Infection control experts often cite one strategy as the most important in the fight against the spread of contagious diseases. It requires no advanced technology, no special equipment or high-level training, and is effective in healthcare, public and home settings. The strategy is hand hygiene. Regardless of whether one uses soap and water or a waterless hand sanitizer, hand hygiene disrupts many of the most common modes of infectious disease transmission. Beginning in the mid-1800’s, instruction for hand cleansing was part of a program to reduce the number of maternal deaths in hospitals. Although there is a long history of hand hygiene in healthcare, wide acceptance and use of the practice has been hard-won. Even today, there is not universal compliance with hand hygiene protocols.

**Modes of transmission**

There are several potential modes of disease transmission directly linked to the lack of proper hand hygiene. One common mode of transmission of diseases such as colds, flu, and eye infections is from the nose, mouth, or eyes of an infected person to someone else. This can occur, for example, when the person with the disease coughs or sneezes into their hand, or rubs their infected eye and then shakes another person’s hand. The recipient receives more than a friendly greeting as their hand is now contaminated. The unlucky recipient can then pass along the viruses, bacteria or fungi into their own mucous membranes, or even to another person, if they do not immediately wash their hands.

Infectious organisms may also spread from hands to food and back again. In restaurants there have been cases of hepatitis A transmission to patrons eating food that kitchen staff handled after failing to wash their hands following bathroom breaks.

Raw or inadequately cooked foods may themselves contain infectious organisms such as *Salmonella* or *E. coli*. Persons handling the raw food products can unknowingly transfer these infectious organisms to other foods or surfaces. As an example, if someone handles raw chicken and then prepares a salad without first washing their chicken-contaminated hands, they may transfer the organisms to the salad. Cooking will render the chicken safe, but the salad will remain contaminated.

**Hand hygiene for routine procedures**

In healthcare settings, it is especially important to use effective and appropriate infection control measures to prevent the transfer of organisms from worker to patient, patient to worker, worker to worker, and from equipment and environmental surfaces to people. Proper hand hygiene is an essential element of infection control and gloving is not a substitute for hand-washing.

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**Learning Objectives**

After reading this article, the reader should be able to:

- understand the role of hands in the transmission of diseases in healthcare, home and public settings.
- be able to select the appropriate hand hygiene product for a variety of situations.
- understand the appropriate procedures for healthcare hand hygiene.
The Number One Infection Control Practice
continued from front cover

For routine dental examinations and nonsurgical dental procedures, plain or antimicrobial soap and water is effective. If the hands are not visibly soiled, an alcohol-based hand rub is adequate.

When using soap and water, wash hands using cool water, covering all areas of the skin. Avoid using hot water as repeated exposure to hot water may increase the risk of dermatitis. Wash for at least 15 seconds before rinsing thoroughly. Tip: Singing “Happy Birthday” to yourself while lathering is a good way to ensure you’ve washed for enough time. Dry hands well with paper towels before donning gloves.

Avoid reusable cloth towels as they may harbor microorganisms that may contaminate hands when drying.

When using alcohol-based hand rubs, read and follow the manufacturer’s recommendations for the amount of product to use and specific instructions.

Hand hygiene for surgical procedures
Surgical procedures tend to be more invasive and longer than restorative or preventive procedures. Because it is critical to eliminate transient microorganisms and reduce resident flora to prevent contamination of the surgical site for the length of the procedure, a more rigorous hand hygiene protocol is necessary.

For surgical procedures, use either antimicrobial soap and water or plain soap and water followed by an alcohol-based hand rub with persistent activity.

Alcohol hand rubs are rapidly germicidal when applied to the skin but should include such antiseptics as chlorhexidine, quaternary ammonium compounds, octenidine, or triclosan to achieve persistent activity.

When performing surgical hand antisepsis remove all jewelry from hands and wrists and clean fingernails using a nail cleaner under running water. After drying hands, do not touch surfaces or objects before donning sterile surgical gloves. Follow the recommendations for surgical hand antisepsis on page 5.

Selection
Dental personnel should consider the types of procedures and accessibility of hand washing facilities when developing the hand hygiene protocol for the office. When making decisions about which products to use, give consideration to potential allergens in the active ingredients, skin integrity after repeated use, scent and other personal preferences, staff acceptance and cost per use.

— OSAP
Compliance Corner

OSHA
The Occupational Safety and Health Administration, OSHA, requires that “employees wash their hands immediately or as soon as feasible after removal of gloves or other personal protective equipment. Employers shall ensure that employees wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials”.

Some wonder if this means OSHA considers alcohol-based hand rubs as inappropriate. In a letter responding to such an inquiry, the OSHA Director of Enforcement Programs had this to say, “OSHA interprets this to mean that when an employee is removing gloves and has had contact, meaning occupational exposure to blood or other potentially infectious materials (OPIM), hands must be washed with an appropriate soap and running water. If a sink is not readily accessible (e.g., in the field) for instances where there has been occupational exposure, hands may be decontaminated with a hand cleanser or towelette, but must be washed with soap and running water as soon as feasible. If there has been no occupational exposure to blood or OPIM, antiseptic hand cleansers may be used as an appropriate ‘handwashing’ practice.”

This statement clarifies that as long as hands are not specifically contaminated, OSHA does not require washing with soap and water. Therefore, the guidelines indicating the use of alcohol-based hand rubs for non-visibly soiled hands is consistent with the OSHA regulations.


Hand hygiene: General term that includes handwashing, antiseptic handwashing, alcohol-based handrubbing and surgical hand hygiene/antisepsis.

Infectious disease: A disease resulting from the presence and activity of a pathogenic microbial agent.

Mode of transmission: The method by which infectious agents are transmitted from one person to another (e.g., via breathing airborne particles, drinking contaminated water, body fluid splash to the eyes, etc.).

Mucous membranes: Soft tissue that lines body passages and cavities (e.g., eyes, mouth, nose) secreting fluids that moisten and protect the area.

Other potentially infectious materials (OPIM): The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.

Salmonella: A bacterium that causes diarrheal illness (salmonellosis) when ingested in contaminated food or water.

Infection Control
In Practice

Infection Control In Practice is a resource prepared for clinicians by the Organization for Safety & Asepsis Procedures with the assistance and expertise of its members. OSAP is a nonprofit, independent organization providing information and education on infection control and occupational health and safety to dental care settings worldwide.

Information in this issue has been brought to you with the help of the following individuals:

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Glossary

Hand hygiene: General term that includes handwashing, antiseptic handwashing, alcohol-based handrubbing and surgical hand hygiene/antisepsis.

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Salmonella: A bacterium that causes diarrheal illness (salmonellosis) when ingested in contaminated food or water.
Ask OSAP

Q: Is it a violation of OSHA regulations or CDC guidelines for the dental assistant in our office to wear acrylic nails?

A: Although OSHA does not specifically address the use of artificial nails in the Bloodborne Pathogens Standard, the CDC does have a few things to say regarding the matter in the Infection Control Guidelines for Dental Health-Care Settings - 2003. First, because there is a relationship between fingernail length and wound infections in healthcare settings, personnel with patient contact should keep nails short enough to thoroughly clean underneath and to prevent glove tears. There is evidence that gram-negative organisms are present in greater numbers among wearers of artificial nails than among nonwearers, even after hand washing. The guidelines specifically recommend the following in relationship to fingernails:

1. Keep fingernails short with smooth, filed edges to allow thorough cleaning and prevent glove tears.
2. Do not wear artificial fingernails or extenders when having direct contact with patients at high risk (e.g., those in intensive care units or operating rooms).
3. Use of artificial fingernails is usually not recommended.

# OSAP Chart & Checklist

## Types of hand hygiene

<table>
<thead>
<tr>
<th>Methods</th>
<th>Agent</th>
<th>Purpose</th>
<th>Area</th>
<th>Duration (minimum)</th>
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<tbody>
<tr>
<td>Routine handwash</td>
<td>Water and non-antimicrobial soap (i.e., plain soap&lt;sup&gt;1&lt;/sup&gt;)</td>
<td>Remove soil and transient microorganisms&lt;sup&gt;2&lt;/sup&gt;</td>
<td>All surfaces of the hands and fingers</td>
<td>15 seconds&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Antiseptic handwash</td>
<td>Water and antimicrobial soap (e.g., chlorhexidine, iodine and iodophors, chloroxylenol [PCMX], triclosan)</td>
<td>Remove or destroy transient microorganisms and reduce resident flora (persistent activity)&lt;sup&gt;8&lt;/sup&gt;</td>
<td>All surfaces of the hands and fingers</td>
<td>15 seconds&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Antiseptic handrub</td>
<td>Alcohol-based handrub&lt;sup&gt;5&lt;/sup&gt;</td>
<td>Remove or destroy transient microorganisms and reduce resident flora (persistent activity)&lt;sup&gt;8&lt;/sup&gt;</td>
<td>All surfaces of the hands and fingers</td>
<td>Until the hands are dry</td>
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<tr>
<td>Surgical antisepsis</td>
<td>Water and antimicrobial soap (e.g., chlorhexidine, iodine and iodophors, chloroxylenol [PCMX], triclosan)</td>
<td>Remove or destroy transient microorganisms and reduce resident flora (persistent activity)</td>
<td>Hands and forearms&lt;sup&gt;6&lt;/sup&gt;</td>
<td>2-6 minutes</td>
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<tr>
<td></td>
<td>Water and non-antimicrobial soap (i.e., plain soap&lt;sup&gt;1&lt;/sup&gt;) followed by an alcohol-based hand rub with persistent activity</td>
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</table>

### References

1. Pathogenic organisms have been found on or around bar soap during and after use. Using liquid soap with hands-free controls for dispensing is preferable.
2. Transient microorganisms often acquired by healthcare personnel during direct contact with patients or contaminated environmental surfaces. Transient microorganisms most frequently associated with healthcare-associated infections and are more amenable to removal by routine hand washing than resident flora.
3. Time reported as effective in removing most transient flora from the skin. For most procedures, a vigorous, brief (at least 15 seconds) rubbing together of all surfaces of premoistened lathered hands and fingers followed by rinsing under a stream of cool or tepid water is recommended. Hands should always be dried thoroughly before donning gloves.
4. Resident flora are species of microorganisms that are always present on or in the body; not easily removed by mechanical friction; and less likely to be associated with health-care-associated infections.
5. Waterless products (e.g., alcohol-based hand rub) are especially useful when water facilities are unavailable (e.g., during dental screenings in schools) or during boil-water advisories. Alcohol-based hand rubs should not be used in the presence of visible soil or organic material.
6. Removal of all jewelry, washing as described above, holding the hands above the elbows during final rinsing, and drying the hands with sterile towels.
7. Before beginning surgical hand rub, remove all arm jewelry and any hand jewelry that may make donning gloves more difficult, cause gloves to tear more readily, or interfere with glove usage (e.g., ability to wear the correct-sized glove or altered glove integrity).
8. Persistent activity. Prolonged or extended activity that prevents or inhibits proliferation or survival of microorganisms after application of a product. Previously, this property was sometimes termed residual activity.

To help practices stay on track, OSAP provides this calendar listing typical schedules for periodic maintenance, record-keeping, and infection control activities. This schedule is intended only to serve as a guide. Proper practices, procedures, and maintenance schedules can vary according to the kinds of products used, the practice type, and patient volume. Always follow the device or equipment manufacturer’s instructions for maintenance and infection control.

### NOVEMBER 2006

<table>
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<tr>
<th>SUNDAY</th>
<th>MONDAY</th>
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<td>Inspect hazardous waste containers for leaks</td>
<td>Waterline maintenance</td>
<td>Spore test sterilizers</td>
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<td>Clean evacuation traps</td>
<td>Update chemical inventory; discard expired supplies, drugs</td>
<td>Inspect hazardous waste containers for leaks</td>
<td>Waterline maintenance</td>
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<td>Read water test results; retreat lines if necessary. Clean evacuation traps</td>
<td>Foil test ultrasonic cleaners, Inspect hazardous waste containers for leaks</td>
<td>Waterline maintenance</td>
<td>Spore test sterilizers</td>
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<td></td>
<td>Clean evacuation traps</td>
<td>Check fire extinguisher operating pressure</td>
<td>Inspect hazardous waste containers for leaks; Waterline maintenance</td>
<td>Thanksgiving Day (U.S.)</td>
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<td>Clean evacuation traps</td>
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**Greater New York Dental Meeting November 24 - 29**

### DECEMBER 2006

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<td>Foil test ultrasonic cleaners, Inspect hazardous waste containers for leaks</td>
<td>Waterline maintenance</td>
<td>Spore test sterilizers</td>
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<td>Clean evacuation traps</td>
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<td>Christmas Day</td>
<td>Inspect hazardous waste containers for leaks</td>
<td>Waterline maintenance</td>
<td>Spore test sterilizers</td>
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**Chanuka December 18 - 23**

**New Year’s Eve December 31**

**Kwanzaa December 26 - 31**
If you wish to obtain one (1) hour of continuing-education (CE) credit, complete the following test by selecting the best answer and fax or mail it to the OSAP Central Office for grading. Please include a check or credit card to cover handling charges. Pending satisfactory results (at least seven out of ten), you will be issued a letter for one (1) CE credit hour. OSAP is recognized by the American Dental Association as a CERP Provider. For more information, call OSAP at 800-298-6727 (410-571-0003).

For each question, pick the best answer.

1. What was one of the first healthcare areas to demonstrate that hand hygiene reduces infections?
   a. dentistry  b. maternity  c. cardiac care  d. intensive care

2. A common mode of transmission of colds and flu is:
   a. hand to mucous membrane  b. contaminated water  c. food to hand  d. mucous membrane to mucous membrane

3. Salmonella poisoning (salmonellosis) is transmitted via which mode?
   a. hand to mucous membrane  b. mucous membrane to mucous membrane
c. environment to mucous membrane  d. hand to food

4. The hand hygiene protocol for surgical procedures should include:
   a. alcohol hand rubs alone  b. plain soap & water alone  c. soap & water in combination with alcohol hand rubs
d. antimicrobial soap & water in combination with petroleum based hand cream

5. Removing hand jewelry before washing will make the hand washing procedure:
   a. more effective  b. faster  c. slower  d. less effective

6. The proper length of time to wash hands before routine dental procedures is:
   a. 5 seconds  b. 10 seconds  c. 15 seconds  d. 20 seconds

7. The proper length of time to wash hands for surgical antisepsis is:
   a. 30 seconds  b. 2-6 minutes  c. 5-7 minutes  d. 8-10 minutes

8. When washing hands with soap and water the water should ideally be:
   a. hot  b. warm  c. cool  d. cold

9. Evidence shows that gram-negative organisms are present in ________ numbers among artificial nail wearers than among nonwearers.
   a. greater  b. less  c. equal  d. variable

10. Avoid the use of hand lotions that contain:
    a. vitamin A  b. aloe  c. lanolin  d. petroleum

Mail or Fax completed test with the appropriate payment to receive one (1) hour of continuing-education credit.

Your Name: ________________________  OSAP Member Name: ________________________  (If different)
Address: ________________________________________________________________________
        street  city/state  zip code  country
☑ VISA  ☑ MASTERCARD  ☑ CHECK ENCLOSED  Fee:  ☑ OSAP MEMBER, $10  ☑ NONMEMBER, $15
Name on Card: ________________________  Card Number: ________________________
Expiration Date: ________________________  Signature: ________________________
Occupational exposures to blood require an immediate and comprehensive response. One of the critical aspects of exposure follow-up is the testing of the source patient for HIV and other bloodborne diseases. Until recently, it could take up to a week to obtain HIV test results from the source patient. This delay often results in increased cost, anxiety and risk of adverse side effects from antiretroviral therapy intended to reduce the risk of HIV transmission.

A rapid, accurate HIV test that does not require drawing blood is now available. OraQuick Advance® Rapid HIV 1/2 Antibody Test can be used with blood or oral fluid samples. This test allows for quick identification of the presence or absence of HIV in the source patient. In settings such as offices or clinics that do not have access to nearby medical services, humanitarian aid missions and mobile clinics, the rapid HIV test could prove very useful. Offices that have access to immediate medical follow-up should contact the designated healthcare provider for exposure incidents and request they use OraQuick for source patient testing. There are several important issues to keep in mind when testing with OraQuick:

- HIV testing requires appropriate counseling, which in turn requires proper training of the person providing the counseling.
- Positive rapid HIV test results are preliminary and require confirmation before the diagnosis of HIV infection is established.
- There is no benefit to rapid testing if post-exposure medications are not readily available.
- There may be certification issues to address before using the test in an office setting.

Clinical Laboratory Improvement Amendments (CLIA) certifies laboratories to conduct tests. Any facility with CLIA certification may use OraQuick, including dental offices and many non-clinical setting if they have a CLIA waiver for the personnel performing the test. Download CLIA waiver forms from:

Some states apply additional restrictions on qualifying for a waived CLIA certificate. Site inspections may be required to qualify and waiting periods may exist.

Nancy Andrews RDH, BS
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Infection Control
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