

Infection prevention and control

The following extract is taken from section five of ***Standards and Recommendations for Safe Perioperative Practice (Fifth Edition)***, published by The Association for Perioperative Practice.

Surgical site infections (SSIs) remain the third most common healthcare associated infection (HCAI) in the UK (HPA 2011). The most recent prevalence surveys of HCAIs in UK hospitals indicate that at any one time between 6 and 8% of patients have an HCAI and that SSIs account for up to 16% of all HCAIs (HPA 2011). According to a five-year NHS SSI surveillance study, the cumulative inpatient or readmission-detected SSI incidence ranges from 8.7% in large bowel surgery to <1% in hip and knee replacement surgery (PHE 2018). Although SSIs are an avoidable cause of harm associated with healthcare, they continue to be a significant burden (WHO 2018).

Every SSI is an additional use of NHS resources, increases the discomfort of the patient and reduces the quality and safety of patient care (NICE 2014). The additional time patients spend in the hospital due to an SSI varies from 3 to 54 days, depending on the surgical speciality and procedure. The pain, anxiety and loss of earnings that patients experience due to SSIs have a negative impact on their health-related quality of life (Pinkney et al 2013, Badia et al 2017). In addition, SSIs are a significant cost to healthcare organisations, owing to prolonged postoperative hospitalisation, surgical re-intervention, increased medical staffing needs and the cost of investigating and treating the infection (Badia et al 2017).

Microbial contamination of the wound site can occur by several routes and pathogens. The most common microorganisms isolated from SSIs across all surgical categories are Enterobacteriaceae, Staphylococcus aureus, methicillin-sensitive Staphylococcus aureus, coagulase-negative staphylococci, Enterococcus, Pseudomonas, Streptococcus and methicillin-resistant Staphylococcus aureus (PHE 2018). One major source of infection is the flora on the patient's skin. Contaminated-type surgeries may further increase the bacterial load of the site with genital, intestinal, respiratory and urinary flora. Alongside this, the surgical staff, the operating environment and surgical instruments are all potential sources of bacteria (Jolivet & Lucet 2018).

Minimising the risk of SSIs requires measures to be taken before, during and after surgical procedures involving a cut through the skin (NICE 2019) by:

- removing microorganisms that normally colonise the skin, e.g. by using evidence-based antiseptic skin preparation
- preventing the multiplication of microorganisms at the operative site, e.g. by using prophylactic antibiotics in procedures that carry an increased risk of SSIs, e.g. clean surgery involving the placement of a prosthesis, clean-contaminated or contaminated surgery (NICE 2019)
- minimising the number of microorganisms introduced into the operative site from airborne particles, instruments and equipment, e.g. by wearing correct surgical attire, maintaining instrument sterility and minimising staff/movement in the theatre
- enhancing the patient's defences against infection, e.g. minimising tissue damage and maintaining normothermia
- preventing access of microorganisms into the incision postoperatively by using appropriate interactive wound dressings (NICE 2019).



Protecting patients and staff from infection

In addition to practices directed at reducing the introduction of bacteria into the wound site, the compliance of all staff with evidence-based infection prevention and control protocols is essential to protect patients and staff from infection. Infections often occur when pathogens cross contaminate different sites on the same patient, or when they are spread between patients. In addition, blood-borne viruses such as hepatitis B, hepatitis C and HIV present a particular hazard in the operating environment, where the risk of splashing with blood/body fluid is high and exposure to blood occurs in the presence of sharp instruments.

The delivery of care must routinely ensure that all risks of transmission are minimised, in particular through (Loveday et al 2014):

- hospital environmental hygiene
- hand hygiene
- use of PPE
- safe use and disposal of sharps
- principles of asepsis.

Everyday practice within healthcare organisations must include the rigorous application of infection prevention and control measures, which should be carried out consistently by all surgical staff members during the care of all patients. Perioperative practitioners have a professional duty of care to minimise the risk of infection to their patients, their co-workers, and to themselves.

In England and Wales, the Code of Practice on the prevention and control of infections sets out ten criteria against which a registered provider is judged against to ensure compliance with the registration requirement for cleanliness and infection control (DH 2015). Other parts of the UK have country-specific guidelines:

- In Scotland, all healthcare organisations should adhere to the Standard for HCAI (HPS 2015), which is aligned with the National Infection Prevention and Control Manual (HPS 2015)
- In Northern Ireland, the Northern Health and Social Care Trust is responsible for the delivery of safe and effective health and social care services. Their strategy should be implemented in accordance with the Regional IPC Manual for Northern Ireland (NHSCT 2014, PHA 2015).

- In Wales, national infection control policies are available from the Welsh Healthcare Associated Infection Programme (2015).

National evidence-based guidance on the prevention of HCAI in NHS hospitals in England was updated in 2014 (Loveday et al 2014). Recommendations for evidence-based practice to prevent SSI are also contained in two clinical guidelines from NICE (2008, 2019).

References and further reading

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