

MINI REVIEW

ROLE OF NURSE IN PREVENTION OF NOSOCOMIAL INFECTION

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Patients being treated in healthcare settings like hospitals or other such facilities, have an increased risk for acquiring infections during long and short term care. Nosocomial or hospital acquired infections result from delivery of health services in a healthcare facility. A hospital is one of the most likely places to “catch” an infection because they harbor a high population of microorganisms that may become resistant to antibiotics. Unfortunately, healthcare workers transmit many nosocomial infections¹.

Some of the factors influencing risk of infection in hospitals are: the number of health care workers who have direct contact with a patient, the type and number of invasive procedures, the therapy received, and the length of time the client spends in the hospital.

The most common sites for hospital acquired infections include surgical or traumatic wounds, urinary and respiratory tracts, and the bloodstream.

Nosocomial infections significantly increase the costs of healthcare. It may give rise to extended stays in healthcare facilities, increased disability, increased costs of antibiotics, and prolonged recovery times which further add to the client’s and healthcare facility’s expenses. Etiological agents vary and include antibiotic resistant bacteria, particularly *Staphylococcus aureus*, Gram negative bacilli and enterococci, viruses (which account for up to 20% of cases), and fungi².

Risk factors for nosocomial infection

Risk factors of hospital acquired infections include duration of hospital stay, indwelling catheters, mechanical ventilation, use of total parenteral nutrition, antibiotic usage, use of histamine (H₂) receptor blockers (owing to relative bacterial overgrowth), age-more common in neonates, infants, and the elderly, immune deficiency.

Control of infection

☞ **Hand washing:** The hands of staff are the commonest vehicles by which microorganisms are transmitted between patients. Hand washing is accepted as the single most important measure in infection control (Figure 1).

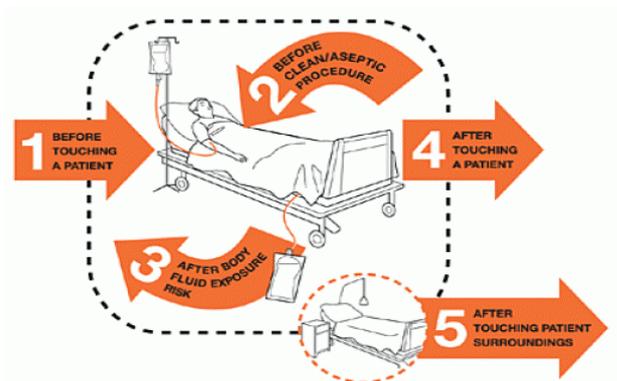


Fig. 1. Moments of hand hygiene

☞ **Gloves:** Gloves are useful additional means of reducing nosocomial infection, but they supplement rather than replace hand washing. Possible microbial contamination of hands and transmission of infection has been reported despite gloves being worn. Not surprisingly, health care workers who wash their hands more often are also more likely to wear gloves. Single use gloves should never be washed, resterilized, or disinfected, and gloves must be changed after each patient encounter³ (Figure 2).



Fig. 2. Glove technique

↪ **Gowning:** Gowning help keeping infectious materials off clothing, although in some centers they are used more as reminders that the patient is isolated. Staff gowning in the neonatal intensive care unit is a necessary custom for prevention of infection. The universal use of gloves and gowns was found to be no better than the use of gloves alone in preventing rectal colonization by vancomycin resistant enterococci in a medical intensive care unit.

↪ **Masks:** It has been shown that wearing surgical facemasks decreases postoperative wound infections. When originally introduced, the primary function of the surgical mask was to prevent the migration of microorganisms residing in the nose and mouth of members of the operating team to the open wound of the patient. However, it is now recognized that most bacteria dispersed by talking and sneezing are harmless to wounds. Masks help for preventing nosocomial infection (Figure 3).



Fig. 3. Working with surgical masks

↪ **Stethoscopes:** Some health personnel have difficulty in accepting that the stethoscope, the symbol of their professional status, may actually be a vector of disease. Cleaning the stethoscope's diaphragm resulted in an immediate reduction in the bacterial count—by 94% with alcohol swabs, 90% with a non-ionic detergent, and 75% with antiseptic soap⁴.

↪ **Intravenous catheters:** In critically ill patients, intravenous lines are responsible for at least one quarter of all nosocomial blood stream infections, with 25% reported mortality. Most causative organisms originate from the skin: staphylococci cause two thirds of the infections, with *S aureus*, accounting for 5–15% of these infections. The insertion of an intravenous needle or cannula results in a break in the body's natural defences. Organisms can enter the circulation from contaminated fluid or a giving set, or can grow along the outer surface of the cannula.

Prevention of complications requires careful insertion practice and optimal catheter care. The hands should be disinfected with alcohol and gloves should be worn. The skin of the insertion site must be thoroughly disinfected with alcoholic chlorhexidine or 70% isopropyl alcohol for at least 30 seconds and allowed to dry before inserting the cannula. The use of a clear, adhesive, bacteria impermeable dressing to secure the cannula has become popular⁵.

↪ **Limited visitors and cleanliness of wards:** Nurse should advise patient's relatives to avoid continuous visits to the patient. Daily cleaning helps for prevention of nosocomial infection^{6,7}.

Practical methods for preventing nosocomial infection

- Hand washing as often as possible use of alcoholic hand spray while hand washing, removing jewellery before washing
- Stethoscope: cleaning with an alcohol swab at least daily
- Gloves: supplement rather than replace hand washing
- Intravenous catheter: thorough disinfection of skin before insertion changing administration sets every 72 h.
- Gowning: routine use in neonatal units
- White coats: enforced use in clinical units

Conclusion

Nosocomial infections are worth preventing in terms of benefits in morbidity, mortality, duration of hospital stay, and cost. Educational interventions promoting good hygiene and aseptic techniques have generally proved to be successful, but these practices are often not sustainable. Greater efforts are being made by the nursing staff ensure the application of the infection control evidence base into practice.

References

1. Wenzel RP. (1995) The economics of nosocomial infections *J Hosp Infect* 31(2):79-87.
2. Saloojee H, van Wersmeskerken A (1999) Neonatal bacteraemia and pseudobacteraemia at Chris Hani Baragwaneth Hospital. *Proceedings of the Eighteenth Conference on Priorities in Perinatal Care in Southern Africa, University of Pretoria, Pretoria.*
3. Larson EL.(1995) APIC guideline for hand washing and hand antisepsis in health care settings. *Am J Infect Control* 23(4):251-69.
4. Basavanhappa (2002) Prevention of nosocomial infections. *Hosp Infect* 22:88-99.
5. <http://www.slideshare.net/amarjit38/nosocomial-infection-infection-7577087>
6. <http://www2.keelpno.gr/blog/?p=1140&lang=en>
7. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3963198>

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