Protecting healthcare workers from pandemic influenza: N95 or surgical masks?

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CRD summary
This review appeared to compare N95 with surgical masks in protecting healthcare workers against influenza. The authors concluded that there was insufficient evidence to recommend the superiority of either N95 masks or surgical masks in the healthcare setting. The review was poorly reported and the reliability of the conclusion is highly uncertain.

Authors' objectives
The authors appeared to compare the effectiveness of N95 filtering face piece respirators (N95 masks) with surgical masks in protecting healthcare workers against influenza.

Searching
The reviewers searched Web of Science, MEDLINE, EMBASE and Cochrane Database of Systematic Reviews for studies published until 2008 in English. Search terms were specified. Systematic reviews and other reviews were searched for relevant studies.

Study selection
Eligible studies had to include healthcare workers, provide information about mask use by individuals and present data required to evaluate the protective value of the masks. Lower-quality studies were excluded from the review.

In most studies healthcare workers were exposed to severe acute respiratory syndrome (SARS); in other studies they were exposed to respiratory syncytial virus (RSV) and to Bordetella pertussis (one study). Not all studies included workers who used both mask types; some included only surgical masks and some included only N95 masks.

Two reviewers independently selected studies for inclusion. Disagreements were resolved by consensus.

Assessment of study quality
The reviewers assessed study quality using Designations of Levels of Evidence set by the National Health and Medical Research Council. It appeared that criteria included the impact of study bias, internal and external bias, confounding of study outcomes and generalisability, but no further details were provided. Lower-quality studies were excluded from the review.

The number of reviewers who conducted the validity assessment was not reported.

Data extraction
Where possible, data were extracted or calculated to enable presentation of odds ratios (ORs) and risk ratios (RR) with 95% confidence intervals (CI).

The review did not state how many reviewers performed data extraction.

Methods of synthesis
A narrative synthesis was conducted.

Results of the review
Twenty-one studies were included in the review (n=4,013, sample size range one to 2,200): six case series, five case controls, four cross-sectional, three case reports, two time series and one cohort control. No formal quality assessment details or summary scores were reported.

The authors stated that three studies directly compared the protective value of N95 masks with surgical masks.
However, results from these studies were not clearly reported. Other results pertaining to the effectiveness of individual masks were reported in the paper.

**Authors' conclusions**
The authors concluded that there was insufficient evidence to recommend the superiority of either N95 masks or surgical masks in the healthcare setting.

**CRD commentary**
This review addressed a somewhat unclear review question with broadly defined study selection criteria. The search was limited to English-language studies, which increased the risk of language bias. Publication bias was a possibility. Very limited study characteristics were provided, which substantially hindered interpretation of generalisability. Details of the methods and processes of quality assessment, data extraction and synthesis were unclear, which suggested potential for errors and biases. Results were presented in a way that was difficult to follow and interpret, and the comparative superiority of masks was unclear. Because of these factors, the reliability of the conclusion is highly uncertain.

**Implications of the review for practice and research**
The authors did not state any implications for research or practice based on the clinical studies.

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the reliability of the review and the conclusions drawn.