more than 20 years ago, a dental patient named Kimberly Bergalis was diagnosed with AIDS. The source of her HIV infection was her dentist. Even though the exact path of transmission is still not known, this first proven transmission of HIV from dentist to patient — and the subsequent intense coverage by the media — set off tremendous confusion and public health concern. DPCH also had to deal with her unfortunate death in 1991 that changed the dental profession almost overnight, prompting all sorts of new regula-
tions, including the sterilization of dental instruments.

The document Guidelines for Infection Control in Dental Health-Care Set-
tings was published by the U.S. Centers for Disease Control and Prevention (CDC) on Dec. 19, 2003, providing some of the current and available scientific rationales for infection-control practi-
ces, for which recommendations were made.1–5 These suggestions were followed closely. Numerous governing dental health organizations, including the U.S. Occupational Safety and Health Administration (OSHA) and Health Canada, have made recommendations for infection-control prac-
tices should have a universal infection-control policy. These recommenda-
tions include a combination of process indicators and biological indicators, and the sterilization process. Proper monitor-
ing of sterilization procedures should be done to ensure that every instrument is uniformly sterilized and safe for pa-
tient use. Cleaning, which is the first step in all decontamination and sterilization processes, involves the physical removal of debris and reduces the number of micro-organisms on an instrument or device. If visible debris or organic matter is not removed, it can interfere with the disinfection or sterilization process. Proper monitor-
ing of sterilization equipment’s effectiveness is critical.

Assessing risk

One factor to consider in assessing the risk of contamination is the type of bodily substances to which dental health-care personnel (DHCP) are ex-
posed. It is generally understood that human blood has a high infectious potential.6 In addition to bacteria and fungi, human saliva has been found to be capable of harbouring many kinds of infectious viruses.7 Without the benefits of a quick and reliable refer-
ence, OSHA recommends that every one is a potential carrier. This is the fundamental reason that dental prac-
tices should have a universal infection prevention protocol.

Among many other related issues, the CDC guidelines explain the man-
ner in which to wear surgical gloves properly and implement a glove proto-
col. These recommendations will help properly prevent contamination from our patients’ oral tissues and fluids. Re-
garding surgical masks, laser ablation of human tissue or dental restorations can cause thermal destruction and can create smoke byproducts containing dead and live cellular material (includ-
ing blood fragments), viruses, and possible toxic gases and vapors. One concern is that aerosolized infectious material in the laser plume, such as the herpes simplex virus and human papillomavirus, may come into contact with the nasal mucosa of the laser operator and nearby DHCP. Another concern is that HIV or the hepatitis B virus (HBV) has been transmitted via aerosolization and inhalation, there are scientific studies that confirm the risk of this possible route of contamin-
ated patients. The risk to DHCP from exposure to laser plumes and smoke is real, and along with other measures such as strong high-volume suction, the use of a high-filtration mask is strongly recom-
nended (Fig. 1).

Sterilization is a multipstep procedure that must be performed care-
fully and correctly by the DHCP to help ensure that all instruments are uniformly sterilized and safe for pa-
tient use. Cleaning, which is the first basic step in all decontamination and sterilization processes, involves the physical removal of debris and reduces the number of micro-organisms on an instrument or device. If visible debris or organic matter is not removed, it can interfere with the disinfection or sterilization process. Proper monitor-
ing of sterilization procedures should include a combination of process indi-


By Frank Y. W. Yung, DDS, MSc

Aerosolized infectious material in the laser plume is just one of many concerns

Non-critical items are instruments and devices that come into contact only with intact (unbroken) skin, which serves as an effective barrier to micro-
organisms. These items carry such a low risk of transmitting infections that they usually only require cleaning and low-level disinfection. Examples of in-
struments in this category include X-ray head/ cones, blood pressure cuffs, low-level laser emission devices and laser safety glasses. For low-level laser therapy, the use of a transparent bar-
rier similar to disposable sleeves for curing lights is acceptable. For safety glasses, the use of a low-level disinfec-
tant is suitable if it has a label claim ap-

infection and should be heat sterilized between patient uses. Examples of critical items are surgical instruments (Fig. 2), although some sur-
gical dental burs, optical fibres (Fig. 3) and contact tips (Fig. 4), are not always sterilized between patient uses. Examples of critical items are surgical instruments (Fig. 2), although some sur-
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Critical items are those that penetrate soft tissue, touch bone or contact the blood-

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organisms. These items carry such a low risk of transmitting infections that they usually only require cleaning and low-level disinfection. Examples of in-
struments in this category include X-ray head/ cones, blood pressure cuffs, low-level laser emission devices and laser safety glasses. For low-level laser therapy, the use of a transparent barrier similar to disposable sleeves for curing lights is acceptable. For safety glasses, the use of a low-level disinfectant is suitable if it has a label claim approved by OSHA for removing HIV and HBV.

The disposal of used instruments and excised biological tissues should be managed separately. A cleaned optical fibre, broken contact tips or dispos-
able fibres should be disposed of prop-

infection and should be heat sterilized between patient uses. Examples of critical items are surgical instruments (Fig. 2), although some sur-
gical dental burs, optical fibres (Fig. 3) and contact tips (Fig. 4), are not always sterilized between patient uses.