



InCONTROL Fact Sheet

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Personal Protective Equipment

PPE is designed to protect the skin and the mucous membranes of the eyes, nose, and mouth of dental health-care personnel (DHCP) from exposure to infectious or potentially infectious materials. Primary PPE used in oral health-care settings includes gloves, surgical masks, protective eyewear, face shields, and protective clothing. Shoe covers and head covers are less frequently used types of PPE. Wearing gloves, surgical masks, protective eyewear, and protective clothing in specified circumstances to reduce the risk of exposures to bloodborne pathogens is mandated by the Occupational Safety and Health Administration (OSHA). All PPE must be removed before DHCP leave patient-care areas. Reusable PPE (e.g., clinician or patient protective eyewear and face shields) should be cleaned with soap and water, and when visibly soiled, disinfected between patients, according to the manufacturer's directions.

What is the purpose of a surgical mask?

DHCP should wear a surgical mask that covers both the nose and the mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood or body fluids. The mask protects the mucous membranes of the nose and mouth from contact with microorganisms. A surgical mask protects against microorganisms generated by the wearer, with >95% bacterial filtration efficiency, and also protects DHCP from large-particle droplet spatter that might contain bloodborne pathogens or other infectious microorganisms. The mask's outer surface can become contaminated with infectious droplets from spray of oral fluids or from touching the mask with contaminated fingers. Also, when a mask becomes wet from exhaled moist air, the resistance to airflow through the mask increases, causing more airflow to pass around edges of the mask. If the mask becomes wet, it should be changed between patients or even during patient treatment, when possible.

Can a surgical mask be worn when treating patients with tuberculosis (TB)?

When airborne infection isolation precautions (expanded or transmission-based) are necessary (e.g., for TB patients), a National Institute for Occupational Safety and Health (NIOSH)-certified particulate-filter respirator (e.g., N95, N99, or N100) should be used.

The majority of surgical masks are not NIOSH-certified as respirators, do not protect the user adequately from exposure to TB, and do not satisfy OSHA requirements for respiratory protection. However, certain surgical masks (i.e., surgical N95 respirator) do meet the requirements and are certified by NIOSH as respirators. When respirators are used while treating patients with diseases requiring airborne-transmission precautions (e.g., TB), they should be used in the context of a complete respiratory protection program (usually administered by bioenvironmental engineering flights in USAF MTFs). This program should include training and fit testing to ensure an adequate seal between the edges of the respirator and the wearer's face.

What is the purpose of protective eyewear?

DHCP should wear protective eyewear with solid side shields during procedures and patient-care activities likely to generate splashes or sprays of blood or body fluids. Protective eyewear provides protection of the mucous membranes of the eyes from contact with microorganisms.

When should a face shield be worn?

Protective eyewear with solid side shields and a surgical mask are adequate for procedures where small amounts of spatter or splashes are likely. Adding a face shield may be useful when more protection is desired. When wearing a face shield DHCP must also wear a mask.

What is the purpose of protective clothing?

Various types of protective clothing (e.g., disposable or reusable gowns or jackets) are worn to provide barrier protection and to reduce opportunities for transmission of microorganisms in health-care settings. Gowns are worn to prevent contamination of clothing and to protect the skin of personnel from exposure to blood and body fluids. OSHA requires sleeves to be long enough to protect the forearms and clothing when spatter and spray of blood, saliva, or other potentially infectious materials (OPIM) to the forearms is anticipated. PPE does not have to be fluid impervious to meet OSHA standards, but must prevent contamination of clothing or skin. Cotton or cotton/polyester scrubs are acceptable as PPE when the sleeve length is long. DHCP should change protective clothing when it becomes visibly soiled and as soon as feasible if penetrated by blood or other potentially infectious fluids. All protective clothing must be removed before leaving the work area. OSHA requires employers to launder or clean any reusable PPE contaminated with blood, saliva, or other infectious material.

Why should DHCP wear gloves?

DHCP wear gloves to provide a protective barrier and to prevent contamination of the hands when touching mucous membranes, blood, saliva, or OPIM. Also, gloves are worn to reduce the likelihood that microorganisms present on the hands of dental personnel will be transmitted to patients during invasive or other patient care procedures. Medical gloves, both patient examination and surgeon's gloves, are manufactured as single-use disposable items that should be used for only one patient, then discarded. Gloves should be changed between patients and when torn or punctured.

Are there different types of gloves?

Gloves are task specific; therefore, the selection of gloves must be based upon the type of procedure to be performed (e.g., surgical vs. non-surgical, housekeeping procedures). Medical-grade sterile and non-sterile examination gloves and sterile surgeon's gloves are medical devices regulated by the U.S. Food and Drug Administration (FDA). Sterile surgical gloves must meet standards for sterility assurance established by FDA and are less likely than non-sterile examination gloves to harbor pathogens that may contaminate an operative wound. General-purpose utility gloves are not regulated by the FDA because they are not promoted for medical use.

Does wearing gloves replace the need for handwashing?

Wearing gloves does not replace the need for handwashing. Likewise, the use of hand hygiene does not eliminate the need for gloves. Gloves reduce hand contamination by 70 to 80 percent, prevent cross-contamination, and protect patients and health-care personnel from infection, however hand contamination may occur as a result of small, undetected holes in gloves and contamination may occur during glove removal. Studies have demonstrated that HCP and DHCP are frequently unaware of small tears in gloves that occur during use. If the integrity of a glove is compromised (e.g., punctured), it should be changed as promptly as safety permits.

Is it safe to wash gloves before use?

Washing of latex gloves with plain soap, chlorhexidine, or alcohol can cause micropunctures. This condition, known as "wicking," may allow penetration of liquids through undetected holes in the gloves. For that reason, washing of gloves is not recommended.

Are gloves affected by dental materials?

Exposure to glutaraldehyde, hydrogen peroxide, and alcohol preparations may weaken latex, vinyl, nitrile, and other synthetic glove materials. Other chemicals associated with dental materials that may weaken gloves include acrylic monomer, chloroform, orange solvent, eugenol, cavity varnish, acid etch, and dimethacrylates. Because of the diverse selection of dental materials on the market, the glove manufacturer should be consulted for chemical compatibility of glove material.

Selected References:

CDC. Guidelines for infection control in dental health-care settings – 2003. MMWR 2003; 52(No. RR-17):1–66.

US Department of Labor, Occupational Safety and Health Administration. 29 CFR Part 1910.1030. Occupational exposure to bloodborne pathogens; needlesticks and other sharps injuries; final rule. Federal Register 2001;66:5317–25. As amended from and includes 29 CFR Part 1910.1030. Occupational exposure to bloodborne pathogens; final rule. Federal Register 1991;56:64174–82.

TEST YOUR KNOWLEDGE

1. When wearing a face shield for additional protection from spatter or splashes, a _____ should also be worn.
2. Which of the following is not considered personal protective equipment (PPE)?
 - a. gloves
 - b. mask
 - c. short-sleeved scrubs
 - d. long-sleeved jacket
 - e. protective eyewear with solid side shields
3. Wearing gloves does not replace the need for _____. Gloves reduce hand contamination by _____ percent, prevent cross-contamination, and protect patients and health-care personnel from infection, however hand contamination may occur as a result of small, undetected holes in gloves and contamination may occur during glove removal.

1. mask 2. C 3. handwashing / 70 to 80