



KEY CONSIDERATIONS FOR GLOVE SELECTION

KEY CONSIDERATIONS FOR GLOVE SELECTION

While there are many considerations that influence the selection of surgical and exam gloves for use in healthcare facilities, the major factors include glove material, size, thickness, specialty design and chemotherapy rating.

Overview*

- Latex is the traditional surgical glove material known for its elasticity and comfort, while synthetic materials such as nitrile, vinyl, neoprene, and polyisoprene offer alternative options for patients and providers with latex allergies.
- Generally, thicker gloves are designed to provide higher barrier protection, while thinner gloves are designed to maintain higher hand sensitivity and dexterity for the user. Most manufacturers provide a thickness dimension at the palm and the finger.
- Specialty surgical gloves are intended to be used for a particular purpose and include microsurgery gloves, orthopedic gloves, and indicator gloves.
- Chemotherapy-rated surgical gloves have been tested for permeation and penetration against specific chemotherapy drugs and thus are appropriate for handling these agents.

Surgical Glove Considerations

While many manufacturers offer similar product portfolios for surgical gloves, key considerations when choosing surgical gloves include materials, size and thickness, specialty use glove options for specific case types and chemotherapy rating.

- **Materials:** Multiple manufacturers offer all material options including latex, neoprene, and polyisoprene. Latex is the traditional surgical glove material known for its elasticity and comfort, while neoprene and polyisoprene are synthetic materials that offer alternative options for patients and providers with latex allergies. Studies have shown higher perforation rates associated with non-latex alternatives compared to latex, but these were limited to arthroplasty procedures. Some studies have found differences in perceived comfort and fit for one glove material over another, but there is no consistent preference across studies. Polyisoprene has a molecular structure more similar to latex than neoprene and thus is theorized to be more similar to latex gloves in terms of comfort and fit. However, there is no evidence to show one material results in superior objective clinical outcomes or performance due to differences in comfort.
- **Size and thickness:** Surgical gloves are offered in a variety of palm circumference sizes ranging from 5.5 to 9 inches in increments of 0.5. Generally, thicker gloves are designed to provide higher barrier protection, while thinner gloves are designed to maintain higher hand sensitivity and dexterity for the user. However, there are no clinical studies or guidelines relating thickness thresholds to specific surgical applications, and there is no evidence to suggest differences in

thickness result in improved clinical or operational benefits. Multiple manufacturers offer an array of gloves to cover sufficient size and thickness requirements.

- **Specialty gloves:** Specialty surgical gloves are intended to be used for a particular purpose and include microsurgery gloves, orthopedic gloves, and indicator gloves. Microsurgery gloves typically have decreased thickness at the fingertips compared to conventional surgical gloves to provide better dexterity suited for microsurgery procedures. In contrast, orthopedic gloves are typically larger, thicker, and more resistant to tear compared to conventional surgical gloves. Although some gloves may not be marketed for microsurgery or orthopedic procedures, they may have comparable thicknesses to these specialty gloves. Indicator gloves are colored and worn as undergloves in double-gloving, high-risk procedures to alert the wearer when a perforation has occurred. Evidence has shown that use of these gloves allows wearers to notice more perforations and reduces the number of perforations per glove but does not reduce the total number of perforations during an operation. Although some gloves may not be marketed as indicator gloves, they may be colored and noted that they may be used as undergloves. Multiple manufacturers offer each type of specialty glove, and superiority has not been established between different manufacturers' specialty gloves.
- **Chemotherapy rating:** Chemotherapy-rated surgical gloves have been tested for permeation and penetration against specific chemotherapy drugs and thus are appropriate for handling these agents. Multiple manufacturers offer a line of chemotherapy-rated surgical gloves, and no manufacturer offers a clinically superior chemotherapy glove over another.

Exam Glove Considerations*

Similarly, while many manufacturers offer similar product portfolios for exam gloves, the main considerations when choosing exam gloves include materials, sterility, size and thickness, chemotherapy rating and coatings.

- **Materials:** Exam gloves are typically made of latex, nitrile, or vinyl, and multiple manufacturers offer all options. Latex and nitrile have demonstrated comparable puncture rates, whereas vinyl was associated with a significantly higher puncture rate compared to latex. However, the effect of an increased puncture rate of vinyl gloves on infection rates was not evaluated. Latex has been subjectively preferred in terms of comfort and fit to non-latex materials. Vinyl gloves have also been shown to induce more sweating than latex, and latex gloves are more elastic than nitrile, which may lead to better dexterity. However, the relationship between perceived comfort or fit and improved performance has not been validated.
- **Sterility:** Gloves are provided sterile or non-sterile, and most manufacturers offer both options. Non-sterile gloves can be used in the majority of cases, while sterile gloves may be considered necessary in a small subset of cases such as for vaginal deliveries, invasive radiological procedures, vascular access, total parenteral nutrition preparation, and chemotherapeutic agent preparation.
- **Size and thickness:** Exam gloves are offered in a variety of sizes ranging from x-small to xx-large. These qualitative sizes are subjective and may not be consistent across manufacturers. While thicker gloves are designed to provide higher barrier protection and thinner gloves are designed to maintain higher hand sensitivity and dexterity, the effect on clinical and operational outcomes has

not been established. Multiple manufacturers offer an array of gloves to cover sufficient size and thickness requirements.

- **Chemotherapy rating:** Chemotherapy-rated exam gloves are appropriate for handling chemotherapeutic agents as they are tested for permeation and penetration against specific chemotherapy drugs and typically feature increased thickness and length compared to non-rated gloves. Chemotherapy-rated exam gloves have become common, particularly among nitrile gloves. Multiple manufacturers offer them, and no manufacturer offers a clinically superior chemotherapy glove over another.
- **Coatings:** Some exam gloves include an inner polymer or natural coating material to provide a moisturizing agent or facilitate ease of donning, but the clinical or operational benefits of these products have not been demonstrated compared to exam gloves without an inner coating. Additionally, multiple vendors offer a glove with an inner coating.

Literature Discussing Glove Selection

Additionally, there are a number of published articles discussing factors associated with glove selection, several of which can be found below:

- [Factors that influence the selection of sterile glove brand: a randomized controlled trial evaluating the performance and cost of gloves](#)
- [Ease of Donning Surgical Gloves: An Important Consideration in Glove Selection](#)
- [The Medical Gloves Assessment Tool \(MGAT\): Developing and Validating a Quantitative Tool for Assessing the Safety and Ergonomic Features Related to Medical Gloves](#)
- [Gloves, extra gloves or special types of gloves for preventing percutaneous exposure injuries in healthcare personnel](#)
- [The durability of examination gloves used on intensive care units](#)

***Product specific information (i.e. product attributes and citations to literature) as well as comprehensive vendor portfolios can be found within the Lumere solution. This content is provided “AS IS”, with all faults and without any warranty of any kind. No information in this content is, or should be construed as medical advice, a guarantee of any product safety or any endorsement of any product or service; use of this content is at your own risk. GHX and its affiliates shall not be liable, in any way, for any use of this content or decisions made and/or actions taken based upon the information herein.**