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Title **Scalpel Safety in the Operative Setting**

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Aim

To identify and assess the efficacy and effectiveness of devices and procedures designed to lower the incidence of scalpel injuries in the operative setting.

Conclusions and results

This systematic review included 19 studies: 13 on cut-resistant gloves and glove liners; 3 on the hands-free passing technique; 1 on protective footwear; 1 on the feasibility of sharpless surgery, and 1 on a single-handed scalpel blade remover. Seven of these studies were randomized trials (NHMRC Level II), 3 were non-randomized comparative studies (Level III-2), 2 were comparative studies with historical controls (Level III-3), 1 was a Level IV study, and 7 were experimental studies to which the NHMRC Hierarchy of Evidence could not be applied.

Recommendations

Evidence rating: The evidence base in this review is rated as poor, limited by the quantity and quality of the available evidence. Specific limitations included the diversity of interventions and outcomes considered, the lack of a standard comparator, and differences in clinical settings and experimental environments.

Effectiveness and efficacy: Effectiveness outcomes were considered for interventions undertaken in clinical settings, and efficacy outcomes for those undertaken in laboratory settings:

- *Cut-resistant gloves & glove liners, hands-free passing technique, sharpless surgery, pass tray & single-handed scalpel blade remover.* Based on the published literature, the effectiveness of these devices/methods in the clinical setting cannot be determined.
- *Cut-resistant gloves & glove liners and protective footwear.* Based on the published literature, the efficacy of these devices/methods in experimental settings cannot be determined.

Clinical and research recommendations: Few published studies systematically assess the effectiveness of safety devices in reducing percutaneous injuries, despite the proliferation of such devices. Reports show substantial variation in study methodology and measurement of outcomes. Standardization of these features needs to be considered to compile a clinically relevant and statistically valid body of evidence by which to assess new safety procedures and devices. Randomized controlled trials (RCTs), particularly of cut-resistant gloves and glove liners, are feasible and desirable.

A detailed audit of scalpel injuries would assist in contextualizing the incidence, prevalence, and epidemiology of these injuries in the Australian healthcare setting, allowing targeted interventions where needed. However, a large part of preventing sharps injuries involves creating a culture of safety. To reduce the rates of scalpel injury in the operative setting in the long-term, the concept of 'scalpel safety' must be reinforced through practice and education.

Methods

Search strategy: RCTs, comparative studies, observational studies, surveys, and modeled data reporting outcomes of interest were identified by searching MEDLINE, EMBASE, CINAHL, the Cochrane Library, Current Contents, PubMed and AMI from inception to December 2006. The Clinical Trials Database (US), NHS CRD Database (UK), National Research Register (UK), and Meta Register of Controlled Trials were also searched in January 2007.

Data collection and analysis: Data were extracted by an ASERNIP-S researcher using standardized extraction tables developed *a priori* and checked by a second researcher. Studies that were sufficiently homogeneous were examined by meta-analysis. Heterogeneous studies that did not meet the criteria for meta-analysis were reported qualitatively.

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