Improving the quality of pressure ulcer care with prevention: a cost-effectiveness analysis

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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 evaluate the cost-effectiveness of procedures to prevent hospital-acquired pressure ulcers, compared with standard care. The authors reported that the prevention of hospital-acquired pressure ulcers was cost-effective. The methods were adequate and the results were well reported. The authors could have given more detail on how the effectiveness estimates were identified, but given the scope of the study the authors’ conclusions appear to be valid.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to evaluate the cost-effectiveness of procedures to prevent hospital-acquired pressure ulcers, compared with standard care.

Interventions
The intervention was the consistent and thorough adherence to the recommended guidelines for procedures to prevent hospital-acquired pressure ulcers. This was compared with standard care, where hospitals might or might not follow the recommended guidelines.

Location/setting
USA/in-patient secondary care.

Methods
Analytical approach:
A semi-Markov model was used to compare the cost-effectiveness of the two options to prevent hospital-acquired pressure ulcers among patients admitted to hospital. The time horizon for costs was until patient discharge, up to a maximum of one year. The time horizon for outcomes was the lifetime of the patient. The authors reported that a societal perspective was adopted.

Effectiveness data:
The effectiveness data were extracted from the literature indexed in the MEDLINE database. The main effectiveness estimate was that of the intervention in reducing the incidence of hospital-acquired pressure ulcers. These data were from a published study.

Monetary benefit and utility valuations:
The utilities for the health states were based on European Quality of life (EQ-5D) questionnaire scores. All utilities were divided by 365 to produce quality-adjusted life-days to match the cycle length. The data were from published studies and other sources.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the measure of benefit and they were discounted at an annual rate of 3%.

Cost data:
The direct costs included those of the interventions (including risk assessments, support surfaces, chair cushions, nutrition, repositioning, dealing with moisture and incontinence, and unforeseen costs); the treatment of deep tissue...
injuries; the treatment of stage I or II hospital-acquired pressure ulcers; and the treatment of stage III or IV hospital-
acquired pressure ulcers. The costs of preventing and treating of stage I or II ulcers were from a micro-costing study
performed by the authors. Those of stage III or IV ulcers were from published studies. The costs of a deep tissue injury
were assumed to equal the costs of daily prevention. The price year was 2009 and all costs were reported in US dollars
($).

Analysis of uncertainty:
One-way sensitivity analyses were conducted to examine the impact of variations in the assumptions on the outcomes.
The base-case estimates were varied by ±15%. Threshold analyses were performed for some inputs by changing their
values by more than ±15%. A probabilistic sensitivity analysis was undertaken, by applying a distribution to each
variable, to assess the uncertainty in all the model parameters simultaneously.

Results
The average QALYs gained per hospitalisation were 11.241 with prevention compared with 9.342 with standard care.
The average cost per hospitalisation was $7,276.35 with prevention compared with $10,053.95 with standard care.

Prevention was found to be dominant as it was more effective and less costly than standard care.

The results of the probabilistic sensitivity analysis showed that prevention was the more cost-effective approach in
99.99% of simulations.

Authors’ conclusions
The authors reported that the prevention of hospital-acquired pressure ulcers was cost-effective.

CRD commentary
Interventions:
The interventions were reported clearly and in detail and they appear to have been appropriate comparators. They might
be relevant comparators in other study settings.

Effectiveness/benefits:
The clinical and effectiveness estimates were from studies identified by a search of MEDLINE. Only one database was
searched and no details of the search methods were reported, which means that the search might not have been
systematic and it is not possible to determine if all the relevant evidence was included. The measure of benefit appears
to have been appropriate and it was discounted.

Costs:
The authors reported that a societal perspective was adopted, but they did not include any productivity losses associated
with the interventions, nor any costs associated with primary or out-patient care; this was acknowledged as a limitation
by the authors. This means that the perspective appears to have been that of the health care provider and no major
relevant costs, for this perspective, appear to have been omitted. The price year, time horizon, and currency were all
reported.

Analysis and results:
All the identified evidence on costs and outcomes was appropriately synthesised, in a Markov decision-analytic model.
The details of the model were given, including a diagram. Uncertainty in the model was comprehensively evaluated in
one-way and probabilistic sensitivity analyses. The main limitation reported by the authors was that some of the clinical
and effectiveness estimates were from small trials, which might not have been generalisable to other US health care
settings.

Concluding remarks:
The methods were adequate and the results were well reported. The authors could have given more details of how the
effectiveness estimates were identified, but given the scope of the study the authors’ conclusions appear to be valid.
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