Catheter-associated urinary tract infections: primary care guidelines

catheterisation, the anticipated duration of catheterisation, any history of latex allergy and the patient’s preference. If an indwelling catheter is required, either a urethral or suprapubic catheter may be used. Alternative catheter systems, such as intermittent catheterisation or penile sheaths, should be considered as they have a lower risk of infection.

Urinary catheters are made of different materials. There is no difference in the rates of bacteriuria between silicone and latex catheters (Pratt et al, 2001), although there is some evidence that bacteria are less likely to adhere to hydrophilic-coated catheters than silicone-coated ones (Roberts et al, 1993).

However, many practitioners have strong preferences for one type over another, based on clinical experience, patient assessment and which materials induce the least allergic response.

There is also some evidence that the balloon material on all-silicone Foley catheters has a greater tendency to ‘cuff’ on deflation than latex catheters, especially when used for suprapubic catherisation, which may cause distress when the catheter is removed (Medical Devices Agency, 2001).

Whichever catheter is selected, those with the smallest possible gauge (12-14Ch for urethral catheters, 17Ch for suprapubic catheters) and with a 10ml balloon are generally used to minimise trauma, mucosal irritation and residual urine, all of which are factors that predispose patients to CAUTI (Saint and Lipsky, 1999; Roe and Brocklehurst, 1987).

Catheter insertion Catheterisation is a skilled procedure for which health care staff require training and an assessment of their competence. Health care professionals should use an aseptic procedure when performing a catheterisation, although it is not necessary to use aseptic preparations to clean the urethral meatus before catheter insertion (Kuinin, 1997; Ward et al, 1997). The use of a sterile, single-use lubricant or anaesthetic gel will minimise trauma and discomfort.

Although intermittent self-catheterisation is not an aseptic procedure, hands should be decontaminated before and after (Shekkele et al, 1999). A lubricant will be required if a non-lubricated catheter is used.

Catheter maintenance Following catheterisation, several techniques to reduce the risk of infection are recommended for use by health care staff, patients and their carers. These include:

- Maintaining a closed urinary drainage system;
- Avoiding urinary reflux;
- Promoting general catheter and meatal hygiene.

In primary and community health care settings, long-term (>28 days) urinary catheterisation (LTC) is most commonly used in managing older people and those with neurological conditions. Studies suggest that in the UK LTC is used in 0.5 per cent of people aged 75 or over (Kohler-Ockmore and Feneley, 1996) and in four per cent of people receiving domiciliary care (Getliffe and Mulhall, 1991).

Most health-care associated infections (HAIs) are caused by indwelling urinary catheters (Stamm, 1998). Many of these infections are serious and lead to significant morbidity. In acute care facilities, 20–30 per cent of catheterised patients develop bacteriuria, of whom two to six per cent develop symptoms of urinary tract infections (UTIs) (Stamm, 1998).

The duration of catheterisation is strongly associated with risk of infection – the longer the catheter is in place, the greater the likelihood of infection. As the risk of acquiring bacteriuria is about five per cent for each day of catheterisation (Garibaldi et al, 1982), most patients with LTC have bacteriuria after 20 days. The NICE guidelines are intended to form the core of an infection-prevention strategy for reducing the risk of catheter-associated urinary tract infections (CAUTIs).

Developing the guidelines We have previously described the methods we used to develop these guidelines (Pellowe et al, 2003). These specific recommendations for preventing CAUTIs are underpinned by a general set of evidence-based guidelines that describe the standard principles for preventing health care-associated infections. Our guidelines cover:

- Assessing the need for catheterisation;
- Selection of catheter type and system;
- Catheter insertion;
- Catheter maintenance;
- Education of patients, carers and health care staff.

Assessing the need for catheterisation As catheterisation frequently results in clients developing UTIs, and because catheter care in the community is time-consuming and expensive, LTC should be regarded as a last resort. The continuing need for indwelling catheterisation must be reviewed and documented regularly and the catheter removed as soon as possible.

Selection of catheter type and system Choosing the right catheter system for each patient will be influenced by the results of a comprehensive individual assessment. This will include the need for

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**KEY WORDS**

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**REFERENCES**


Closed urinary drainage system The most effective way of avoiding CAUTIs is to maintain a sterile, continuously closed urinary drainage system (Ward et al, 1997). Any breaches in the system, such as unnecessary emptying or changing of the urinary bag, increase the risk of infection and should be avoided. However, if health care staff need to access the system, they should decontaminate their hands and wear clean, non-sterile gloves. Those managing their own catheters should wash their hands before and after manipulation of the catheter.

Avoiding urinary reflux As reflux of urine is associated with infection, catheters should be secured to avoid trauma and drainage bags positioned in a way that prevents backflow of urine and contact with the floor (Kunin, 1997; Ward et al, 1997).

For night drainage, a link system – a bag attached to the end of the day system – should be used to maintain the integrity of the closed system (Kennedy and Brocklehurst, 1992). Drainable urinary drainage bags should be changed in line with manufacturers’ recommendations, generally every five to seven days, or sooner if clinically indicated – for example, if the bag is malodorous or damaged. Bags that are non-drainable should be used once, for example overnight, and emptied before disposal. When urine samples are required they should be obtained from a sampling port using an aseptic technique.

General catheter and mental health Washing the urinary meatus with soap and water during routine bathing or showering is encouraged to promote mental hygiene. It is not necessary to use antiseptic/antimicrobial agents for this (Pratt et al, 2001).

More than 50 per cent of patients with long-term catheters will experience catheter encrustation and blockage (Kunin, 1997; Roe and Brocklehurst, 1987). The tendency to encrustation is multifactorial and includes patient factors, catheter materials and micro-organisms. The use of bladder instillations or washouts have no proven value in preventing infections, and may cause local toxic effects and contribute to the development of resistant micro-organisms (Pratt et al, 2001; Kennedy and Brocklehurst, 1992). Therefore, they should not be used and instead each newly catheterised patient should have his or her tendency for encrustation monitored and an individual care regimen designed to minimise encrustation and blockage.

Changing catheters There is no definitive evidence as to the optimal interval for changing catheters in patients undergoing long-term urinary drainage, via either the urethral or suprapubic route, in order to prevent CAUTI. Given the points made above, catheters should only be changed when clinically necessary or according to manufacturers’ current recommendations. The use of antibiotic prophylaxis at the time the catheter is changed should be reserved for those with a history of CAUTI following catheter change and those patients who have a heart valve lesion, septal defect, patent ductus arteriosus or prosthetic valve (Saint and Lipsky, 1999). Patients who use intermittent self-catheterisation may either use disposable single-use catheters or, if reusable, they can clean them with water and store them dry in accordance with manufacturers’ instructions.

Education of patients, carers and health care personnel Much of the care that takes place in the community is undertaken by the patients themselves, their families or non-professional carers. Consequently, any decision to use long-term catheterisation must involve an assessment of patients’ circumstances and their ability to manage the system themselves or with the help of their families or non-professional carers. To do this, they need to understand the importance of hand decontamination and must be trained to do this effectively. They will also need to know how to obtain and store their equipment. Finally, ongoing support and follow-up training need to be available for the duration of catheterisation.

Primary and community health care personnel must be trained in catheter insertion, including suprapubic catheter replacement and catheter maintenance.

Implementation and audit These guidelines provide an opportunity for health care staff to be confident that their practice is current and evidence-based. The recommendations can be used for audit purposes, the results of which can highlight further education and training needs.

All newly catheterised patients should have a patient record that documents the integrity of the catheter when it is first changed and any adjustments made to their care regimen. Direct questioning of patients and their carers can identify their understanding of the importance of hand decontamination and keeping the system closed.

The guidelines are the first step in establishing consistency in practice in the management of urinary catheters, regardless of care setting. We are confident that their incorporation into routine clinical practice will significantly promote patient safety by reducing the high risk of infection associated with urinary catheterisation.

REFERENCES


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