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A URINARY TRACT INFECTION IS THE SECOND MOST FREQUENT INFECTION IN LONG-TERM CARE FACILITIES

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WHAT YOU NEED
TO KNOW

URINARY TRACT INFECTIONS IN OLDER PERSONS

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WHAT YOU NEED TO KNOW

WHAT IS A URINARY TRACT INFECTION?

Urinary tract infection (UTI) is the second most frequent infection in long-term care (LTC) facilities and the most common cause of hospitalization for bacterial infection². Urinary tract infection is a condition characterized by significant bacterial count (108 CFU/L) accompanied by symptoms of UTI and confirmed by urine culture and sensitivity¹. Urinary tract infection is distinct from asymptomatic bacteriuria, which is the presence of microorganisms in the urinary tract *without* associated signs and symptoms of disease. Asymptomatic bacteriuria does not require antibiotic treatment. It is common for the elderly to have bacteria in their urine. In fact, 15%–30% of men and 25%–50% of women in LTC may have bacteria in their urine without symptoms².

UTIs are commonly suspected in residents of LTC homes, and it has been common practice to prescribe antibiotics to these patients, even when they are asymptomatic (i.e. asymptomatic bacteriuria). Public Health Ontario states that 50% of antibiotic use in LTC homes is unnecessary and 78% of residents receive at least one antibiotic course each year¹. Unnecessary antibiotic use does more harm than good, leading to increased rates of adverse drug effects and more recurrent infections with drug-resistant bacteria. It does not improve genitourinary

symptoms (i.e. polyuria or malodorous urine) or lead to improved mortality rates; thus, distinguishing UTIs from asymptomatic bacteriuria is imperative in the LTC setting.

RISK FACTORS

Risk factors for UTI include³: age and gender (i.e. female sex if under the age of 65 years), sexual intercourse, pregnancy, indwelling urinary catheters and urinary tract instrumentation, and incomplete voiding and residual volume due to neurological syndromes, obstruction (i.e. stones, large prostate, tumor) or neuromuscular disease (i.e. stroke, diabetes).

DIAGNOSIS, SIGNS, SYMPTOMS

UTI is suspected when a resident has new difficult or painful urination OR two or more of the following: fever (oral temperature >37.9°C or 1.5°C above baseline on 2 consecutive occasions within 12 hours), new flank pain or suprapubic pain/tenderness, new or increased urinary frequency/urgency, gross hematuria or acute onset of delirium in residents with advanced dementia¹. Note that elderly patients and patients with urinary catheters and neurologic conditions may not experience or report the above signs and symptoms¹. Urine culture is obtained for diagnosis if a resident is suspected to have a UTI based on the aforementioned criteria. Urine specimen can be obtained as a mid-stream or in/out catheter specimen. Bacterial count greater than 108 CFU/L, with signs and symptoms is compatible with UTI⁴.

Non-specific symptoms of UTI, such as worsening functional status, falls or worsening mental status (i.e. new behavioural changes, increased confusion, acute delirium or agitation) do not indicate an UTI unless clinical symptoms develop¹. In these cases, assess for other causes of behaviour change.

Some patients may be asymptomatic but have significant bacteriuria. It is not recommended to screen patients for asymptomatic bacteriuria unless residents have the indicated clinical signs and symptoms of an UTI³.

TREATMENT/DRUG THERAPY

Guidelines recommend nitrofurantoin macrocrystals as the first-line empiric treatment in residents with uncomplicated UTI (refer to Table 1)⁵. Nitrofurantoin has low rates of resistance, is generally well-tolerated and has limited effects on resistance to other antimicrobials⁵. Some LTC residents may not be candidates for nitrofurantoin due to having complicated UTI and/or impaired creatinine clearance⁶. Trimethoprim-sulfamethoxazole (TMP-SMX) is the second-line therapy and has reasonable resistance rates (refer to Table 1). In addition, TMP-SMX has lower rates of C. difficile than fluoroquinolones or amoxicillin-clavulanate⁶. Ciprofloxacin is considered as an alternative to TMP-SMX. Ciprofloxacin has reasonable resistance rates, generally well-tolerated, and allows for shorter course of therapy in comparison to other drugs⁵. However, it induces resistance to fluoroquinolones and other antimicrobials, has an increased risk of C. difficile and has a risk of QT-prolongation⁷. Another alternative is amoxicillin-clavulanate. Amoxicillin-clavulanate has low rates of resistance and minimal side effects, but requires a longer-course of therapy versus other drugs and may cause diarrhea^{5,6}. The recommended duration for uncomplicated UTI treatment is 3 days for lower UTI and 5 days for upper UTI¹.



TABLE 1. Medications used to treat uncomplicated UTIs^{1,5,6,7,8,9}

Medications	Dosage	Comments
Nitrofurantoin macrocrystals Macrobid	100mg bid x 5 days <i>CrCl <30ml/min: not recommended</i>	Administer with meals to improve absorption and decrease adverse effects.
Trimethoprim-sulfamethoxazole (TMP-SMX) Septra, Bactrim, Co-trimoxazole	1 DS bid x 3 days <i>CrCl 15-30ml : 1/2 the dose</i> <i>CrCl <15ml/min: not recommended</i>	Administer with at least 8 ounces of water.
Fosfomycin	3 g sachet in a single dose	Dissolve 1 packet (3 g) in 3-4 oz of cold water.
Fluoroquinolones Ciprofloxacin Levofloxacin	ciprofloxacin 250mg bid daily levofloxacin 250mg once daily <i>CrCl: no dose adjustment required with these doses for uncomplicated UTI</i>	May be taken with or without food. Prolongation of QT interval - avoid use in patients with known QT prolongation, those with hypokalemia, and those taking other QT-prolonging drugs. Should be taken at least (Ciprofloxacin: 2 hours before or 6 hours after; levofloxacin: 2 hours before or 2 hours after) taking other products that may bind to it, including certain medications, calcium, zinc and iron supplements. Ciprofloxacin: Do not use the suspension with feeding tubes because the suspension may clog the tube.
Amoxicillin-clavulanate	875/125mg bid x 5-7 days <i>CrCl 10-30 mL/min: 250 - 500mg every 12H</i> <i>CrCl <10mL/min: 250- 500 mg every 24H</i>	Take with meals to avoid GI upset.

PREVENTION AND RECURRENT UTIs

Avoid using the same antibiotic if recurrent UTI within 3 months⁵. Residents with recurrent UTIs of 3 or more per year could be considered for prophylactic therapy of low dose antibiotic for 6 months⁵. Limiting the use of catheters, ensuring proper hydration and good perineal hygiene are important in UTI prevention³.