The urinary catheter: 'a-voiding catastrophe'

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A quarter of all patients admitted to hospital are catheterized. This is associated with significant morbidity and occasional mortality. This article reviews the risks of urinary catheterization and suggests preventative measures.

Closed catheter drainage systems have been in regular use since the 1960s (they were first introduced by Sir Cuthbert Dukes (1928)). Alarmingly, hospital use of urinary catheters has been indiscriminate with many being left in situ for unnecessarily long periods. Up to 25% of hospital admissions are catheterized (Haley et al, 1981; Saint and Lipsky, 1999), this being responsible for 80% of nosocomial urinary tract infections (Stamm et al, 1977). The fatality rate in hospital patients with catheter-associated urinary tract infections is three times higher than in non-infected individuals (Platt et al, 1982). This article emphasizes the potential hazards of urinary catheterization and their avoidance.

UTILIZATION AND HAZARDS OF CATHETERIZATION

Urinary catheters are commonly used for:

- The accurate measurement of urinary output and improved nursing care
- Urinary retention or incontinence
- Intravesical drug instillation
- Bladder irrigation
- Protection of lower urinary tract anastomoses.

The duration of catheterization is the most important risk factor for the development of significant morbidity (Platt et al, 1986) (*Table 1*), such as urinary tract infections, pyelonephritis and septicaemia, with the latter being potentially fatal (Kunin et al, 1992).

PATIENTS AT HIGH RISK

Short-term catheterization is associated with asymptomatic or transient bacteriuria, which resolves after catheter removal and requires no treatment (Sedor and Mulholland, 1999). The incidence of febrile episodes, although low, is commonly associated with long-term catheterization (Warren et al, 1987). If a febrile event occurs, aggressive treatment should be instigated, particularly in long-stay elderly male patients and those with debilitating diseases.

Importantly, 95% of urosepsis-related deaths, secondary to indwelling catheters, occur in patients over 50 years of age (Stamm et al, 1977). Thus, catheterization should be avoided unless absolutely necessary in this group.

AVOIDING CATHETER UROSEPSIS

Catheters should be restricted to carefully selected individuals, because of the obvious hazards. If the use of catheters is unavoidable, they should be removed at the earliest opportunity. If

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TABLE 1.
Infection risks of closed drainage system catheterization

Duration of catheterization	Risk of infection (%)
<24 hours	1–2
<7 days	10–40
>30 days	100

From Garibaldi et al (1974); Haley et al (1981); Turck and Stamm (1981); Platt et al (1986); Kunin et al (1992);Saint and Lipsky, (1999)

left in situ, certain basic principles should be followed. These include:

- Aseptic insertion of catheters with regular meatal cleansing using an antiseptic solution
- Hand washing by all health professionals is essential, both before and after handling catheters, to reduce cross infection (Steere and Mallison, 1975), as 15% of nosocomial urinary tract infections are the result of cross infection (Bukhari et al, 1993)
- Disinfecting all closed system connections after any manipulation
- Avoidance of urinary stasis within the system by placing the drainage bag below the bladder
- If obstruction, break of aseptic technique or leakage occurs, then the entire system needs to be replaced
- Prophylactic antibiotics before urinary catheterization can result in antibiotic resistant strains (Magoha, 1997), however, their use is important in high-risk groups, such as long stay elderly males and debilitated patients.

Alternatives to indwelling urethral catheters include:

- Condom catheters in patients with an intact voiding pathway (lower risk of infection and incidence of bacteriuria) in selected patients
- Suprapubic catheters, which have an associated morbidity when inserted, but have no increased risk of infection compared to urethral catheterization (Horgan et al, 1992).

The latter is also more convenient for patients and health professionals.

CONCLUSION

The most important factor in the reduction of nosocomial urinary tract infections and urosepsis is a reduction in the use of the urinary catheters. When considering urinary catheterization, all health professionals should be aware of the potential risks of insertion. If catheterization is absolutely necessary, the principles of asepsis outlined above should be strictly adhered to, and most importantly the catheter should be removed as soon as possible, thus avoiding catastrophe. HM

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KEY POINTS

- A quarter of all hospital admissions are catheterized.
- Incidence of morbidity and mortality is directly related to the period of catheterization.
- The fatality rate in hospital patients with catheter-associated urinary tract infections is three times greater than in non-infected individuals.
- High-risk groups for catheter-associated urosepsis and resulting mortality are long stay elderly male patients or those with debilitating illnesses.
- If catheterization is absolutely necessary, the basic principles of aseptic management should be strictly adhered to and/or it should be removed at the earliest opportunity.