Economic evaluation of Vacuum Assisted Closure Therapy for the treatment of diabetic foot ulcers in France


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 assess the cost-effectiveness of Vacuum Assisted Closure (V.A.C.) Therapy, compared with advanced wound care, for the treatment of diabetic foot ulcers. The authors concluded that V.A.C. was more effective and less expensive than advanced wound care, in France. The results were well reported and the methods were satisfactory, but those used to identify the effectiveness data were not well reported. If these data were the best available evidence, the authors’ conclusions are appropriate.

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

Study objective
The objective was to assess the cost-effectiveness of Vacuum Assisted Closure (V.A.C.) Therapy, compared with advanced wound care, for the treatment of diabetic foot ulcers.

Interventions
For V.A.C. Therapy, open-cell foam dressings were placed on the wound and covered with a pressure-sensitive pad to allow the V.A.C. device to produce, monitor, and adjust negative pressure on the wound. Advanced wound care consisted of a combination of ALGOSTERIL (calcium alginate) with adaptic. This type of advanced wound care was considered, by experts, to be the standard care in France.

Location/setting
France/secondary care.

Methods
Analytical approach:
This economic evaluation was based on a published Markov model (Flack, et al. 2008, see 'Other Publications of Related Interest' below for bibliographic details). The time horizon was one year. The authors stated that the perspective of the payer was adopted.

Effectiveness data:
Most of the data were from published studies and were already incorporated in the Flack, et al. model. These were updated with the results of a randomised controlled trial, published after the model was created, and with expert assumptions. The main clinical effectiveness estimates were the rates of amputation and healed wounds.

Monetary benefit and utility valuations:
The utility values were from a published study.

Measure of benefit:
The summary benefit measure was quality-adjusted life-years (QALYs) gained.

Cost data:
The costs were those of hospital stay; nurse, physician, and home care visits; orthopaedic appliances and prostheses; and antibiotics. The costs of specialist visits, day care visits, and devices to access transport, were included to reflect French
practice. The resource use data were based on the opinions of clinical experts. The costs were from the national price list and national medical aids reimbursement data. The device costs were from the manufacturer. All costs were reported in 2008 to 2009 Euros (EUR).

Analysis of uncertainty:
A one-way sensitivity analysis was conducted to examine the impact of variations in the model inputs, including the cost of V.A.C. Therapy and the hospital stay.

Results
The expected annual costs per patient were EUR 24,881 with V.A.C. and EUR 28,855 with advanced wound care. The expected QALYs per patient were 0.787 with V.A.C. and 0.784 with advanced wound care.

The incremental analysis showed that V.A.C. was associated with more QALY gain, more wounds healed, and less amputation, at lower costs, and dominated advanced wound care, as it was more effective and cheaper.

The sensitivity analyses demonstrated that the base-case results were affected by changes in the hospital resource use and costs. The acquisition costs had a modest impact on the results, but V.A.C. was still more cost-effective.

Authors' conclusions
The authors concluded that V.A.C. was more effective and less expensive than advanced wound care, for diabetic foot ulcers, in France.

CRD commentary
Interventions:
The interventions were well described and appear to have been appropriate comparators for the setting. The usual practice was included, but this might differ from the usual practice in other settings.

Effectiveness/benefits:
The effectiveness data were mostly already incorporated in the published Markov model. The search strategy for this model was not described, making it unclear if all the best available evidence was used. It was also unclear how the more recent trial used to update the model was identified. Both a generic (QALYs) and disease-specific (healed wounds and amputations) benefit measures were appropriately used. QALYs assess both morbidity and mortality, and allow comparisons with other health interventions. The derivation of the utility estimates was not described, and their quality is unclear, but the reference was given.

Costs:
The perspective was clearly stated and the cost categories appear to have been consistent with this payer perspective. The resource use and cost data were from French sources, reflecting the French context. The unit costs and resource use estimates were presented in detail, which will help if replicating the analysis for other settings. The price year was reported, indicating that the costs were appropriately adjusted for inflation.

Analysis and results:
Little information was provided on the analytic approach of the study. The original model publication should be consulted to assess its quality. An incremental approach was appropriately used to combine the costs and benefits, and the results were clearly reported. A one-way sensitivity analysis was conducted to investigate uncertainty, but a probabilistic sensitivity analysis could have assessed the overall uncertainty in the model. The authors acknowledged some limitations of their study, which related to data availability and the reliance on assumptions and expert opinions.

Concluding remarks:
The methods were satisfactory and the results were well reported. The methods used to identify the effectiveness data were not well reported. If these effectiveness data were the best available evidence, the authors' conclusions are appropriate.
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