Title **S.R.I.S. – Systematic Review of Isolation Policies and Screening Practices in Methicillin-Resistant S. Aureus Management**

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Aim

To review the evidence for the effectiveness of different isolation policies and screening practices in reducing the incidence of MRSA colonization and infection in hospital inpatients, and to develop transmission models to study the effectiveness and cost effectiveness of isolation policies in controlling MRSA.

Conclusions and results

Few pre-planned prospective intervention studies were found, and most failed to assess and adjust for confounding factors and intrinsic biases. Meta-analysis was not appropriate due to heterogeneity between studies. We identified over 4,000 studies, of which 46 met the criteria for data extraction. The studies were rated as presenting "weak evidence", "evidence", or "stronger evidence" that their interventions affected MRSA levels. The effect of isolation could not be assessed in 1/3 of the studies. Evidence in most of the remaining studies was consistent with isolation reducing MRSA, but was weak in over half. Six studies presented relatively strong evidence. Stochastic and fixed transmission dynamic models showed that the level of endemic MRSA in a hospital depended on the detection rate (screening) and the isolation capacity, provided neither was the limiting factor. The greater the capacity of an isolation facility, the greater and quicker the reduction of endemic MRSA. The earlier an isolation unit was opened, the sooner control was achieved, but endemic levels could still be reduced years later. Although large numbers of patients might overwhelm institutions with successful isolation units, this could be postponed for years, and the final endemic level would be lower than without the isolation ward. Economic models are hampered by a lack of reliable information on key parameters. However, under a range of plausible parameters, substantial savings could be achieved over 10 years compared with a policy of no isolation, provided the burden of unused isolation ward capacity and staff time was not too great.

Recommendations

Both the systematic review and modeling studies generated hypotheses suitable for testing in future prospective studies. There is no evidence that current guidelines to control MRSA are ineffective, and these should be maintained until further evidence to the contrary is available.

Methods

Systematic review of the literature with epidemiological and economic modeling.

Further research/reviews required

Planned prospective studies that assess and adjust for confounders are required. A variety of designs were suggested, eg, cluster randomized trials and pre-planned interrupted times series. Appropriate interventions to assess include isolation wards, single room isolation with audit and feedback of hand-hygiene, and nurse cohorting of patients isolated in single rooms. Economic studies of the consequences of MRSA colonization and infection are required, as are studies to develop appropriate statistical methods of evaluating outcomes of intervention studies.

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