Standard and Transmission-Based Precautions

An update for dentistry

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In 1996, the Centers for Disease Control and Prevention (CDC) introduced Standard Precautions, which combined and expanded on the elements of Universal Precautions to create a standard of care designed to protect all health care personnel (HCP) from pathogens that can be spread by blood or any other body fluid, excretion or secretion. Standard Precautions also include three subsets of precautions, known as "Transmission-Based Precautions," that are based on the routes of disease transmission for a smaller number of patients who are known or suspected to be infected or colonized with highly transmissible or epidemiologically important pathogens. Transmission-Based Precautions are designed to reduce the risk of airborne, droplet and contact transmission and always are used in addition to Standard Precautions. Since the publication of the Guidelines for Infection Control in Dental Health-Care Settings—2003,[1] the CDC has published updated isolation guidelines, which have introduced new elements of Standard Precautions and provided more detailed information about Transmission-Based Precautions.

In this article, I review Standard Precautions, including the new ele-

ABSTRACT

Background. Standard Precautions are the foundation of all infection control programs and include infection control practices that apply to all patients and situations regardless of whether the infection status is suspected, confirmed or unknown.

Methods. The author reviewed Standard Precautions, including two new elements introduced by the Centers for Disease Control and Prevention in 2007: safe injection practices and respiratory hygiene and cough etiquette. Standard Precautions sometimes are referred to as the first tier of precautions because for some diseases and circumstances, transmission cannot be interrupted completely with Standard Precautions alone and it is necessary to use second-tier Transmission-Based Precautions. The author reviewed the three categories of Transmission-Based Precautions—Airborne, Droplet and Contact—with an emphasis on their use in dental health care outpatient settings.

Conclusions and Clinical Implications. Dental health care personnel (DHCP) should update their infection control programs to ensure that safe injection practices and respiratory hygiene and cough etiquette measures are used routinely. In addition, with the emergence of new pathogens, re-emergence of variant organisms and more patients seeking care in ambulatory care facilities, DHCP need to be aware of additional measures to take when treating patients in their offices who are actively infected with certain organisms to protect fully other patients, their staff members and themselves.

Key Words. Infection control; Standard Precautions; Transmission-Based Precautions; Contact Precautions; Droplet Precautions; Airborne Precautions.

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ments applicable to dentistry, and the importance and relevance of Transmission-Based Precautions in dental settings.

STANDARD PRECAUTIONS

Overview. Because patients with blood-borne infections can be asymptomatic or unaware that they are infected, in 1985 the Centers for Disease Control (now the Centers for Disease Control and Prevention) introduced the concept that all blood and body fluids that might be contaminated with blood should be treated as infectious.[2] Infection control precautions were introduced largely because of the human immunodeficiency virus (HIV) epidemic and were updated and revised across the years. They eventually became known as Universal Precautions and were designed to prevent transmission of HIV, hepatitis B virus (HBV), hepatitis C virus (HCV) and other blood-borne diseases.[3,4] The Occupational Safety and Health Administration (OSHA) based its blood-borne pathogens standard on the concept of Universal Precautions.[5]

Many fluids, secretions and excretions from patients not covered under Universal Precautions are colonized with organisms (that often are resistant to antimicrobial therapy) before any symptoms of illness become apparent, and they are potential sources of hospital- and community-acquired infections. Therefore, infection control personnel at the Harborview Medical Center, Seattle, and the University of San Diego introduced Body Substance Isolation (BSI) guidelines in 1987. These guidelines concentrate on isolating all moist and potentially infectious body substances (blood, feces, urine, sputum, saliva, wound drainage and other body fluids) primarily by wearing gloves.[6] Although these guidelines were accepted, there was some confusion regarding which body fluids or substances required HCP to use precautions under Universal Precautions and BSI. Also, it was becoming necessary to address droplet transmission and emerging multidrug–resistant organisms (MDROs) such as *Clostridium difficile* and vancomycin-resistant enterococci; direct or indirect contact transmission of some infectious microorganisms from dry skin or environmental sources (for example, *C. difficile* and vancomycin-resistant enterococci); and airborne transmission of infections across long distances by floating droplet nuclei. CDC expanded the concept of Universal Precautions in 1996 and began using the term "Standard Precautions," which was introduced in the Guideline for Isolation Precautions in Hospitals.[7]

Standard Precautions combined and expanded the elements of Universal Precautions and BSI into a standard of care designed to protect HCP and patients from pathogens that can be spread by blood or any other body fluid, excretion or secretion (Table 1).[1,8] Standard Precautions apply to contact with blood; all body fluids, secretions and excretions (except sweat), regardless of whether they contain blood; nonintact skin; and mucous membranes. While the term "Universal Precautions" still is used in OSHA's blood-borne pathogens standard and other documents, no operational difference exists in clinical dental practice between Universal Precautions and Standard Precautions, because even when blood is not visible, saliva has been considered a potentially infectious material in dentistry.[1]

Standard Precautions are the foundation of a comprehensive infection control program and include a group of infection control practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which health care is delivered, including dental settings. Although Standard Precautions apply to all patient encounters, the application of Standard Precautions during patient care is determined by the task being performed and the type of exposure to blood, body fluid or pathogens that is anticipated. In other words, infection control procedures are determined according to the procedure, not the patient. In OSHA terminology, they are performance-based standards because they are applied to the level necessary to provide exposure protection relative to the procedure performed and the given circumstances. For example, only gloves may be needed when obtaining dental radiographs, whereas protective eyewear and

ABBREVIATION KEY. AIIR: Airborne infection isolation room. **BSI:** Body Substance Isolation. **CDC:** Centers for Disease Control and Prevention. **DHCP:** Dental health care personnel. **HBV:** Hepatitis B virus. **HCP:** Health care personnel. **HCV:** Hepatitis C virus. **HIV:** Human immunodeficiency virus. **MDROs:** Multidrug–resistant organisms. **MRSA:** Methicillin-resistant *Staphylococcus aureus.* **NIOSH:** National Institute for Occupational Safety and Health. **OSHA:** Occupational Safety and Health Administration. **PPE:** Personal protective equipment. **SARS:** Severe acute respiratory syndrome. **TB:** Tuberculosis.