceptibility. Treatment algorithms & local antibiograms are helpful when selecting empiric antibiotic therapy, but both have caveats to consider:
 - Treatment algorithms may include broad geographic resistance rates versus local data.
 - Local antibiograms may report sensitivities for all isolates versus separating out by urine specimens or population (e.g. LTC residents). Urine samples are more likely to be collected in complicated UTIs which may skew data for uncomplicated UTIs.
- **Amoxicillin, cephalexin, fluoroquinolones & SMX/TMP** are treatment options for UTIs, but antibiotic resistance rates to *E. coli* are high in certain geographic areas.
- 2010 IDSA Guideline suggests selecting alternative empiric therapy if local resistance is >20% with SMX/TMP for uncomplicated UTI & >10% with FQs for upper UTI treatment.³⁰ A Canadian study found a national SMX/TMP resistance rate to *E. coli* of 16%.³¹ This rate was ↑ to 21.4% in females ≤50 years of age & ↓ to 10.7% in females >50 years of age.³²
- Once C&S is confirmed, ensure antibiotic therapy suitable for C&S results. This may require changing from the empiric antibiotic to an antibiotic to which the bacteria is sensitive.

GENITOURINARY

Urinary Tract Infections in Older Adults

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