A silver coated dressing reduces the incidence of early burn wound cellulitis and associated costs of inpatient treatment: comparative patient care audits

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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
The use of Acticoat, a new silver-coated dressing for inpatient treatment of early burn wounds. The intervention consisted of daily showers of the burn wound with 4% chlorhexidine soap, followed by the application of an Acticoat dressing.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients admitted with burn injuries. Patients admitted with an existing wound infection, staying in hospital for less than 3 days, admitted to an intensive care unit (ICU), or admitted for burn reconstructive surgery were excluded.

Setting
The setting was a hospital. The economic study was carried out in Australia.

Dates to which data relate
The effectiveness and resource use data were gathered in 2000 and 2002. The price year was not reported.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

Link between effectiveness and cost data
The costing was carried out retrospectively on the same sample of patients as that used in the effectiveness study.

Study sample
Power calculations, if performed, were not reported. The patients included in the standard treatment group were identified in January, February, and September to December 2000. Of the 87 patients initially identified, 36 were not eligible. Thus, the final study sample included 51 patients. The patients included in the new treatment group were enrolled in May and June 2002. Of the 49 patients initially identified, 30 were excluded because they did not fulfil eligibility criteria. Thus, 19 patients were considered.
Study design
This was a retrospective comparative study with historical control that was carried out at a single institution, the Royal Perth Hospital in Perth, Western Australia. The patients were followed until hospital discharge. No patient was lost to the follow-up assessment.

Analysis of effectiveness
All of the patients included in the initial study sample were accounted for in the analysis of effectiveness. The outcome measures were the incidence of burn wound cellulitis and antibiotic usage. Wound cellulitis was defined as one or more signs of burn wound cellulitis: redness 2 cm or more from wound edges, elevated body temperature of 38.5 degrees C for at least 24 hours, or positive wound swab culture. Antibiotic usage was defined as the number of types of antibiotics administered within 2 days of admission. One investigator collected data on these outcome measures using a specifically designed form. The average total body surface area (TBSA) of the burn and the signs and symptoms of wound cellulitis were also reported. The baseline comparability of the study groups was not stated.

Effectiveness results
The incidence of wound cellulitis was 55% in the standard treatment group and 10.5% in the new treatment group.

Antibiotic usage was 57% in the standard treatment group and 5.2% in the new treatment group.

The average TBSA of the burn was 9.5% in the standard treatment group and 9% in the new treatment group.

The incidence of wound cellulitis signs and symptoms was as follows:
redness or erythema, 47% in the standard treatment group versus 0% in the new treatment group;
elevated body temperature, 29.4% in the standard treatment group versus 0% in the new treatment group;
redness plus elevated body temperature, 17.6% in the standard treatment group versus 0% in the new treatment group;
positive swab, 7.8% in the standard treatment group versus 10.5% in the new treatment group; and
redness plus elevated body temperature plus positive swab, 49% in the standard treatment group versus 10.5% in the new treatment group.

Clinical conclusions
The effectiveness analysis suggested that the new treatment was more effective than the standard one for the inpatient management of early burn wound cellulitis.

Measure of benefits used in the economic analysis
The health outcomes were left disaggregated and no summary benefit measure was used in the economic evaluation. In effect, a cost-consequences analysis was carried out.

Direct costs
The authors stated that a preliminary cost analysis was carried out, thus no specific costs were provided for surgery, cultured epithelial autograft, individual patient antibiotic therapy or staffing. The perspective adopted in the study was unclear. Only the costs of hospital stay and dressing products were included in the analysis. The unit cost of one day of hospitalisation was reported separately from the length of stay. However, the resources used and costs were not presented separately for dressing items. The source of the costs was not stated. Resource use was estimated from the comparison between 4 patients admitted in May 2002 with burn injuries treated with Acticoat and 4 matched historical controls from 2000 treated with Silvazine. The inclusion criteria specified an upper limb burn injury and, to ensure compliance with treatment regimen, no recorded history of psychiatric illness. Pairs were matched on the burn...
percentage TBSA and depth. The price year was not reported. Discounting was not relevant since the costs were incurred during a short time.

**Statistical analysis of costs**
The costs were treated deterministically.

**Indirect Costs**
The indirect costs were not included in the economic evaluation.

**Currency**
Australian dollars (Aus$) and US dollars ($).

**Sensitivity analysis**
Sensitivity analyses were not carried out.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The matched comparison showed that the average length of stay was 17.25 days for the Silvazine group and 12.5 days for the Acticoat group (difference 4.75 days).

The average cost per patient was $27,339 for the Silvazine group and $19,726 for the Acticoat group (difference $7,613 per patient).

The average dressing cost was $1,533 per patient for the Silvazine group and $946 per patient for the Acticoat group.

**Synthesis of costs and benefits**
A synthesis of the costs and benefits was not relevant since a cost-consequences analysis was performed.

**Authors' conclusions**
The use of Acticoat would reduce the incidence of burn wound cellulitis and the costs associated with hospital stay and dressing products in comparison with Silvazine.

**CRD COMMENTARY - Selection of comparators**
The rationale for the selection of the comparators was clear since the two dressing products were used at the authors' institution. You should decide whether they are valid comparators in your own setting.

**Validity of estimate of measure of effectiveness**
The effectiveness evidence came from a retrospective study, which is usually associated with some limitations. However, since the two treatments were not used concurrently at the authors' institution, the choice of the design might have been appropriate, given the objective of the study. The patients' demographics were not reported and the evidence came from a single institution. These issues might limit the representativeness of the study sample. In addition, the authors did not discuss the baseline comparability of the study groups. No justification for the size of the sample was provided and, given the small number of patients included in the analysis, it was unclear whether the results obtained
were due to the intervention or to chance. The retrospective nature of the study represents a limitation to its internal validity. The two study groups were not studied concurrently, thus the impact of factors other than the study interventions cannot be ruled out.

Validity of estimate of measure of benefit
No summary benefit measure was used in the analysis because a cost-consequences analysis was conducted. Please refer to the comments in the 'Validity of estimate of measure of effectiveness' field (above).

Validity of estimate of costs
The cost analysis was restricted to the costs of hospitalisation and dressings. The authors stated that the costs associated with surgery, cultured epithelial autograft, individual patient antibiotic therapy or staffing were not included in this preliminary analysis. Information on the unit costs and quantities of resources used was provided for hospitalisation costs only. Details on the other items were not reported. Statistical analyses of the costs were not carried out and the cost estimates were specific to the study setting. The price year was not reported, which makes reflation exercises in other settings difficult.

Other issues
The authors stated that their effectiveness results were consistent with those from published studies. However, there were few comparisons of the current cost results with those from other economic evaluations, owing to the paucity of research on the costs of dressing products. The issue of the generalisability of the study findings to other settings was not addressed and sensitivity analyses were not carried out. Therefore, the external validity of the study was limited. The authors noted that the main limitations of their study were the lack of random allocation of patients to the study groups and the small sample size.

Implications of the study
The study results suggested that Acticoat should be used as the dressing of choice post burn admission.

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None stated.

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Other publications of related interest


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