



Hand hygiene

The most important thing you can do for your patients

By Amanda Perkins, MSN, RN

A nurse in the ED is caring for Mrs. D, a patient with severe diarrhea, dehydration, and confusion. A stool sample has been sent to the lab to check for *Clostridium difficile*. Mrs. D is placed on precautions until the lab results are available. While caring for Mrs. D, Mr. M, a patient two rooms down the hall, yells out for help. The nurse removes her personal protective equipment and goes into Mr. M's room to assist him. Mr. M has cancer and came to the ED when he became ill after his last round of chemotherapy.

The lab results come back and show that Mrs. D does, in fact, have *C. difficile*. When the nurse went from Mrs. D's room to Mr. M's room without practicing proper hand hygiene, she exposed Mr. M—an immunocompromised patient—to *C. difficile*. Mr. M later develops *C. difficile* and requires hospitalization for treatment.

Hand hygiene is essential because it protects patients and healthcare staff. We clean our hands to prevent the spread of microorganisms and the illnesses that they cause. When providing patient care, be aware of the potential for the spread of microorganisms and, ultimately, infection. Research has shown that many healthcare-acquired infections (HAIs) can be prevented with good hand hygiene.

Hand hygiene is the easiest and least expensive way to reduce the incidence of HAIs, as well as the incidence of antimicrobial resistance. This is essential because it's been predicted that antibiotic-resistant diseases will kill 10 million people annually by the year 2050. Additionally, HAIs have been shown to increase morbidity and mortality, costs of

care, lengths of stay, and recovery time. These data demonstrate the significance of good hand hygiene. The time is now for nurses to take charge and improve hand hygiene practices.

In this article, we discuss the chain of infection, hand hygiene in healthcare, and patient education.

Chain of infection

Infection occurs as the result of a chain of events, referred to as the chain of infection. The following are links in the chain of infection:

- infectious agent—the organism that causes infection
- reservoir—the place where the organism grows
- portal of exit—the method by which the organism leaves the reservoir
- mode of transmission—the vehicle for organism transfer
- portal of entry—the method by which the organism enters a susceptible host
- susceptible host—the person whom the organism enters.

When it comes to the development of infection, there are several factors that affect the ability of the infectious agent to cause illness. These factors include the number of microorganisms present, the strength of the microorganisms, the ability of the microorganisms to enter a host, and the susceptibility of the host.

The reservoir can be a variety of things, including humans, plants, animals, inanimate objects, food, and water. Be aware that some people, as well as animals, may be carriers of an infectious agent



without displaying signs and symptoms of an illness. As a nurse, you need to know that carriers, although asymptomatic, can still transmit the infectious agent to others, causing them to become ill.

Common examples of portals of exit and entry are the gastrointestinal tract, respiratory tract, genitourinary tract, blood, and tissue.

Transmission of an infectious agent can occur by the following means: direct, indirect, or airborne. Direct transmission occurs when the infectious agent is directly transmitted from one person to another. Indirect transmission occurs when the infectious agent is transmitted through contact with inanimate objects known as fomites. Airborne transmission occurs through contact with droplets and dust that harbor the infectious agent. Common examples of fomites are bedside tables, bed controls, I.V. poles, privacy curtains, and stethoscopes.

Depending on the circumstances, anyone can be a susceptible host. With that being said, there are risk factors that can increase susceptibility, including chronic diseases, immunosuppressive therapy, immune deficiency conditions, and hospitalization.

Always remember that infection will only develop if the chain of infection remains intact. Nurses are responsible for breaking the chain. What's the best way to break the chain of infection? Hand hygiene!

Hand hygiene basics

Hand hygiene includes washing your hands with soap and water, using an antiseptic hand wash or rub, and surgical hand antisepsis.

Hand washing with soap and water entails lathering your hands and vigorously rubbing them together, followed by rinsing with warm (not hot) water. Remember that friction is needed to dislodge microorganisms. It's very important that all surfaces of your hands are cleaned. Hand washing doesn't kill microorganisms; they're mechanically removed and then rinsed off with water. Keep in mind that bar soaps should never be used in a healthcare setting because they can harbor bacteria.

Antiseptic hand washing involves the use of water and an antiseptic agent. This type of hand washing will kill some bacteria and viruses. With antiseptic hand rub, apply an antiseptic sanitizer to your hands, ensuring that all surfaces are covered. The most effective antiseptic hand rubs are those

that are alcohol-based. To use alcohol-based hand rubs, remember that your hands need to be rubbed together until they're dry.

Surgical hand antisepsis is performed by surgical personnel before surgery. This type of hand hygiene removes both transient (microorganisms that colonize the superficial layers of the skin) and normal flora (microorganisms that live under the superficial cells of the stratum corneum). It's easier to remove transient flora—usually acquired by health-care workers during patient care and the most common microorganisms associated with HAIs—with hand hygiene.

When working in healthcare, hand hygiene needs to happen in the following situations:

- before and after eating
- before and after touching a patient
- before and after touching anything connected to the patient, such as I.V. tubing
- after contact with blood, body fluids, secretions, excretions, mucous membranes, nonintact skin, or dressings
- after touching inanimate objects in the immediate vicinity of the patient
- when moving from a contaminated to a clean body site
- before and after using the bathroom
- before and after donning gloves
- upon entering and leaving a patient's room (when caring for patients in the same room, always clean your hands before moving from one patient to the other)
- when hands are visibly soiled.

Remember that appropriate hand hygiene should never replace the need to wear gloves.

Alcohol-based hand sanitizer or soap and water?

Many people ask the question: "What's better, hand sanitizer or soap and water?" The answer is that it depends. In most situations, hand sanitizers are better because they're more effective at reducing microorganisms. Additionally, alcohol-based hand sanitizers are more convenient and easier to use than soap and water. Keep in mind that alcohol-based sanitizers don't kill spores, such as those seen with *C. difficile*. Spores always need to be removed mechanically with soap and water.

If you need a visual, think of glitter. Imagine that glitter is all over your hands. Now think about



using hand sanitizer on your glitter-covered hands. The hand sanitizer will do nothing, except possibly move the glitter around your hands. The best way to remove the glitter is by washing with soap and water. The friction of washing with soap and water will dislodge the glitter and the water will wash it away. Spores act in the same way.

Additionally, always remember that alcohol-based hand sanitizers won't work effectively on hands that are visibly soiled. With that being said, washing your hands with soap and water is more effective in the following instances: when caring for patients with *C. difficile* or infectious diarrhea, after exposure to *Bacillus anthracis*, before eating, and after using the bathroom.

On the other hand, hand sanitizer can be used in the following circumstances:

- before, after, and between patient contact, such as when taking BP or lifting a patient in bed
- before putting on gloves, including sterile gloves
- before inserting invasive devices, such as an I.V. or catheter.

Be aware of when you should clean your hands with soap and water and when you can use hand sanitizer. Incorrectly performing hand hygiene is just as dangerous as not performing it.

A word of caution

As nurses know, practicing hand hygiene can lead to dry, cracked hands. In these instances, lotions may be used, but only use those that have been approved by your facility so that they don't interfere with the hand sanitizer and decrease effect.

Also remember that you shouldn't wear artificial nails or nail tips because microorganisms make their way underneath artificial nails and aren't removed with hand hygiene. Additionally, nail polish shouldn't be worn because it can also harbor microorganisms, especially when the nail polish is chipped. Natural nails should be kept short (less than one-fourth of an inch long).

Why not perform hand hygiene?

After reading the information in this article, you may ask yourself, why would any healthcare professional choose not to practice good hand hygiene? In addition to struggling with hand hygiene adherence, it can also be difficult to get healthcare workers to perform hand hygiene correctly. (Please refer to

the World Health Organization hand hygiene guides at the end of this article.) There have been many studies completed that show nonadherence with hand hygiene by healthcare workers. For example, one research study conducted in 2016, in which researchers secretly observed hand washing among healthcare workers at multiple facilities, showed that only 37% of healthcare workers washed their hands.

The following are some reasons why healthcare professionals may not practice good hand hygiene:

- lack of role-modeling from nurse leaders and coworkers
- poor staffing
- patient overcrowding
- insufficient time
- heavy workloads
- dryness and irritation caused by hand hygiene
- sinks that are inconveniently located
- lack of supplies.

Although these are common reasons given for not practicing good hand hygiene, it's never acceptable to place patients at risk. It's the nurse's responsibility to ensure that his or her patients receive the best care possible, which includes care provided with clean hands.

Patient education

Much of this article has focused on the nurse's role in hand hygiene, but patient education about hand hygiene is also essential. Don't assume that your patients know how to perform hand hygiene effectively and correctly. In addition to teaching your patients how to perform appropriate hand hygiene, you should also encourage your patients to ask healthcare workers, such as nurses, to wash their hands before providing patient care.

Be a champion

As the largest sector of the healthcare workforce, nurses come into contact with many patients. This means that we have a greater number of opportunities for hand hygiene. Take steps to ensure that hand hygiene is a priority in your organization. Be a good role model, practice appropriate hand hygiene, and encourage others to do the same. Be a hand-washing champion at your facility. It only takes one person to be a change agent and improve healthcare across an organization. ■



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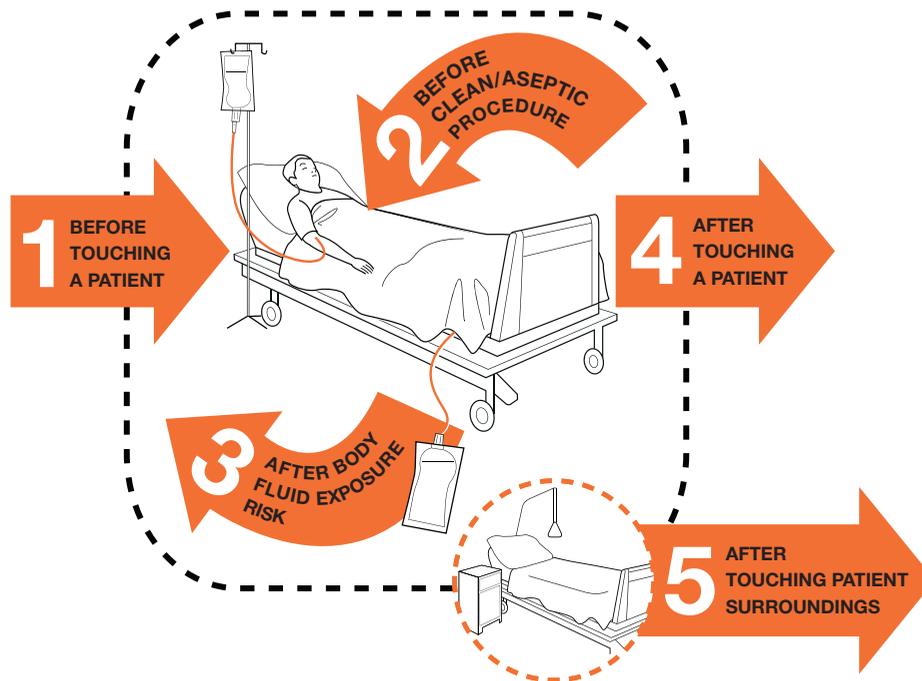
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See the next page for the WHO's hand hygiene guides.



Your 5 Moments for Hand Hygiene



1	BEFORE TOUCHING A PATIENT	WHEN? Clean your hands before touching a patient when approaching him/her. WHY? To protect the patient against harmful germs carried on your hands.
2	BEFORE CLEAN/ASEPTIC PROCEDURE	WHEN? Clean your hands immediately before performing a clean/aseptic procedure. WHY? To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	AFTER BODY FLUID EXPOSURE RISK	WHEN? Clean your hands immediately after an exposure risk to body fluids (and after glove removal). WHY? To protect yourself and the healthcare environment from harmful patient germs.
4	AFTER TOUCHING A PATIENT	WHEN? Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side. WHY? To protect yourself and the healthcare environment from harmful patient germs.
5	AFTER TOUCHING PATIENT SURROUNDINGS	WHEN? Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving – even if the patient has not been touched. WHY? To protect yourself and the healthcare environment from harmful patient germs.



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May 2009



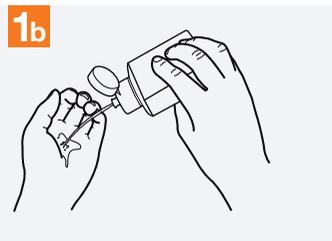
How to Handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

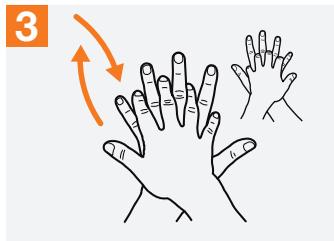
Duration of the entire procedure: 20-30 seconds



Apply a palmful of the product in a cupped hand, covering all surfaces;



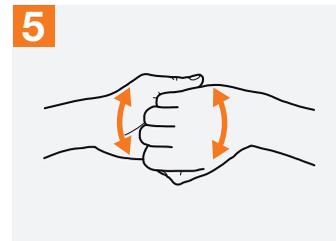
Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;



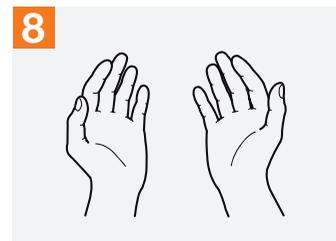
Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;



Rotational rubbing, backward and forward with clasped fingers of right hand in left palm and vice versa;



Once dry, your hands are safe.



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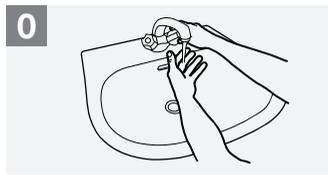
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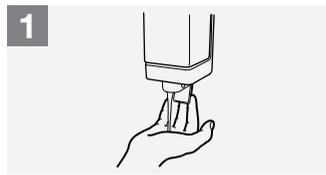
How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

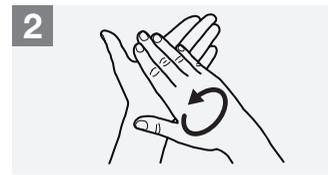
Duration of the entire procedure: 40-60 seconds



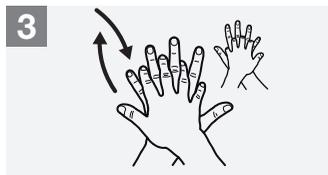
0 Wet hands with water;



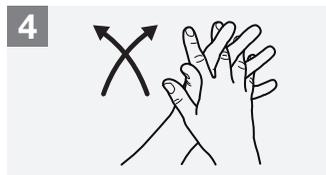
1 Apply enough soap to cover all hand surfaces;



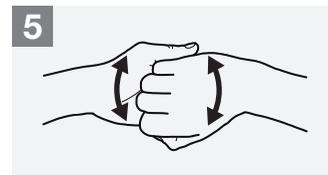
2 Rub hands palm to palm;



3 Right palm over left dorsum with interlaced fingers and vice versa;



4 Palm to palm with fingers interlaced;



5 Backs of fingers to opposing palms with fingers interlocked;



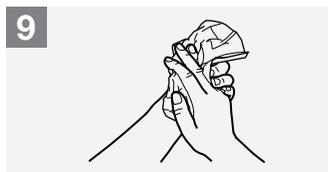
6 Rotational rubbing of left thumb clasped in right palm and vice versa;



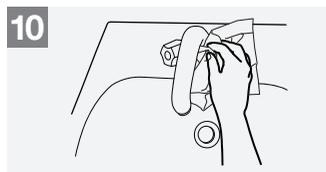
7 Rotational rubbing, backward and forward with clasped fingers of right hand in left palm and vice versa;



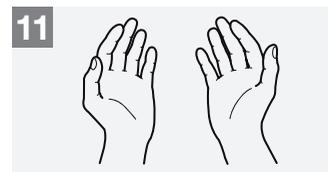
8 Rinse hands with water;



9 Dry hands thoroughly with a single-use towel;



10 Use towel to turn off faucet;



11 Your hands are now safe.



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