The role of patient isolation and compliance with isolation practices in the control of nosocomial MRSA in acute care

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CRD summary
This review concluded that discontinuing isolation did not increase methicillin-resistant Staphylococcus aureus transmission in acute hospital settings, when high levels of hand hygiene or standard precautions were maintained, but there was a need for further research. This was a generally well-conducted review, but the limitations of the available evidence mean that the authors' conclusions should be interpreted with caution.

Authors' objectives
To assess the efficacy of patient isolation practices in minimising methicillin-resistant Staphylococcus aureus (MRSA) transmission in the acute hospital setting.

Searching
The Internet and several electronic databases, including MEDLINE, CINAHL, EMBASE, The Cochrane Library and Joanna Briggs Institute Library of Systematic Reviews were searched for articles between 1990 and August 2005. The search strategy was reported. The search was restricted to articles in English. Reference lists of retrieved articles, reports and guidelines of expert committees, and 15 relevant journals were handsearched. The search strategy sought to identify published and unpublished research.

Study selection
Studies assessing patient isolation practices for MRSA, or compliance with isolation practices for MRSA, and focusing on adult, paediatric, or neonatal environments in an acute care setting, were eligible for inclusion. The primary outcome of interest was the incidence of colonisation and new cases of MRSA infection in a clinical environment. Secondary outcomes included the assessment of staff, patient, and/or visitor compliance with the isolation practices. Studies that did not report data related to MRSA separately from other pathogens, investigated the implementation of multiple infection control strategies (rather than patient isolation practices), or specifically focused on immuno-compromised patients, were excluded.

All included studies explored adult acute care settings (Intensive Care Units or across departments within the acute care setting). Studies of isolation interventions compared MRSA-positive patients cared for in single rooms with those nursed in cohorts, or compared the effectiveness of contact precautions (gloves, hand washing before and after patient contact, and isolation of personal belongings) with usual care (use of disposable aprons, gloves for all invasive procedures or exposure to body fluids, hand hygiene, maintenance of antibiotic policy, and staff education). Studies of compliance measured compliance by clinical staff, or non-clinical staff and visitors.

One reviewer assessed titles and abstracts for inclusion and two reviewers assessed full papers. Discrepancies were referred to a third reviewer.

Assessment of study quality
Two reviewers assessed studies for methodological quality, using their own tool, which included items on: research design, blinding, type of analysis, clinical significance, and consistency with results. It was unclear how discrepancies were resolved. The studies were also rated on levels of evidence.

Data extraction
Two reviewers extracted data on MRSA rates and compliance rates, and p values for individual studies were reported. Discrepancies were resolved by discussion with a third reviewer.

Methods of synthesis
Due to differences between the included studies, a narrative synthesis was used.
Results of the review

Seven studies were included in the review; one randomised controlled trial, four comparative studies, and two descriptive studies. Methodological quality was reported to vary across studies. Mean quality score ranged between 14 and 18 for isolation practice studies, and between 10 and 16 for compliance with isolation practices.

Isolation practices (four studies): Two studies showed that discontinuing single room and cohort isolation does not increase nosocomial MRSA transmission in adults when hand washing compliance and standard precautions were maintained. Two studies reported that extra contact precautions alone can reduce MRSA transmission; one study reported a 17.9% reduction in MRSA incidence compared with usual care, while the other study showed a statistically significant decrease in MRSA prevalence within the intervention wards (p=0.007).

Compliance with isolation practices (five studies): These reported conflicting results, but one study showed that regular audit and feedback could improve staff compliance with and accountability for isolation practices, showing a 30% reduction in MRSA transmission.

Authors' conclusions

Ending single room or cohort isolation did not appear to increase MRSA transmission when high levels of hand hygiene or standard precautions were maintained. The evidence was limited and there was a need for further rigorous research.

CRD commentary

The review question was clear and was supported by appropriate inclusion criteria. The literature search was comprehensive, including a search for unpublished articles, which minimised the potential for relevant papers to be missed. The search was restricted by language, which means that language bias may have been present. The authors attempted to minimise reviewer error and bias at each step of the review process by using two reviewers to select studies, assess their quality, and extract data. Methodological quality was assessed and varied across studies. Due to the small number of studies, the authors did not exclude studies based on methodological quality and the authors recognised that this should be taken into consideration when interpreting the findings. A narrative synthesis was appropriate, given the differences between the studies. Only a small number of studies assessed the different interventions.

This was a generally well-conducted review, but there was a lack of available evidence and robust conclusions cannot be made. The authors' conclusion that further research was required seems to be appropriate.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that further well-designed clinical studies with large sample sizes were needed to assess the efficacy of various aspects of isolation practices and compliance with such practices. Future studies needed to consider the wide range of confounding factors that might impact on the nosocomial transmission of MRSA, including patient factors, staff compliance, environmental considerations, and institutional policies and practices. The level of contamination of the clinical environment also needs to be taken into consideration in future research.

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