Does isolation prevent the spread of methicillin-resistant *Staphylococcus aureus*?

Cepeda JA, Whitehouse T, Cooper B, Hails J, Jones K, Kwaku F, et al. Isolation of patients in single rooms or cohorts to reduce spread of MRSA in intensive-care units: prospective two-centre study. *Lancet* 2005;365(9456):295-304.

Background: Hospital management of patients infected with or colonized by methicillin-resistant *Staphylococcus aureus* (MRSA) traditionally includes some form of isolation to prevent transmission of MRSA to other patients. Recently, the risks and value of isolation have been questioned.[1,2]

Design: This prospective 1-year study examined rates of MRSA colonization or infection in 2 intensive care units (ICUs) and compared a strategy of isolating infected or colonized patients ("move phase") with not isolating them ("non-move phase"). During the move phases (months 1–3 and 10–12) MRSA-infected or -colonized patients were moved into a private room or isolated with like patients. During the non-move phase (months 4–9) patients were not moved or isolated. During the entire study period "standard-plus precautions" were used for all patient care (these precautions are routine practices as recommended by Health Canada, plus the use of gloves for bed baths and aprons for patient contact).

The primary outcome was time to nosocomial acquisition of MRSA colonization, after adjustment for potential ward and patient confounders. Hand hygiene compliance was measured by observation.

Results: The cohort included 886 patients. The cumulative risk of a patient acquiring MRSA was 2% per ICU day. There was no difference in time to MRSA acquisition between the non-move phase and the move phases (adjusted hazard ratio 0.79, 95% confidence interval 0.51–1.22). This finding was unchanged after adjustment for potential confounders, and in a variety of sensitivity analyses. Adherence to hand hygiene was 21%.

Commentary: Better evidence to support or refute recommendations for infection control practice is urgently needed, and this carefully done trial advances our knowledge. It would have been helpful to know the percent reduction in "exposure" days associated with moves (most patients were colonized on admission, and would not have been identified until 3–4 days later). It is true that the confidence limits include the possibility of a 20% reduction in transmission with moves; however, the study shows that, in ICUs with high rates of MRSA colonization on admission (18%–22%), routine 1:1 nursing care and no additional barriers beyond hand hygiene, the risk of transmission to other patients is not significantly reduced by moving patients with MRSA into private rooms or isolating them with like patients.

Although the study showed that, in one situation, the use of private rooms alone does not substantially reduce MRSA transmission, we cannot conclude that private rooms are never effective in reducing transmission of nosocomial pathogens. Private rooms may reduce transmission because they increase the space between patients, or because they facilitate infection control signage, use of barrier precautions and hand hygiene (if sinks are well placed). They may also prevent patient–patient or patient–environment–patient transmission. Thus, private rooms may be effective when used in conjunction with additional barriers (e.g., gloves and masks on room entry) but not by themselves. They may also be important in preventing the transmission of some types of bacteria, but unimportant in preventing the transmission of others.

Practice implications: Most hospitals in Canada recommend barrier precautions in addition to the use of private rooms for patients with MRSA. This study tested the effect of private rooms alone and does not help in assessing the efficacy or risk–benefit ratio of Canadian policies. Although the results of intervention trials would clearly allow us to better balance the risks and benefits of such policies, such trials may not be feasible because of the ethical constraints of having wards as the unit of analysis and individual patients at risk.

In the meantime, the most important message from this trial is about adherence to hand hygiene. Several studies demonstrate that relatively small improvements in adherence to hand hygiene are associated with dramatic reductions in infection rates and transmission of MRSA.[3] If we all washed our hands on the way into each patient's room, intervention trials of additional precautions might become unnecessary.

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References

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