

## Clinical Summary

### Gloves, extra gloves or special types of gloves for preventing percutaneous exposure injuries in healthcare personnel

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#### Applicable Product Categories/Indications

- Surgical gloves (Biogel®)
- Double-gloving

#### Background

- Inadvertent punctures or cuts of the skin during surgery expose healthcare workers to contaminated blood and body fluids from the patient, thus increasing the risk of them acquiring infections.
- These occurrences are commonly known as percutaneous exposure incidents (PEI).
- PEIs affect the safety of both patient and healthcare personnel and have a negative impact on economic burden and quality of care. Two million healthcare workers have been reported to experience PEIs worldwide each year.

#### Purpose of Item

- To determine if there is a clinically relevant difference in using extra gloves for preventing inadvertent cuts and needle stick injuries during surgery among healthcare personnel in comparison to no intervention or alternative interventions.
- To evaluate if double-gloving has a negative impact on the healthcare professional's hand skills (dexterity).

#### Methods

- Risk of contamination exposure was measured as number of holes (perforations) in the gloves.
- The following aspects of glove use were evaluated:
  - Increasing layers of gloves (single, double, triple)
  - Thicker gloves
  - Gloves with special protective materials
  - Detection system gloves
  - Combinations of two or more of these strategies
- Outcome measures – EXPOSURE RISK:
  - All perforations – Including all obtained holes in the inner glove in the analysis
  - Matched perforations – Including only the holes in the inner glove that have a matching hole on the outer glove
  - Self-reported needle stick injuries
  - Observable blood stains on the skin
- Outcome measures – DEXTERITY:
  - Visual Analogue Scales (VAS) – Self-report
  - Ratio of outer glove perforations – assuming an extra glove layer would impair dexterity, thus causing more cuts/needle stick injuries

## Results

### Increasing layers of gloves

- **The use of double gloves reduces the risk of inner glove perforation by 71%, compared to the use of single gloves.**
  - When analyzing only matched perforations, the risk reduction was 89%.
  - One small study showed that using triple gloves reduces the risk for inner glove perforation by 97%, compared to double gloves (this study was not included in the meta-analysis).

**The use of double gloves also reduces the risk of blood contamination by 65%, compared to the use of single gloves.**

### Indicator gloves

- The use of indicator gloves results in 90% fewer inner glove perforations, compared to double standard gloves
- Compared to the use of single gloves, the risk reduction was 94%

### Dexterity

- Outcome measure: visual analogue scale (VAS)
  - The four studies that reported VAS data for loss of dexterity did not supply enough data to be combined in a meta-analysis
  - All four studies did however report loss of dexterity in the use of double gloves, compared to the use of single gloves
  - Limitations: No standardized method to assess dexterity was used, which makes the data difficult to compare and evaluate. There was also a lack of statistical testing which also makes it problematic to draw any conclusions of the clinical relevance of these results.
- Ratio of outer glove perforations
  - No significant difference between double or single gloves was found in regards to number of outer glove perforations.

## Conclusions

- This review confirms that double-gloving does give a better protection against accidental cuts and needlestick injuries, compared to single-gloving.
- The consistency of current evidence as well as the relatively large effect size lead to the conclusion that there is no further need for more or better studies to confirm the enhanced protective effect of double-gloving.
- This review also determines that there is no relevant influence of double-gloving on dexterity.

\*This synopsis of a published article has been compiled by Mölnlycke® Health Care as a service to healthcare professionals. It does not contain the complete text and Mölnlycke® Health Care makes no representation as to its completeness in addressing all issues in the article.

\*\*All the included studies were performed as investigator initiated, independent clinical trials without stated involvement from any manufacturer.

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