Epidemiologic and economic effect of methicillin-resistant Staphylococcus aureus in obstetrics

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The objectives were to assess the epidemiologic and economic burden of methicillin-resistant Staphylococcus aureus (MRSA) infections in the obstetric population, to identify the main factors influencing the magnitude of disease, and to evaluate the cost-effectiveness of MRSA screening and decolonisation. The authors concluded that universal screening and decolonisation for MRSA was not cost-effective. The reporting lacked detail, which makes it difficult to determine the reliability of the results.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The objectives were to assess the epidemiologic and economic burden of methicillin-resistant Staphylococcus aureus (MRSA) infections in the obstetric population, to identify the main factors influencing the magnitude of disease, and to evaluate the cost-effectiveness of MRSA screening and decolonisation.

Interventions
Universal surveillance and decolonisation for MRSA was compared with no surveillance and no decolonisation. Screening consisted of cultures and susceptibility tests on positive isolates. The decolonisation regimen consisted of systemic and topical antimicrobials and washing with antibacterial soap. The authors varied the effectiveness of the decolonisation regimen from 0% to 90%.

Location/setting
USA/secondary care.

Methods
Analytical approach:
A decision tree was used to model the care pathway for pregnant women and the incidence of infection at different stages. The time horizon was one year. The clinical data were from published literature and the authors reported both a societal and a third-party perspective.

Effectiveness data:
The effectiveness data were from published sources, where available, and, where not available, patient-level estimates were obtained from a local hospital. All the probabilities used within the model were reported, with their sources.

Monetary benefit and utility valuations:
A utility decrement was applied to patients with MRSA for the year of infection.

Measure of benefit:
Quality-adjusted life-years (QALYs) were calculated and an average additional cost per MRSA case was reported.

Cost data:
The third-party perspective included the direct costs of illness, while the societal perspective also included productivity losses due to time in hospital or time off work. The cost estimates were derived from the Centers for Medicare and
Medicaid Services and from the Healthcare Cost and Utilization Project, where possible. The remaining estimates were from the local hospital. A cost-to-charge ratio was applied to the medical charges. The currency was US dollars ($) and the costs were adjusted to 2008 prices, using a 5% annual inflation rate.

Analysis of uncertainty:
- The parameter uncertainty was evaluated, using both probabilistic and univariate sensitivity analysis.

Results
The incremental cost-effectiveness ratio (ICER) of surveillance and decolonisation varied from $4,352,894 per QALY, with a 10% rate of successful decolonisation to $426,686 per QALY, with 90% successful decolonisation.

Sensitivity analysis indicated that the model was most sensitive to the rates of caesarean delivery, mastitis, and MRSA colonisation.

Authors’ conclusions
The authors concluded that universal screening and decolonisation for MRSA was not cost-effective.

CRD commentary
Interventions:
The interventions were not clearly described and the usual practice was not defined.

Effectiveness/benefits:
The effectiveness data were generally derived from published sources, but no details of a literature review were reported, which means that it is not clear whether the selected data were the most appropriate. For the remaining estimates, patient-level data were obtained from a local women's hospital. All the costs included in the model and their sources were provided, but the sources for the utility decrements, their method of elicitation, and the sample used were not reported. No discounting of benefits was reported, but this was not necessary as the model simulated one year of women's progress through pregnancy and following birth.

Costs:
The authors reported both a societal and a third-party perspective and all the relevant costs were included. The unit costs and their sources were given. The costs were not discounted, due to the one-year time horizon.

Analysis and results:
The model structure was clearly described, with a diagram. The results were generally reported clearly, but not in full. The incremental analysis and univariate and probabilistic sensitivity analyses were appropriately performed and reported, but the perspective for the incremental ratios was not clear. The authors acknowledged and highlighted the limitations of their study.

Concluding remarks:
The reporting lacked detail, which makes it difficult to determine the reliability of the results.

Funding
Supported by the National Institutes of Health, and the National Institute of General Medical Sciences.

Bibliographic details

PubMedID
19384112

DOI
