Are glycopeptides still appropriate and convenient for empiric use?

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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 objective was to review the evidence for the use of glycopeptides in the management of Gram-positive infection. The authors concluded that use of daptomycin was marginally cheaper than teicoplanin and guaranteed optimal dosing. The study was not intended to be a full economic evaluation, but a basic cost-effectiveness assessment was made. A more thorough evaluation of the health benefits and costs is required to make a sound cost-effectiveness statement.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objectives were to review the evidence for the use of glycopeptides in the management of Gram-positive infection, to explore the differences between published guidelines and treatment alternatives, and to explore whether there were alternative therapies for the management of infection, such as a seven-day course of three antibiotics.

Interventions
The study reviewed the effectiveness of a number of different glycopeptides: vancomycin, teicoplanin, clindamycin, linezolid, quinupristin-dalfopristin, and daptomycin. It also compared the costs of three of them: vancomycin, teicoplanin, and daptomycin at different doses.

Location/setting
UK/secondary care.

Methods
Analytical approach:
The effectiveness data were derived from a review of the literature. The medication costs of each drug regimen were compared. The time frame of the cost analysis was seven days of treatment. No study perspective was reported.

Effectiveness data:
The effectiveness data were derived from published literature. The main clinical effectiveness estimate was the antimicrobial activity of Gram-positive agents against Gram-positive cocci, as measured using the minimum inhibitory concentration.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measure of benefit was the antimicrobial activity of Gram-positive agents against Gram-positive cocci, measured by the minimum inhibitory concentration.

Cost data:
The costs were the drug costs for a seven-day course of treatment. The drugs were: vancomycin (2g and 4g daily); teicoplanin (600mg and 1200mg daily) and daptomycin (350mg and 500mg daily). These costs were calculated using National Health Service (NHS) list prices. The price year was not reported. All costs were reported in UK pounds sterling (£).
Analysis of uncertainty:
No analysis of uncertainty was performed.

Results
Daptomycin was more rapidly bactericidal than other agents against a number of Gram-positive isolates. The bactericidal activity of daptomycin was also maintained in the stationary phase of bacterial growth.

The cost of seven-day treatment with vancomycin 2g was £243.54 and 4g was £469.08. The cost of seven-day treatment with teicoplanin 600mg was £519.82 and 1200mg was £840.40. The cost of seven-day treatment with daptomycin 350mg was £434.00 and 500mg was £619.99.

The costs and benefits were not combined.

Authors' conclusions
The authors concluded that the use of daptomycin was marginally cheaper than teicoplanin and guaranteed optimal dosing without the need for drug monitoring. The authors also concluded that further clinical studies were needed to validate these economic benefits.

CRD commentary
Interventions:
The interventions were reported clearly and in detail.

Effectiveness/benefits:
An overview of the clinical evidence rather than a systematic review of the literature was presented. As such, no mention was made of how the studies and guidelines were identified. The measure of benefit, antimicrobial activity of Gram-positive agents against Gram-positive cocci, did not describe the absolute health gains from the seven-day course of treatment that was valued.

Costs:
A very limited costing study, which included only those of the drugs under study, was performed. As a result the economic perspective was very narrow and did not include hospitalisation, side effects, and other important health care costs. The price year was not reported, which will hamper any future inflationary exercises.

Analysis and results:
The costs and benefits were not combined even though, in some cases, daptomycin treatment was more expensive than treatment with teicoplanin. The impact of the uncertainty in the results was not investigated. Given the limited costing and small series of patients included, the results of this study may not be widely generalisable. As the authors recommended in their conclusions, further clinical studies were required to validate these economic benefits.

Concluding remarks:
The study was not intended to be a full economic evaluation, but a basic cost-effectiveness assessment was made. A more thorough evaluation of health benefits and costs is required to make a sound cost-effectiveness statement.

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