Does routine gowning reduce nosocomial infection and mortality rates in a neonatal nursery? A Singapore experience
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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.

Health technology
Using routine gowning (handwashing and wearing a plastic apron) versus no routine gowning (no plastic apron) before entering a neonatal nursery.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Babies admitted to the neonatal intensive care unit (NICU) and the neonatal special care unit (NSCU).

Setting
Hospital. The economic study was carried out in Singapore.

Dates to which data relate
The effectiveness and resource utilisation data were collected from September 1993 to August 1994. The fiscal year was not specified.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was undertaken retrospectively on the same patient sample as that used in the effectiveness study.

Study sample
Power calculations were not used to determine the sample size. The study sample consisted of 212 neonates from the NICU (104 in the routine gowning group with average gestational age of 31.6 weeks and 108 in the no routine gowning group with average gestational age of 33.6 weeks) and 1,694 from the NSCU (800 in the routine gowning group with average gestational age of 37.6 weeks and 894 in the no routine gowning group with average gestational age of 37.8 weeks).

Study design
This was a non-randomised trial with historical (every alternate 2 month cycle) self-controls, carried out in a single centre. The duration of the follow-up was not specified. No loss to follow-up was reported.

Analysis of effectiveness
The principle (intention to treat or treatment completers only) used in the analysis of effectiveness was not explicitly specified, but seems to have been intention to treat. The chief clinical measures adopted in the study were nosocomial infection, MRSA (methicillin resistant staphylococcus aureus) colonisation and infection and mortality rate. The subjects in the two study groups were comparable in terms of birthweight, gestational age, extreme low birthweight, and diagnosis (except for gestational age in the NICU subjects and the number of respiratory cases in the NSCU subjects).

Effectiveness results
Nosocomial infection among the NICU subjects was 24% in the routine gowning group versus 16.6% in the no routine gowning group. The corresponding values among the NSCU neonates were 1.5% and 2.1%, respectively. MRSA colonisation among the NICU subjects was 1.9% in the routine gowning group versus 0% in the no routine group. The corresponding values among the NSCU neonates were 0.5% and 0.45%, respectively. MRSA infection among the NICU subjects was 0% in both study groups. The corresponding values among the NSCU neonates were 0% and 0.1%, respectively. The mortality rate among the NICU and NSCU neonates was 0% among both study groups. None of the differences between the study groups were statistically significant.

Clinical conclusions
This study has demonstrated that the use of gowns before entering a neonatal unit does not reduce the incidence of nosocomial infection, MRSA colonisation or infection and mortality.

Measure of benefits used in the economic analysis
No summary benefit measure was identified in the economic analysis, and only separate clinical outcomes were reported.

Direct costs
The quantities were reported separately from the costs. The cost analysis consisted of the costs of plastic aprons. The perspective adopted in the cost analysis was not explicitly specified. The resource use and corresponding cost data (based on cost per gown) were collected by the hospital management department. The price date was not explicitly specified.

Indirect Costs
Not considered.

Currency
Singapore dollars (S$).

Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
Not applicable.
Cost results
The total cost of plastic aprons in the routine gowning group was S$3,708 versus S$2,012.8 in the no routine gowning group.

Synthesis of costs and benefits
Not combined since the policy of not using routine gowning was the weakly dominant strategy.

Authors' conclusions
Based on the findings from this study the investigators conclude that routine gowning is an ineffective and expensive method of reducing nosocomial infection, MRSA colonisation and infection and mortality rate. Greater emphasis and attention should be directed toward handwashing practices.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear.

Validity of estimate of measure of benefit
As acknowledged by the authors a limitation of the study was the lack of randomisation. Nonetheless, confounding may have been reduced by the use of subjects as their own controls.

Validity of estimate of costs
The resource utilisation was reported separately from the costs. However, adequate details of methods of cost estimation were not given. The study suffered from the lack of a prospective and comprehensive cost analysis.

Other issues
In view of the lack of randomisation, sensitivity analysis, and statistical analysis of the costs, the study results need to be treated with some caution. The issue of generalisability to other settings or countries was not addressed. However, appropriate comparisons with other studies were made by the authors.

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