A monolayer coagglutination microplate technique for typing red blood cells
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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
Monolayer coagglutination microplate in the typing of red blood cells.

Type of intervention
Screening.

Economic study type
Cost-effectiveness analysis.

Study population
Blood donors.

Setting
Hospital. The economic study was conducted in Valencia, Spain.

Dates to which data relate
Not stated.

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

Link between effectiveness and cost data
Costing was undertaken retrospectively on the same sample as that used in the effectiveness analysis.

Study sample
43,662 blood samples from normal blood donors tested in parallel.

Study design
Case-control study.

Analysis of effectiveness
The analysis of the clinical study was based on the chosen protocol. The primary health outcomes were: test results of ABO and Rh typing by MCM (microplate coagglutination method) and automatic hemagglutination system. The two groups were shown to be comparable.
Effectiveness results
ABO typing by MCM showed no discordant results while there were 7 discordant results in red blood cell typing by automated hemagglutination. In Rh typing the MCM test recognized also 203 D\(^u+\) cases and no false positive results were found. Tube hemagglutination needed a more specific D\(^u+\) test to detect the 203 D\(^u+\) cases.

Clinical conclusions
The MCM test was more sensitive and free of false negative reactions compared with the automated hemagglutination technique.

Measure of benefits used in the economic analysis
The measure of benefits was the number of correct screenings. This final endpoint was achieved in both alternatives.

Direct costs
Costs were estimated from a provider perspective. Discounting was not applied as the period of analysis was less than one year. Costs and quantities were reported separately. Costs for different reagents were derived from the mean market price within the country. Cost dates were not stated.

Statistical analysis of costs
Costs were not treated in a stochastic way.

Indirect Costs
Not stated.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
A correct typing was achieved in both alternatives.

Cost results
Typing for ABO and D costs $0.07 by tube hemagglutination, $0.006 by automated Groupamatic system and $0.002 by MCM test. For Rh phenotyping (-C, -c, -E, -e) the cost would be $1.2 by tube hemagglutination and $0.005 by MCM.

Synthesis of costs and benefits
The cost per correct typing ratio was not reported by the authors and, as such, the cost results can be assumed to be the cost per correct typing for the intervention and comparator. The intervention was shown to have the lowest cost ($0.002 and $0.005 for ABO and D, and Rh phenotyping, respectively).

Authors' conclusions
The MCM test is accurate and cost-effective compared with conventional hemagglutination methods.
CRD COMMENTARY - Selection of comparators
The comparator was correctly identified as being the traditional method of blood screening.

Validity of estimate of measure of benefit
The analysis assumed that final endpoints are comparable (results of the ABO typing). However, the tests do not correctly identify the phenotype to the same extent. The authors noted that the intervention enables an additional test to be avoided which will involve cost savings, but these were not estimated in the analysis. This may produce some limitations in terms of the comparability of the benefits of the intervention and the comparator.

Validity of estimate of costs
The issue of generalisability to other settings was not addressed although this issue will depend only on unit costs in other countries. No reference was made to other similar studies.

Implications of the study
If the results are validated by further analysis and shown to be cost-effective, the MCM test should be implemented and preferred to traditional tube hemagglutination tests.

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