

Nitrile Gloves Over Latex Gloves: Need of the Hour!

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Personal protective equipments play a significant role for medical and surgical asepsis in the health care settings. Cross-infection via hands is prevented through hand washing, use of sanitizers, and gloves. However, it has been observed that the rubber material of gloves is an allergen which can result in allergies when used by people with sensitive/delicate skin. Rise in the prevalence of allergic reactions to latex medical gloves among health care workers is being observed for the past few years. Current estimates on the prevalence of latex allergy among health care workers range as high as 17%. This can be largely attributed to the establishment of general safety measures in response to the AIDS epidemic, and the subsequent increases in the usage of gloves.^[1-3]

Latex glove contains natural latex, cornstarch powder, and various chemicals, which are considered as foreign matter by the human body, forcing the immune system to sometimes react. There are three major types of reactions.

(1) *Irritant dermatitis* – This is skin irritation that does not involve the body's immune response. It is not an allergic response. Some causes include: frequent hand washing and inadequate drying, aggressive scrubbing technique or detergents, mechanical abrasive effect of glove powder, climatic irritation (cold climates can cause dry, chapped skin and hot weather can cause excessive sweating), and emotional stress. Despite, it not being considered as an allergic reaction, irritant hand dermatitis can lead to breaks in the

skin that can allow easier entry of the sensitizing latex protein or glove chemicals, and in turn result in latex allergy.^[4-6]

(2) *Delayed cutaneous hypersensitivity (type IV allergy)* – This is a contact (hand) dermatitis mostly caused because of the chemicals utilized for latex glove production. It is mediated via T-cells. The skin reaction is commonly seen within 6–48 hours after contact. The reaction is local and is constrained to the portion of skin which has come in contact with the glove. Although not life threatening, those with type IV allergy have an increased risk of developing type I allergy. One way of sensitization, for instance, is that latex proteins are more easily able to enter the body through the broken skin barrier.^[4-6]

(3) *Immediate reaction (type I allergy)* – These are systemic allergic reactions triggered by circulating IgE antibodies in response to the proteins in natural latex. Symptoms include hives, rhinitis, conjunctivitis, asthma because of bronchoconstriction, and in extreme cases, anaphylaxis, and hypotension. Symptoms appear soon after exposure to latex (within about 30 minutes). There are several routes of exposure that can lead to type I sensitivity: cutaneous, mucosal, parenteral, and aerosol (from breathing in latex glove powder).^[4-6]

Because of the presence of the allergen component in latex gloves, the requirement has shifted to gloves that have

been created from materials like neoprene and nitrile as these are synthetic and latex free.^[7,8] Nitrile exam gloves are being used as a popular synthetic substitute to natural rubber latex, thereby, reducing the risk of contact dermatitis that is being caused due to allergic reaction in response to natural rubber proteins. Nitrile is a distinctive sort of polymer that provides superior chemical and tear resistance.^[9,10]

Medical grade corn starch powder is used as a donning agent in latex gloves. This is not used in nitrile gloves as they are polyacrylate coated from inner side to facilitate easy and smooth donning.^[11,12] This implies that with the use of nitrile gloves you are additionally eliminating the powder which is a well proven carrier of latex allergens and assays. Latex is strong but nitrile is stronger and more tear resistant when formed into gloves. They

are also usually being preferred due to the latter's susceptibility to small pin prick holes that cannot be easily seen by the naked eye.^[13]

Nitrile protects against contaminants like blood transfused pathogens and so on. With regards to nitrile, it is also highly resistant against petroleum-based solvents and the like. Not only does it provide protection against pathogens, it also gives a better grip and resists electric charges at the same time.^[14]

Nitrile forms a skin tight barrier that is naturally activated by the heat from the hands wearing it. The fit becomes more exact the longer you have the gloves on. For diagnostic laboratory tasks, dexterity is extremely vital and this is why the synthetic material is best utilized in laboratory or clinical setting.^[14,15]



The move to nitrile gloves not only minimizes the risk of allergy-related events, but creates a safer working environment to avoid the development of future latex allergies by hcws and/or patients. This will also generate potential associated savings that should be taken

into account when switching from latex surgical gloves to nitrile surgical gloves. This, combined with recent product advances, should make latex gloves in hospitals a thing of the past.^[1,2]

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