The control and prevention of hospital-acquired infections

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Recently the public’s attention has been focused on the issue of hospital-acquired infections. The latest Audit Commission report (National Audit Office, 2004) reveals an increase in MRSA cases from 7,250 in 2001-2002 to 7,647 in 2003-2004. This has resulted in new action plans for prevention and control of infection.

Modern health care has brought many benefits, but one unfortunate side-effect of treating large numbers of people in close proximity has been the growth of hospital-acquired infections (HAI).

What are hospital-acquired infections?

HAI is a term used to describe all infections that do not stem from the patient’s original diagnosis on admission.

HAIs are caused by bacteria, viruses or parasites that originate from the hospital environment, contaminated equipment, staff, or other patients. The most common types are urinary tract infections, chest infections, and surgical wound infections (National Audit Office, 2004).

Recently, the public’s attention has been focused on the issue of HAIs due to the publicity surrounding so-called ‘superbugs’ such as methicillin-resistant Staphylococcus aureus (MRSA), which, in part due to overprescribing, have developed immunity to antibiotics.

MRSA is carried in the nose or on the skin. In the community it is relatively harmless, but in hospitals it can be dangerous due to the concentration of people with disease and open wounds, and to the virulence of the organism. Strict infection control procedures are the best defence against MRSA, but one study found that less than half of health care staff complied with them (Girou et al, 2002).

The surveillance of HAIs in England

Surveillance involving data collection, analysis and feedback to clinicians is vital when attempting to detect HAIs. However, the latest National Audit Office report (NAO, 2004) states that there has been little improvement in the information available on the incidence and cost of HAIs since the NAO’s original report on hospital infection rates in 2000 (NAO, 2000).

This is partly due to inconsistency in policy. The original NAO report recommended that the voluntary Nosocomial Infection National Surveillance Scheme (NINSS), instigated in 1996, be made mandatory. However, instead of this, a new approach was introduced in April 2001 with mandatory laboratory-based MRSA bloodstream infection surveillance.

In 2002 responsibility for HAI surveillance transferred to the Health Protection Agency, which continued mandatory trust-wide surveillance of MRSA bacteraemias, other specific organisms, and orthopaedic surgical site infections. However, had it developed the system to include specific areas such as bloodstream, surgical site, and urinary tract infections, this information could have been fed back to clinicians to influence practice. Instead, as the data is collected across whole hospital sites clinical staff cannot relate it to their particular specialties.

This mandatory laboratory-based MRSA surveillance has helped identify increases in the frequency of infections resistant to common antibiotics, albeit with wide regional variations. To supplement this figures are supplied by the Public Health Laboratory Services Communicable Disease Centre’s voluntary reporting system, which shows increases in infections (Fig 1).

The latest Audit Commission report concludes that there has been limited progress in the implementation of comprehensive mandatory surveillance. For example, the only kind of MRSA hospitals have to report is bloodstream infections, which have increased from 7,250 in 2001-2002 to 7,647 in 2003-2004. As a result accurate data, other than that on rates of hospital-wide MRSA, is unavailable for the NHS in England. It is therefore impossible to accurately quantify any changes in NHS trusts’ infection rates.

Prevention and control

The basic principles of infection control are (Ayliffe et al, 2000):● Remove sources of infection by treating infections and decontamination procedures;
● Prevent transfer with good hand hygiene, aseptic procedures, and appropriate isolation;
● Enhance resistance with good nutrition, and appropriate antibiotic prophylaxis or vaccination.

These should underpin all nursing practice and are fundamental in the prevention of HAIs. Every hospital must have policies in place to ensure the control and prevention of infection. Nurses are likely to be aware of policies regarding hand hygiene, use of protective clothing, and safe disposal of sharps (NAO, 2004).

There are other key policies important in the control of infection including policies that will reduce the infection risk from use of catheters, tubes, cannulas, and those regarding the prudent use of antibiotics. However, infection control is a complex problem. For example, HAI risks
are greatly increased by extensive movement of patients in the hospital, by high bed occupancy, and by an absence of facilities to isolate infected patients.

New plans have been unveiled this week including giving nurses more power to keep wards clean, enabling patients to ‘speed dial’ cleaners (p2), MRSA and cleanliness targets (p5), and bringing in foreign experts (p4).

**Nursing implications**

It is easy to blame the increase in HAIs on falling standards but it should be remembered that medical advances have resulted in more patients surviving, such as those with cancer or the critically ill. During treatment these patients are more vulnerable to infection.

Plans to allow patients to request cleaners have no evidence base. In fact, despite the attention given to hospital cleanliness and sections of the media and public being convinced that dirty hospitals cause infections, research evidence does not sustain this view (Patel, 2004). Instead the control of HAI depends on a number of issues.

Over the last few years many trusts have implemented hand hygiene initiatives to raise awareness of the issues and improve compliance. Good infection control measures are often simple practical interventions, many of which are nurse led, such as putting alcohol hand gels at every bedside, holding awareness days, and organising educational activities (Dentith and Shelmerdine, 2004). Hand hygiene is a crucial factor in the control of HAI because hands can easily transfer micro-organisms from one area or patient to another. Despite strategies promoting hand hygiene there still seems to be difficulty persuading staff to adopt good practice (Shuttleworth, 2004).

However, failure to comply with measures such as good hand hygiene, is rarely due to laziness or lack of care, but due to barriers preventing effective practice:

- Poor knowledge of the guidelines;
- A lack of education;
- Inadequate facilities;
- Time pressures;
- Lack of access to hand hygiene agents.

Schemes to improve handwashing compliance by staff wearing badges saying ‘ask me if my hands are clean’ have been considered successful (Dentith and Shelmerdine, 2004) although investigation into the effect on infection rates have not been undertaken.

**Conclusion**

Good infection control is essential but the complex nature of infection means that it is not always easy to achieve. Accurate surveillance that provides information to clinicians about where improvements can be made, comprehensive education, regular updates, and good hospital policies are all necessary to control the spread of HAIs.