Economic evaluation of the use of a multi-layer polyurethane foam dressing* for the prevention of pressure ulcers in elderly patients with hip fractures

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Introduction

- Pressure ulcers (PU) are relatively common adverse events in hospital, particularly affecting elderly patients and other vulnerable patient groups.¹
- There has been evidence that “Recent studies consider pressure ulcers as the greatest burden exerted by unnecessary patient harm”¹.
- These hospital-acquired pressure ulcers continue to impose a cost burden on hospital providers, primarily driven by the resources used to treat complications.² These additional resources may include extended hospital stay.³ For example, the total cost of managing pressure ulcers in the UK has been estimated at £531 million.⁴
- Frail elderly patients with hip fractures are particularly at risk.³ Pressure ulcers in fragility fracture patients occur in 8.8% to 55% of patients and are located most commonly in the sacral area.¹,⁵
- Strategies to prevent PU in this patient population may therefore be an important consideration for hospitals. For example, a recently-published RCT reported that the use of a multi-layer foam dressing, when combined with standard prevention, was effective in reducing the incidence of PU in this patient group.³

Methods

- A decision-analytic model was constructed to determine the incremental cost of the foam dressing strategy alongside standard prevention, compared with standard prevention alone.
- The model type was a decision tree and the perspective of the analysis was the Italian hospital system.
- The time horizon of the analysis was 8 days post-admission, and therefore because of this short timescale, costs and effects were not discounted.
- Pressure ulcers occurring beyond this period were not considered to be attributable to the hospital stay.
- PU incidence data (Table 1) was obtained from a recent 359-patient RCT which investigated the effectiveness of using a foam dressing strategy alongside standard prevention compared with standard prevention alone.³
- The cost of materials used included both the dressing itself and ancillary materials used in its application.
- The cost of treating a pressure ulcer was derived from an analysis of patients with pressure ulcers in Italy.⁷ The majority of these patients were over 65 years of age. The mean cost per patient episode of €5,500 was adjusted to 2017 prices using healthcare inflation indices for Italy,⁸ to give a mean cost of €6,878.
- To investigate the sensitivity of the model to the input assumptions, a one-way sensitivity analysis was undertaken. Each input was adjusted by ±20%, one at a time whilst keeping all the other inputs constant. A decision-analytic model was conducted to determine the incremental cost of the foam dressing strategy alongside standard prevention, compared with standard prevention alone.
- A threshold analysis was conducted to estimate the cost of treating a pressure ulcer at which the strategy becomes cost-neutral. To do this, the cost of treating a pressure ulcer was varied until the incremental cost of the strategy became zero.

Results

- The foam dressing intervention was found to be cost-saving and more effective than standard preventive care (Table 2). Switching to foam dressing + standard prevention would result in an expected cost saving of €737 per patient and an expected reduction of 0.109 pressure ulcers per patient.

Conclusions

- This analysis suggests that in elderly frail patients, the use of a multi-layer, silicone-adhesive polyurethane foam dressing combined with standard preventive care is more cost-effective than standard care alone.
- The strategy is expected to be both cost-saving (reducing overall cost by 69.2%) and more effective than standard preventive care.
- One-way sensitivity analysis demonstrates that the strategy remains dominant over a range of values of the input variables.