Your role in infection pre

Nurses have the unique opportunity to reduce the potential for hospital-acquired infections. Utilizing the skills and knowledge of nursing practice, you can facilitate patient recovery while minimizing complications related to infections. We give you the basic strategies you need for positive patient outcomes.

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According to the CDC, hospital-acquired infections (HAIs) account for an estimated 1.7 million infections and 99,000 associated deaths each year in American hospitals. A recent study found HAIs to be the sixth leading cause of death in the United States, costing the healthcare industry $6 billion annually. Government laws linking patient outcomes to healthcare provider reimbursement have sparked discussion in boardrooms across the country. The current economic climate has healthcare providers more concerned than ever about promoting and supporting strategies to ensure patient safety. Patients and their families are more informed about healthcare services and have expectations for quality patient outcomes.

One patient safety topic of particular interest is HAIs. Infection prevention has become a key focus in the realm of patient safety. Infection preventionists typically provide a variety of services to healthcare organizations; however, it's the nurse who provides care at the bedside who has the ability to directly impact infection prevention, resulting in positive patient outcomes. The actions of the nurse and other healthcare workers directly impact patient morbidity and mortality.

The role of the professional nurse in preventing HAIs is significant. Nursing-sensitive indicators are actions and interventions performed by the nurse when providing patient care within the scope of nursing practice. These interventions are integral to the processes of nursing care and are often performed in collaboration with other members of a multidisciplinary healthcare team. Nursing-sensitive patient outcomes represent the consequences or effects of nursing interventions and result in changes in patients' symptom experience, functional status, safety, psychological distress, or costs.

The nurse is the member of the healthcare team who leads the rest of the team in practicing prevention strategies to protect the patient from infection. Some of the most basic strategies resulting in positive patient outcomes include:

- the practice and promotion of hand hygiene
- consistent use of aseptic technique
- cleaning and disinfection practices
- use of standard precautions
- patient assessment and additional precautions
- patient education
- use of safety devices
- removal of unnecessary invasive devices
- use of bundle strategies for infection prevention
- fit for duty.

Let's take a closer look.

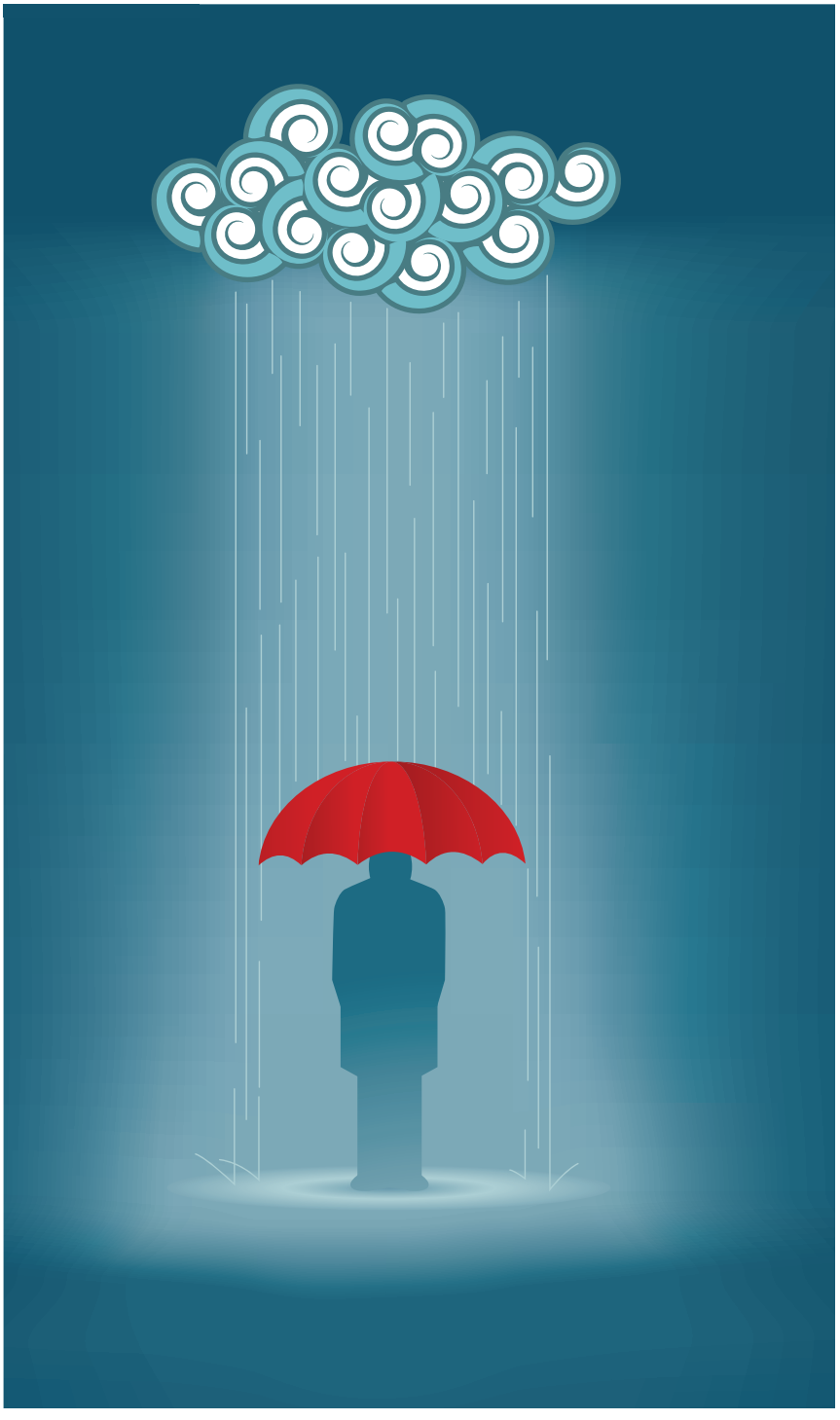
vention

The practice and promotion of hand hygiene

Hand hygiene is the most effective way to prevent transmission of infection. Healthcare workers' hands are the most common vehicle for the transmission of healthcare-associated pathogens from patient to patient and within the healthcare environment. Hand hygiene is the leading measure for preventing the spread of antimicrobial resistance and reducing HAIs, but healthcare worker compliance with optimal practices remains low in most settings.

You can reduce the transmission of HAIs by performing hand hygiene consistently before each patient contact, after each patient contact, after contact with environmental surfaces and equipment/medical devices, and before and after donning gloves. Keeping fingernails one-fourth of an inch or less in length and avoiding the use of artificial nails, nail extenders, and nail decorations is necessary to ensure hand hygiene products reach hand surfaces and cuticles. Studies in the medical literature have demonstrated that nearly everything in the healthcare setting—from surfaces, to healthcare workers' hands, to medical equipment—can serve as a reservoir and vector for opportunistic pathogenic organisms. Some bacteria and viruses can live on inanimate objects and surfaces for weeks or even months.

It's important to develop the habit of routinely performing hand hygiene when performing patient-care tasks and procedures or handling medical devices and equipment (see *When to perform hand hygiene*). Healthcare providers, including nurses, also need to be empowered to hold one another accountable to ensure everyone is compliant with hand hygiene.



Consistent use of aseptic technique

Aseptic technique is a set of specific practices and procedures performed under carefully controlled conditions, with the goal of minimizing contamination by pathogens. It's employed to maximize and maintain asepsis—the absence of pathogenic organisms—in the clinical setting. Aseptic technique protects the patient from infection and prevents the spread of pathogens.

When performing tasks and procedures, such as starting a peripheral I.V. line or scrubbing the hub of an I.V. connector before injection, you can reduce the potential for infection by performing hand hygiene before initiating any task or procedure and following careful technique. Avoiding shortcuts can minimize the potential for disease transmission.

Cleaning and disinfection practices

Nurses and other healthcare workers often use medical devices on more than one patient. You're responsible for cleaning and disinfecting the device between each patient use. There's research reporting evidence of hardy pathogens remaining for weeks on environmental surfaces in the healthcare environment. Housekeeping staff members sometimes avoid touching such equipment for fear of causing damage; therefore, pathogens and dust collect, becoming a potential vector for transmission of infection.

Communicating with environmental services about expectations regarding cleaning and disinfecting sophisticated patient monitoring equipment and computers is vital to ensure cleaning and disinfection occur on a routine basis. Often, practices that clean (remove dirt and other impurities), sanitize (reduce the number of microorganisms to safe levels), or disinfect (remove most microorganisms but not highly resistant ones) aren't sufficient to prevent infection.

Use of standard precautions

Standard precautions are the most basic level of infection control and prevention that should be used at all times when providing patient care at any level (see *Types of precautions*). This strategy applies to blood and all bodily fluids, secretions, and excretions (except sweat) whether or not they contain visible blood. The use of personal protective equipment (PPE), such as fluid-resistant cover gowns, disposable gloves, masks, and eye protection (in the event of splash), provides safety for the nurse providing care. Prompt and proper removal of PPE followed by performance of hand hygiene is the best practice to avoid transmission of infection to other patients and staff.

Healthcare organizations are responsible for providing and making this protection available to all healthcare workers at no charge. If this protection isn't readily available in your place of employment, discuss the issue with your supervisor.

When to perform hand hygiene

Hand decontamination with an alcohol-based product

- After contact with body fluids, excretions, mucous membranes, nonintact skin, or wound dressings as long as hands aren't visibly soiled
- After contact with a patient's intact skin (such as after taking a patient's pulse or BP or lifting a patient)
- In patient care, when moving from a contaminated body site to a clean body site
- After contact with inanimate objects in the patient's immediate vicinity
- Before caring for patients with severe neutropenia or other forms of severe immune suppression
- Before donning sterile gloves when inserting central catheters
- Before inserting urinary catheters or other devices that don't require a surgical procedure
- After removing gloves

Hand washing

- When hands are visibly dirty or contaminated with biologic material from patient care
- When healthcare workers don't tolerate waterless alcohol products

Source: Smeltzer S, Bare B, Hinkle J, Cheever K. *Brunner and Suddarth's Textbook of Medical-Surgical Nursing.* 11th ed. Philadelphia, PA: Lippincott, Williams & Wilkins; 2007:2481.

Patient assessment and additional precautions

When you complete an initial nursing assessment of a patient, you're in an excellent position to notify the physician immediately of unexpected signs and symptoms, thereby reducing infection transmission and expediting patient treatment. The nurse is often the first of the healthcare team to notice and learn about unexpected patient symptoms that require the use of strategies to prevent the spread of infectious agents in the healthcare setting.

Your facility will have infection control and prevention plans, policies, procedures, and protocols for addressing the care and placement of patients suspected of having a communicable disease. Familiarize yourself with these strategies or know how to access them.

Patient education

Patient and family education are critical aspects of providing care to patients and their families. Nurses routinely provide most of the healthcare education to patients and their families about their illness or disease processes. It's the nurse who typically explains to the patient the rationale for strategies and treatments.

For example, the nurse is typically the member of the team who provides the explanation of the concept of multiple drug-resistant organisms, contact isolation, and why the patient is being placed in contact isolation. The nurse explains the rationale for the healthcare staff wearing PPE. It's the nurse who identifies if a language interpreter is necessary. And it's the nurse who reinforces teaching and empowers patients and their families to expect and remind healthcare workers to perform hand hygiene at the appropriate times.

Use of safety devices

Federal legislation in the form of Occupational Safety and Health Administration regulations requires the use of engineering and work practice controls to eliminate or minimize employee exposure to blood-borne pathogens.

It's important to protect yourself from potential harm by using available safety devices when performing tasks or procedures requiring the use of sharps. If there are no such devices available in your place of employment, ask your supervisor, safety officer, occupational health representative, or infection preventionist for assistance with obtaining such devices. By law, nurses should have input into the choice of safety devices used in the healthcare facility. Ask about joining the product evaluation team to provide such input and give feedback to

Types of precautions

Standard precautions

Use standard precautions for the care of all patients. The elements of standard precautions include hand hygiene, use of gloves and other barriers (such as a mask, eye protection, face shield, and gown), proper handling of patient-care equipment and linen, environmental control, prevention of injury from sharps devices, and patient placement (such as room assignments) within healthcare facilities.

Transmission-based precautions

Airborne precautions

In addition to standard precautions, use airborne precautions for patients known or suspected to have serious illnesses transmitted by airborne droplet nuclei. When hospitalized, patients should be in rooms with negative air pressure; the door should remain closed, and the nurse should wear an N-95 ventilator (protective mask) at all times while in the patient's room.

Droplet precautions

In addition to standard precautions, use droplet precautions for patients known or suspected to have serious illnesses transmitted by large particle droplets. While taking care of a patient requiring droplet precautions, the nurse should wear a face mask, but because the risk of transmission is limited to close contact, the door may remain open.

Contact precautions

In addition to standard precautions, use contact precautions for patients known or suspected to have serious illnesses easily transmitted by direct patient contact or by contact with items in the patient's environment. When possible, the patient requiring contact isolation is placed in a private room to facilitate hand hygiene and decreased environmental contamination. Masks aren't needed, and doors don't need to be closed.

Source: Smeltzer S, Bare B, Hinkle J, Cheever K. *Brunner and Suddarth's Textbook of Medical-Surgical Nursing.* 11th ed. Philadelphia, PA: Lippincott, Williams & Wilkins; 2007:2480-2483.

the organization about safety devices used in your facility.

Removal of unnecessary invasive devices

Nursing practice includes evaluating and reporting a patient's response to treatment. Removal of certain devices such as urinary catheters, central lines, and peripheral I.V. lines when the patient no longer needs them is important to returning patients to their optimum level of health and avoiding HAIs. Routine rounding to evaluate the patient's need for such devices is your responsibility.

It's the nurse who prompts the physician and the rest of the team by reporting patient response and improvement. The nurse is aware of the patient's ability to ambulate to go to the restroom with the assistance of one person, and the possibility of eliminating the use of a urinary catheter before it causes an infection. It's the nurse who's typically aware of the increase in the patient's appetite and the patient's ability to drink enough fluids for optimum hydration, which could result in elimination of an I.V. line being used for hydration.

The potential for reducing the risk of acquiring an HAI and restoration of the patient to an optimum level of health is realized when supportive devices that are no longer needed are promptly removed. It may be helpful to have a protocol in place so you can remove devices when the patient no longer meets the indications for them.

Use of bundle strategies for infection prevention

A bundle approach to the prevention of HAIs, such as ventilator-associated pneumonia (VAP) and central line-associated bloodstream infection (CLABSI), has been proposed. The use of bundles has been shown to effectively reduce infections.

For example, the bundle for prevention of VAP includes elevation of the head of bed, comprehensive oral care, and the use of a sedation vacation. The bundle for CLABSI prevention includes the best insertion practices of using maximal barrier precautions during insertion, using chlorhexidine gluconate for cleaning the site, and avoidance of femoral sites. The maintenance bundle for CLABSI prevention includes changing the dressing every 7 days and as needed if loose or soiled, scrubbing the needleless hub before accessing the site, and removing unnecessary lines.

By implementing all elements of the bundle, improvements in patient outcomes can be attained. See "Understanding Care Bundles" from the March/April issue for a more in-depth discussion.

Fit for duty

Communicable diseases can be transmitted to patients who are under the care of healthcare workers who report for work when they're ill. You have the responsibility to look after your own health to avoid compromising patient safety. Dedicated nurses struggle with making the decision to stay away from work when duty calls and they know their presence will be missed by their peers and patients.

Fit for duty includes meeting basic physical requirements for safely performing essential functions of the job without

Prevention of CLABSI bundle

cheat sheet

Insertion

- Proper hand hygiene
- Use of maximal barrier precautions during insertion
- Site preparation with chlorhexidine/alcohol solution (30-second scrub, with 30-second dry)
- Avoidance of femoral sites
- If line is placed in suboptimal conditions during emergent situations, change line within 24 hours

Maintenance

- "Scrub the hub:" Clean needleless ports (5 to 15 seconds) before any access
- Dressing changes every 7 days and when needed if loose or soiled
- Daily review of necessity of central line

compromising patient safety. This means that staff members are free of active symptoms such as fever, cough, sore throat, and gastrointestinal illness.

Making a difference

As a nurse, you're an essential member of the healthcare team. You can make a difference between a patient having a positive healthcare experience and a negative one. You can also make a significant impact in reducing patient potential for acquiring an HAI. ■

Learn more about it

CDC. Guideline for hand hygiene in health-care settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. http://www.cdc.gov/mmwr/PDF/rr/rr5116.pdf.

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Scott RD II. The direct medical costs of healthcare-associated infections in U.S. hospitals and the benefits of prevention. http://www.cdc.gov/ncidod/dhqp/pdf/Scott_CostPaper.pdf.

DOI-10.1097/01.NME.0000395995.78267.c9

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Your role in infection prevention

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