

RECURRENT UTIS

Recurrent urinary tract infection (UTI) is one of the most common reasons for long-term antibiotic use among older people in residential aged care homes. Long-term prophylaxis with antibiotics reduces the risk of postmenopausal women experiencing a recurrent UTI. However, inappropriate antibiotic use is a key driver of antibiotic resistance. The Aged Care Standards require evidence of practices to promote appropriate antibiotic prescribing and use to support optimal care and reduce the risk of increasing resistance to antibiotics.

Definition

Urinary tract infection refers to the presence of bacteria in the urine, above 100,000 colony-forming units (CFU)/mL. It consists of cystitis (bacteria in the bladder), urethral syndrome (frequency and dysuria syndrome) or pyelonephritis (infection in the kidneys). UTIs are referred to as uncomplicated with no structural or functional abnormalities within the urinary tract, or complicated, with an abnormal urinary tract. *Escherichia coli* accounts for 70 to 95% of infections.

Asymptomatic bacteriuria is widespread in aged care homes; however, it does not require antibiotic treatment or prevention. Unnecessary urine testing and antimicrobial therapy contribute to antimicrobial resistance. Cloudy or malodorous urine in aged-care facility residents who do not have other symptoms or signs of UTI should not be investigated or treated.

Recurrent UTI refers to the occurrence of 2 or more symptomatic episodes within 6 months or 3 or more symptomatic episodes within 12 months.

Presentation

Cardinal symptoms of urinary tract infections include:

- Dysuria (pain on passing urine)
- Urinary urgency
- Urinary frequency
- Suprapubic pain or tenderness

Older people with an UTI may present with confusion or altered mental status.

Recurrent UTIs present as dysuria or irritative voiding symptoms. Recurrent UTIs in men may be due to bacterial prostatitis.

Management

Increased water intake may reduce the risk of recurrent UTIs if fluid intake is inadequate. Frequent bladder emptying and perineal hygiene measures should be encouraged.

Antibiotics

Use of antibiotics may be appropriate when at least 2 infections occur in 6 months or at least 3 infections in one year. In women, Therapeutic Guidelines recommends continuous use for 6 months with one of the following antibiotics:

- Trimethoprim 150mg at night
- Cefalexin 250mg at night
- Nitrofurantoin 50mg at night

It is important that these preventive antibiotics are reviewed after 6 months and not continued long-term. In the 2018 Aged Care National Antimicrobial Prescribing Survey (NAPS), cefalexin was the most commonly prescribed antibiotic for treatment and prevention of UTIs.

Prophylactic antimicrobial therapy to prevent recurrent UTIs is not recommended for residents with complicated UTIs. Long-term use of nitrofurantoin (Macrochantin) is associated with increased risk of rare adverse effects, including severe pulmonary reactions, hepatotoxicity and peripheral polyneuropathy.

Older people may be more susceptible to hyperkalaemia with use of trimethoprim (Triprim, Alprim). Serum potassium concentration should be monitored regularly, especially if the resident has reduced renal function or taking other medicines that can increase serum potassium (e.g. spironolactone, ACE inhibitors).

Oestrogen therapy

In post-menopausal women, use of topical oestrogen may reduce the incidence of recurrent UTIs.

Intravaginal oestrogen in postmenopausal women may be beneficial, especially if atrophic vaginitis is present. The lowest effective dose should be used.

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- Oestriol 1mg/g cream (Ovestin) once or twice weekly
- Oestriol pessary 500mcg (Ovestin Ovula) once or twice weekly
- Oestradiol pessary 10mcg (Vagifem Low) twice weekly

Methenamine Hippurate

The evidence for methenamine hippurate (Hiprex) for the prevention of UTI is poor and inconsistent. However, it does not appear to promote development of antimicrobial resistance.

A 2012 Cochrane review concluded that methenamine hippurate may be effective against recurrent UTIs. A small Swedish trial demonstrated that methenamine hippurate 1g given twice-daily for two years reduced recurrent symptomatic infections by 73% compared with placebo.

In acidic urine, methenamine (hexamine) is hydrolysed to formaldehyde, which has antibacterial activity. Hiprex is available on the Pharmaceutical Benefits Schedule (PBS) for the suppression or elimination of bacteriuria associated with chronic or recurrent infection of the urinary tract, especially when long-term therapy is indicated. Usual dose is 1G twice daily.

Methenamine hippurate should not be administered to residents with reduced renal function (eGFR less than 50mL/min). Side effects are usually mild, include nausea, upset stomach, painful urination, rash and inflammation of the mouth.

Cranberry

It has been suggested cranberry products (juice, tablets, capsules, syrup) prevent recurrent UTIs. Cranberries are an important source of flavonoids that have antioxidant and anti-inflammatory properties. Cranberries are known to contain proanthocyanidins, which may prevent bacteria (particularly *E. coli*) from adhering to uroepithelial cells that line the wall of the bladder. Without adhesion, *E. coli* cannot infect the mucosal surface of the urinary tract.

However, the evidence of benefit with cranberry is conflicting. Therapeutic Guidelines does not recommend cranberry products for the prevention of recurrent symptomatic UTIs.

In a small trial of older women living in residential aged care home, administration of cranberry capsules (containing 72mg proanthocyanidin) resulted in no significant difference in presence of bacteriuria plus pyuria compared to placebo over one year.

A review of 9 trials concluded that cranberry products can significantly reduce the incidence of symptomatic UTIs in 12 months compared to placebo.

Theoretically, using cranberry instead of antibacterials might reduce the risk for the development of antibacterial-resistant organisms.

Alkalinising agents

There is limited evidence for long-term use of alkalinising agents such as Ural or Uricil. Urinary alkalinisers can provide relief of UTI symptoms. Uricil also contains turmeric, which has antioxidant, anti-inflammatory and antimicrobial actions.

Concomitant use of urinary alkalinisers and quinolone antibiotics (e.g. norfloxacin) should be avoided due to the risk of crystalluria. It should not be used in conjunction with methenamine hippurate because it requires an acidic urine for benefit. High sodium and potassium content may be problematic in residents with cardiovascular disease including heart failure.

Ascorbic acid

Ascorbic acid (vitamin C) not effective for prevention of UTIs.

Summary

Recurrent urinary tract infections are common in residents in aged care homes. Adequate fluid intake, avoidance of risk factors, vaginal oestrogens and low-dose antibiotics are effective management strategies to prevent recurrent UTIs.

Therapeutic Guidelines recommends trimethoprim as the first-choice for prevention of recurrent UTIs, if indicated for six months duration with subsequent review. Over-treatment with antibiotics is common in aged care homes and a key driver of antimicrobial resistance.

References

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