

# Double gloving to reduce surgical cross-infection (review)

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## KEY POINTS

- This meta-analysis aimed to determine if additional glove protection reduces the number of surgical site infections (SSI) and blood borne infections in patients or the surgical team
- The authors concluded that two layers of surgical gloves, the use of glove liners, knitted gloves worn over a latex glove and triple gloving can all reduce perforation to the innermost gloves, thus preventing contamination between the staff and patient, and without apparently affecting surgical performance
- The authors also noted that puncture indicator systems result in significantly more innermost glove perforations being detected during surgery

## INTRODUCTION

The invasive nature of surgery means that there is a high risk of transfer of pathogens between surgical patients and the surgical team, resulting in post-operative infections in the patient or blood-borne infections in the patient or surgical team. This risk can be reduced by the surgical team wearing surgical gloves as a protective barrier.

This meta-analysis aimed to determine if additional glove protection reduces the number of SSIs or blood borne infections in patients or the surgical team, as well as to determine if this additional protection reduces the number of perforations to the innermost glove – the last barrier between the patient and the surgical team.

## METHOD

- The authors searched the Cochrane Wounds Group Specialized Register and Cochrane Central Register of Controlled Trials in order to identify randomized controlled trials involving various systems of glove protection. They also contacted glove manufacturing companies and professional associations for data. A total of 31 randomized controlled trials were identified for inclusion in the review.
- Both authors independently assessed the relevance and quality of each trial and one author then extracted data from each trial onto a standardized form, this data was then checked by the second author.
- Data extracted was used to assess the rates

of SSI in patients (primary outcome), rates of perforation in the innermost glove, and rates of blood borne infections in post-operative patients or the surgical team (secondary outcomes).

## RESULTS

- The two trials included that addressed the primary outcome of the review reported no SSIs, however these trials were individually and collectively underpowered for this.
- The 14 pooled double gloving trials showed significantly more perforations in single gloves than in the innermost of the double gloves.
- Eight trials of Biogel® Indicator™ gloves (colored latex gloves worn under regular latex gloves) showed that significantly fewer perforations were detected with either single gloves or standard double gloves than with indicator gloves.
- Two trials of glove liners (a knitted cloth or polymer glove worn between two pairs of latex gloves), three trials of knitted gloves worn over a latex surgical glove and one trial of triple gloving all compared with standard double gloves, showed there were significantly more perforations to the innermost glove of a standard double glove in all comparisons.
- No trials were found which provided data on transferred blood borne infections in surgical patients or the surgical team in relation to gloving method.

## CONCLUSION & COMMENT

There is no direct evidence that additional glove protection worn by the surgical team reduces surgical site infections in patients (due to insufficient power to the studies reviewed).

However, there is evidence that the addition of a second pair of gloves significantly reduces perforation to the innermost gloves. Additionally, triple gloving, knitted outer gloves and glove liners also significantly reduce perforations to the innermost glove.

Perforation indicator systems result in significantly more innermost glove perforations being detected during surgery.

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