Improving compliance with universal precautions
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Authors' objectives
To describe what effect interventions have had on health care workers' use of barrier precautions.

Searching
Computerised searches for articles published in the English language were conducted of MEDLINE, AIDSLINE, HEALTH, and CINAHL (1983 to 1994). Bibliographies of articles were examined.

Study selection
Study designs of evaluations included in the review
Data based, review, narrative or expert opinion articles that reported original data from studies conducted within the CDC jurisdiction of the United States and published after CDC notification of universal precautions August 1987 were eligible. Included studies were either non experimental cross sectional surveys or of pre-test post-test design.

Specific interventions included in the review
Health care organisation interventions regarding universal precautions were included. Universal precautions were defined as blood and body fluid precautions to be consistently used for all patients regardless of their bloodborne infection status (Other Publications of Related Interest no.1). The following interventions were included: education (used in all but one study); equipment purchase; reminder posters; and performance feedback. Handwashing and needle handling studies were excluded.

Participants included in the review
The following groups of health care workers and HCW patient contacts were included: medical laboratory workers; anaesthetists; physicians; pediatric nurses; aeromedical workers; nursing personnel; and emergency department, emergency department resuscitation, operating room, intensive care and surgical ward contacts. Participants were selected either randomly or as a convenience sample. Dentists and morticians were excluded.

Outcomes assessed in the review
Compliance with universal precautions was assessed by the use of barriers including gloves, gowns, eyewear, masks, aprons, and ankle protection. The definition of compliance varied across studies with compliance assessed using self-report or observational methods.

How were decisions on the relevance of primary studies made?
The author does not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
Aspects of validity were discussed, though no formal assessment was undertaken.

Data extraction
The following data were extracted using a pre-tested data collection instrument: author and year of publication; conceptual framework; study design; sample size and sampling method; power analysis calculation; intervention strategy; outcome measures; treatment effect; statistical methods used; and threats to validity. The authors do not state how data were extracted for the review, or how many of the reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative review.

How were differences between studies investigated?
Differences between the studies were discussed.

Results of the review
A total of 13 studies (7821 patients) were included, (two cross-sectional surveys and 11 pre-test post-test studies).

Methodological flaws in the primary studies included: the use of non experimental designs; lack of analysis of power; few studies reported any standardisation of interventions; definition of compliance varied; instrument reliability and inter-observer training procedures were rarely reported; use of variable units of analysis (HCW and number of patient contacts); only a small number of studies with similar methods of reporting significant results were identified; and threats to internal validity were possible in most of the studies including selection, history, instrumentation and Hawthorne effect. Findings were categorised according to compliance by type of barrier, type of HCW, and type of patient contact. Sample sizes of individuals ranged from 4 to 283 and sample size for HCW patient contacts ranged from 40 to 1161 contacts or events.

Studies reported inconsistent effects of interventions.

Glove use varied from 15% to 'nearly universal’ before the intervention to 49% to 97% post-intervention. Two studies indicated a trend that barrier compliance was significantly associated with type of contact, with more emergent or extensive contact associated with less frequent use of barriers. One study reported that compliance varied between HCW groups. Two studies reported no change of compliance with the intervention.

Authors' conclusions
Although inconclusive, results indicate that health care workers’ compliance may vary with type of barrier used, type of patient contact, and type of health care worker. No conclusions, however, can be made about the effect of interventions due to small numbers of articles reporting significant results, lack of power and weakness of the study design.

CRD commentary
The aims were stated and inclusion criteria defined in terms of setting, intervention, participants and outcome. Eligible studies were limited to those conducted in the United States. Keywords used were not specified and no attempt was made to locate unpublished studies, thus raising the possibility of publication bias. Methods used to select primary studies, assess validity and extract data were not described. Some relevant details of the primary studies were presented in tabular format though the results were not easy to interpret. Methodological flaws in the primary studies were discussed though no formal validity assessment was undertaken. Given the heterogeneity between studies a narrative review was appropriate, though attention was not drawn in the review to better quality of evidence.

The evidence presented supports the author's conclusion.

Implications of the review for practice and research
Practice: The author reports that barriers, including an adequate supply of gloves (non latex and latex), must be accessible to all health care workers (HCW) at all times, that adequate time be made available for HCW to protect themselves, and that occupational health nurses develop cost-effective strategies which assure the accessibility of barrier protection and tailor programmes to meet specific concerns regarding barrier use.

Research: The author reports that future research addressing the following methodological issues be directed at identifying factors related to HCW non compliance and the effects of interventions; study designs that rule out alternative explanations and systematically report valid reliable findings; random selection of samples (randomisation at level of institution, work unit, shift, or individual); sample sizes adequate to assure adequate power at small levels of effect; and the use of valid instruments for assessing compliance.
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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.