Randomized controlled single center study comparing a polyhexanide containing bio-cellulose dressing with silver sulfadiazine cream in partial-thickness dermal burns

Piatkowski A, Drummer N, Andriessen A, Ulrich D, Pallua N

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
This study evaluated the effectiveness and costs of wound dressings for adults with partial thickness burns. The authors concluded that polyhexanide containing bio-cellulose dressings reduced pain better and quicker than silver sulphadiazine dressings, and they were safe and cost-effective for partial-thickness burns. The methods seem to have been valid, and they were clearly reported. The authors' conclusion appears to be appropriate.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study evaluated the effectiveness and costs of wound dressings for adults with partial thickness burns.

Interventions
Polyhexanide containing bio-cellulose dressings were compared with silver sulphadiazine cream plus a gauze dressing. Polyhexanide dressings were changed once every two to three days, and silver sulphadiazine dressings were changed once daily.

Location/setting
Germany/out-patient care.

Methods
Analytical approach:
The economic evaluation was based on a single-centre prospective randomised controlled trial, with 60 patients with 72 second-degree burn wounds. Patients were followed-up until complete wound epithelialisation (skin covering). The authors did not state the perspective.

Effectiveness data:
The primary measures of effectiveness were time to wound healing, and pain during and between dressing changes. Wound healing was assessed, using digital photographs, by two experienced wound specialists. Pain was measured on a 10-point visual analogue scale, immediately after dressing change, for pain during dressing change, and immediately before dressing change, for pain in between dressing changes. Wounds were assessed for differences in fibrin and colour in the wound bed. Patients and wound specialists were asked which treatment they preferred. Randomisation was by computer. Patients and therapists could not be blinded to allocation, but those who assessed wound healing were.

Two patients with multiple burns were randomised to each treatment. Patient characteristics – gender, age, wound size, wound location, and cause of burn – were reported for each group.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The clinical effectiveness outcomes were the measures of benefit: the time to wound healing, and pain during and between dressing changes.
Cost data:
The costs were calculated for materials and personnel, for wound dressing changes up to the median day of complete wound epithelialisation. The costs were the billable service prices from a large German health insurer, for wound dressing. The calculation method was from a published German paper. Costs were reported in Euros (EUR).

Analysis of uncertainty:
The differences in pain outcomes, for the interventions, were assessed for statistical significance.

Results
The median time to wound healing was 10 days for both treatments. Polyhexanide dressings were changed 0.4 per day, while silver sulphadiazine dressings were changed daily. Pain reduction was faster and greater for patients with polyhexanide dressings (p<0.001). Silver dressings produced wound discoulouration and ointment residue that made assessing wounds more difficult. Patients and wound specialists preferred the polyhexanide dressings.

Silver dressings had material costs, for 10 days of treatment, of EUR 69.51, and material plus personnel costs of EUR 165.81. Polyhexanide dressings had material costs of EUR 51.36, and total costs of EUR 70.61. The polyhexanide dressings saved EUR 95.20, over the 10 days of treatment.

Authors' conclusions
The authors concluded that polyhexanide containing bio-cellulose dressings reduced pain better and quicker than silver sulphadiazine dressings; they were safe and cost-effective for partial-thickness burns.

CRD commentary
Interventions:
The interventions were described sufficiently. Silver sulphadiazine cream was a standard treatment for superficial burns, but the authors indicated that there were other treatments available.

Effectiveness/benefits:
The effectiveness data were clearly described, and appropriate methods were used to collect them. It was not possible to blind patients or wound specialists, but appropriate blinding was used in assessing wound healing. The initial characteristics were well reported, but there was no statistical comparison for any differences. It seems that silver dressing patients were younger, than polyhexanide dressing patients. It is not clear what effect this could have on the results. The authors mentioned that scarring was an important outcome for patients, but the time horizon was too short to assess this outcome.

Costs:
It appears that a third-party payer perspective was adopted. The costs were adequately reported and were from a German source. The price year was not explicitly stated, but the only cost source was published in February 2009. The costs were presented as fixed amounts; it was not clear whether there was any variation in the insurance payments. The methods were not fully reported, but if they were consistent between treatments, any bias should be minimised. There were some costs that might be considered for a societal perspective, such as out of pocket expenses and travel time for patients, but these are likely to make the assessment more favourable for polyhexanide dressings.

Analysis and results:
The results were clearly presented and an appropriate intention-to-treat analysis was conducted. The authors conclusions were consistent with their results. The study was not large, but the differences in effectiveness and indications of patient and wound care specialist preferences, clearly suggested that polyhexanide dressings were the superior treatment.

Concluding remarks:
The methods seem to have been valid, and they were clearly reported. The authors' conclusion appears to be appropriate.

Funding
Not stated.
Bibliographic details
Piatkowski A, Drummer N, Andriessen A, Ulrich D, Pallua N. Randomized controlled single center study comparing a polyhexanide containing bio-cellulose dressing with silver sulfadiazine cream in partial-thickness dermal burns. Burns 2011; 37(5): 800-804

PubMedID
21349646

DOI
10.1016/j.burns.2011.01.027

Original Paper URL

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Anti-Infective Agents, Local /therapeutic use; Bandages /economics; Biguanides /therapeutic use; Biocompatible Materials /economics /therapeutic use; Burns /drug therapy /economics /therapy; Cellulose /therapeutic use; Female; Health Care Costs; Humans; Male; Middle Aged; Pain Measurement; Prospective Studies; Silver Sulfadiazine /therapeutic use; Wound Healing /drug effects; Young Adult

AccessionNumber
22011001842

Date bibliographic record published
30/11/2011

Date abstract record published
23/10/2013