

## Factors that Affect Selection and Performance of Disposable Medical Gloves

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Disposable medical gloves worn by health care workers provide an effective barrier against cross-contamination and cross-infection. With specific regard to dental professionals, individuals who were previously trained using “wet finger” procedures can readily recall cases of occupational injuries and infections that resulted from direct exposure of hands to patient secretions. These cases include localized herpetic whitlow and staphylococcal pyoderma infections, as well as increased exposure to blood-borne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). Fortunately, the routine use of gloves during treatment of patients has dramatically reduced the incidence of many occupational infections, further adding to the documentation of increased safety for today’s health care. The decline of exposure to HBV and other occupational pathogens is reinforced by the recommendation that medical gloves are to be always worn when there is a potential for contacting blood, blood-contaminated saliva or mucous membranes.

Medical-grade gloves are classified into two groups - non-sterile examination gloves and sterile surgical gloves. Materials used in the manufacture of medical-grade gloves are latex, vinyl, nitrile, and chloroprene. Quality control of glove manufacturing and labeling is subject to evaluation and clearance by the Food and Drug Administration (FDA). The selection of which glove to use is based on multiple factors, including type of procedure, need for chemical resistance, barrier effectiveness, fit, comfort, and tactile sensitivity.

Fundamental to all glove choices is a consideration of the types of procedures performed. Sterile surgeon’s gloves should be used when performing oral surgical procedures. Sterile gloves provide excellent dexterity, comfort and are available as right-and left-handed fitted choices.

The single most important factor for medical-grade glove selection is barrier protection against microbial pathogens. Latex gloves have been in use for over 100 years and have proven to be the gold standard for protective barrier capability. Examples include: *ColorTouch® Lightly Powdered Latex Gloves; Comfort Grip® Powder-Free Latex Gloves; Diamond Grip Plus™ Powder-Free Latex Gloves, and ColorTouch® Pink Powder-Free Latex Gloves (Microflex Corporation).*

One inherent positive feature of latex gloves is related to observed glove leakage. The type of glove material can also affect leakage rates. Early studies showed that vinyl gloves had a higher failure rate than latex or nitrile gloves when tested under simulated or clinical conditions. Nitrile gloves are finding increasing use in the healthcare professions and provide equivalent barrier protection to latex gloves. Microflex Corporation claims that data

for the newest generation of their nitrile gloves (*XCEED® Powder-Free Nitrile Gloves*) show that *XCEED® Powder-Free Nitrile Gloves* are up to 60% stronger than other nitrile brands. Additionally, they claim that *XCEED®* gloves deliver 74% more protection against pinholes than the FDA standard for medical exam gloves.

Non-sterile examination gloves are most often ambidextrous and come in a variety of sizes. A desirable feature for this type of glove is that it should be easily donned, and the fit should not be too loose or tight. Depending on their softness and flexibility, nitrile gloves can be easy to don, fit well, and remain comfortable during procedures. These features have helped

facilitate their increased usage. Better fitting gloves also can help to lessen hand fatigue during prolonged treatment procedures. Right-and left-hand fitted gloves have historically been shown to reduce muscle fatigue with long-term glove use, thereby minimizing potential for permanent damage to hands. This type of ergonomic consideration is now incorporated into the manufacture of *XCEED® Powder-Free Nitrile Gloves*, which have led to clinical users reporting no hand fatigue problems when performing longer procedures, as reported in a recent clinical evaluation and study of the gloves by THE DENTAL ADVISOR.

*XCEED®* gloves have been shown to require less muscle effort to flex in a separate study and have been certified as ergonomic by U.S. Ergonomics.

Many latex gloves have been demonstrated to offer high levels of tactile sensitivity for clinical procedures. As this type of glove is being gradually phased out because of documented development of latex allergic reactions in susceptible persons, it has fallen upon nitrile manufacturing technologies to supply the healthcare professions with the most appropriate alternative. Early generations of nitrile gloves were often too stiff and offered minimal tactile sensitivity. Improved technology in this area, however, has allowed for increased softness, strength and excellent tactile sensitivity (*XCEED® Powder-Free Nitrile Gloves*).

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### SUMMARY

*Properly fitting gloves protect health care workers from direct exposure through cuts and abrasions on hands, which often may be visually undetectable. Gloves used during the provision of patient care are single-use items and must not be used on another patient or washed for reuse. The routine use of disposable gloves constitutes the most important personal protective barrier. Fit and comfort are crucial to maintaining hand health and reducing the risk of developing repetitive strain injuries. +*