The control of urinary tract infection in hospitalised older people

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Urinary tract infection (UTI) is the most common hospital-acquired infection (HAI). UTIs vary in their frequency and effect in different patient populations. Linda Bissett examines the problem of UTI in older patients, a group in which its incidence is high and where it is a cause of increased morbidity.

**key words**
- Older people
- Urinary tract infection
- Hospital-acquired infection

**references**

**methods**
- Methods for the prevention and treatment of infection.
- A study by Glynn et al (1997) discovered that although most hospitals audited prescribing practice, the audits lacked regularity and rigour.
- It was found that in most of the 19 hospitals taking part in the study, compliance with the antibiotic policy was poor, with antibiotic use continuing beyond the recommended time.
- Less than half the hospitals encouraged junior doctors and nurses to comment on the antibiotic policy. This study recommended the involvement of key stakeholders to ensure compliance with the policy.
- Antibiotic resistance will occur as a consequence of antibiotic use even where they are used appropriately (Fraise, 1997). Mechanisms exist in both pathogenic bacteria (those capable of carrying disease) and commensal bacteria (carried harmlessly) to facilitate long-term survival in the face of antibacterial assault.
- Manges et al (2001) found the widespread distribution of a new multi-drug resistant *Escherichia coli*, clonal group A. Research undertaken with three groups of volunteers in the US suggests that *E. coli* clonal group A was responsible for 50 per cent of the infection identified in the study.
- It is resistant to co-trimoxazole (a mixture of trimethoprim and sulfamethoxazole), a drug used in the treatment of UTI, and this is a major cause for concern. Clonal group A appears to represent a new lineage of multi-drug resistance rather than the established clone that has acquired antibiotic resistance.

**the role of health care professionals in the control and reduction of UTI**
- Effective hand hygiene practice is the first and most effective defence against cross-contamination (Voss and Widmer, 1997). All staff with direct patient contact should be educated in proper hand-hygiene practice.
- The need for hands to be washed before and after contact with each patient must be emphasised and the proper use of alcohol-based hand gels or rubs should be encouraged to reduce the risk of transmitting infection (Bissett, 2002).

**patient education**
- Patients should be encouraged to maintain a good standard of personal hygiene. If the patient has an indwelling urinary catheter and can use it independently, he or she should be encouraged to wash his or her hands before and after attending to it.
- Patients should be encouraged to drink two to three litres of fluids a day to help eliminate bacteria from the urinary tract. This is often difficult for older people to achieve and is a particular problem for older people with disability who may have difficulty accessing fluids and urinary infection in older people in institutionalised care is problematic. It is suggested that less than 10 per cent of patients who present with a fever and a positive urine culture have a UTI (Orr et al, 1996).
- Bacteriuria is common in older patients. Routine urinalysis that gives positive results for leukocytes and nitrites (which can indicate infection) should not lead to a urine sample being sent for culture if the patient is asymptomatic. It is important to consider the signs and symptoms associated with the genitourinary tract.

**use of antibiotics**
- The World Health Organization (1995) cites infectious disease as the leading cause of death worldwide. It views the increase in microbial resistance as a major problem in hospital and community-acquired infections. The need for caution in the use of antimicrobial therapy is therefore necessary.
- Antimicrobial resistance has been described as a major threat to public health (Wise et al, 1998) so the overuse of antibiotics and the increase in antibiotic resistance have led to an examination of alternative
Urinary tract infection (UTI) can be symptomatic, asymptomatic, complicated or uncomplicated. A symptomatic UTI is identified by the presence of clinical symptoms that can be attributed to the presence of bacteria in the urinary tract. This may present as an acute uncomplicated UTI or an acute non-obstructive pyelonephritis (bacterial infection of the kidney).

Asymptomatic UTIs occur when causative organisms can be isolated in appropriate numbers from a urine sample in the absence of any clinical symptoms. Complicated UTIs may be either symptomatic or asymptomatic and can involve the lower or upper urinary tract. These are related to functional or structural abnormalities of the genitourinary tract (Nicolle, 1997), for example glomerulosclerosis (fibrosis of the glomeruli as a result of inflammation).

**Urinary tract infections** Eighty-five per cent of UTIs are caused by Escherichia coli (Sobel, 1991), which is the most common hospital-acquired infection (HAI).

Emmerson et al (1996) suggest that UTI accounts for 26.8 per cent of HAIs in the UK and the Republic of Ireland. A study by Gazzani et al (2001) showed that of 161 urine samples obtained from patients, 46 (28.6 per cent) had more than 100 white blood cells per millilitre, while normal urine contains no white blood cells on microscopy. However, only 34 (21.1 per cent) had more than 100 white blood cells per millilitre, while normal urine contains no white blood cells on microscopy.

**The older population in hospital** A survey on HAI in 1996 showed that 48.8 per cent of male and 50.7 per cent of female patients were at least 65 years of age (Emmerson et al, 1996). In total, 30 per cent of all patients in the acute hospitals surveyed were at least 75 years of age and were not confined to wards designated for the care of older people.

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**Factors influencing the incidence of UTI in older patients** Research has shown that up to 60 per cent of women will have a UTI in their lifetime (Foxman et al, 2000). UTI is more common in women than men (Monane et al, 1995) but this gap closes with age (Lipsky, 1989).

The increase in the number of UTIs in older people may be due to the physiological changes associated with ageing. Enlargement of the prostate gland and reduced testosterone levels are considered to be factors in the increase of UTI in men.

In women, the weakness of pelvic floor muscles and the reduction of bladder capacity and vaginal secretions are all believed to play a part. Other risk factors include: decreased functional abilities; cognitive impairment; cerebrovascular disease; immobility; faecal incontinence; incomplete bladder emptying; and previous antibiotic therapy (Marchiondo, 1998).

There are age-related changes in the way that drugs are distributed, metabolised and eliminated from the body (pharmacokinetics). Factors include the reduction of liver mass and blood flow, increased body fat and reduced renal function (Drake et al, 1998). Smoking, alcohol consumption and nutritional status may also affect the way drugs are metabolised by older people.

Drake et al (1998) suggest that the bladder is vulnerable to the adverse effects of drugs because of its complex control mechanisms and the question of drug resistance in elderly patients requires closer examination.

**Bacterial infections** The older population in hospital is the most common hospital-acquired infection (HAI). Most infections occurred in patients who had been in hospital for more than 14 days. The length of stay for patients acquiring an HAI was significantly higher, ranging from seven to 124 days (the mean being 34 days), compared with a mean of 13 days for patients who were not infected.

Older people living in nursing or residential homes are particularly at risk of developing a UTI (Harkins, 2000). Studies by Brocklehurst et al (1977) and Baldassarre and Kaye (1991) confirm that older people in institutionalised care are at greater risk of UTI than those living in the community.

**REFERENCES**


Bacterial Resistance to Antimicrobial Agents

American Journal of Medicine 1995


REFERENCES


RECOMMENDATIONS

- McMurdo and Davey (1993) suggest that the aim of treatment in lower UTI should be symptomatic relief and not the attainment of a negative urine culture. They also state that in view of the susceptibility of older people to the adverse effects of antimicrobial agents, consideration should be given to the use of three-day courses of antimicrobial therapy. This would also have the effect of reducing the amount of antimicrobial use, so lowering the possibility of antimicrobial resistance.

- Doctors are encouraged not to treat asymptomatic UTI. McMurdo and Gillespie (2000) state that the diagnosis of urinary infection in frail older people should be based on careful clinical evaluation.

- Urine samples should only be sent for culture in the presence of specific clinical symptoms and should only be used to confirm antimicrobial sensitivity.

- The routine testing of urine in older patients should be discontinued to prevent the unnecessary prescribing of antibiotic therapy.

- The perineal area should be cleaned following defecation to reduce the possibility of contamination of the urethra with perineal bacteria.

- Patients should be encouraged to drink two to three litres of fluid a day.

- Urinary catheterisation should be avoided if possible.

FOOTNOTE

Although the term ‘health care-associated infection’ is now in common use, the term ‘hospital-acquired infection’ has been used throughout this article as it focuses on hospitalised older people.

Conclusion

With good infection-control practices, especially good hand-hygiene technique, UTI in older patients could be greatly reduced. Careful clinical examination is necessary before treatment for a UTI is commenced.

Requests for urine sample testing are only necessary when genitourinary related symptoms are present and urinalysis is positive for leukocytes and nitrites. This may further reduce what appears to be a large number of infections being reported in this at-risk group.

Clinicians must ensure they adhere to their trust’s protocols for antibiotic use. These measures should be audited on a regular basis to ensure compliance and to assess their effectiveness.

Encouraging perineal hygiene in independent patients and assisting dependent patients with post-defecation hygiene measures also play a role. More research is required into the use of cranberry juice among older patients in the hospital setting.