Efficacy of advanced dressings in the treatment of pressure ulcers: a systematic review
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CRD summary
This review concluded that hydrocolloid dressings are more effective than moistened conventional dressings in healing pressure ulcers, but there was insufficient evidence for other dressings. This conclusion seems appropriate given the evidence presented, though some important data were not clearly reported in the review.

Authors' objectives
To assess the effectiveness of different types of advanced dressings in the treatment of pressure ulcers.

Searching
MEDLINE, CINAHL, SWEESNET (up to January 2003) and the Cochrane Controlled Trials Register were searched without any language restrictions; the search terms were reported. In addition, the reference lists of relevant articles were screened. Proceedings of meetings were excluded from the review.

Study selection
Study designs of evaluations included in the review
Randomised, quasi-randomised and controlled clinical trials were eligible for inclusion in the review if they included at least 10 participants.

Specific interventions included in the review
Studies were eligible if they compared one or more advanced dressings (hydrocolloids, polyurethane, alginate, dextranomer, polyhydroxyethyl methacrylate, amino acid copolymer etc.) with conventional dressings (saline gauze, knitted viscose, paraffin gauze etc.) or other types of advanced dressings. The specific advanced dressings included in the review were hydrocolloids, polyurethane, hydrogel, dextranomer, polyhydroxyethyl methacrylate, amino acid copolymer and collagen.

Participants included in the review
Studies of patients with pressure ulcers were eligible for inclusion. Studies of patients with only stage I ulcers (non-blanching erythema) and those with other types of wound were excluded. The characteristics of the patients in the included studies were not described.

Outcomes assessed in the review
Studies measuring quantitative measures of outcome were eligible for inclusion. The primary review outcome was the proportion of healed ulcers. Withdrawals and adverse effects were also assessed.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected studies for inclusion in the review.

Assessment of study quality
Validity was assessed and scored according to two validated published scales. The studies were also assessed for the use of a power calculation and intention-to-treat analysis. It appeared that two reviewers independently assessed validity.

Data extraction
Two reviewers independently extracted relevant data using a specially designed form. The reviewers were not blinded to study authors, institutions, journal or interventions. The percentage healing rates were reported for each study.
Methods of synthesis

How were the studies combined?
Where studies were clinically comparable, the data were combined using a fixed-effect meta-analysis. Pooled relative risks with 95% confidence intervals (CIs) were calculated for dichotomous data, whilst pooled weighted mean differences with 95% CIs were calculated for continuous data.

How were differences between studies investigated?
Consistency across studies was assessed using the I-squared statistic and potential causes of heterogeneity were explored through sensitivity analyses.

Results of the review

Twenty-one studies (n=1,104) were included. Eleven studies (n=450) compared advanced dressings against conventional dressings. Ten studies (n=654) compared two different advanced dressings.

Advanced versus conventional dressings.

Six studies evaluated hydrocolloids for wound healing: three reported significant benefits for hydrocolloids and three reporting no such difference (pooled number-needed-to-treat 7, 95% CI: 4, 16). The outcomes of the included studies were heterogeneous (I-squared 78%), but sensitivity analyses showed no appreciable differences between the pooled effect sizes obtained. A significant effect favouring hydrocolloids on time to heal was also reported (estimate not given; I-squared 77%).

No differences were observed in healing rates in studies comparing dextranomer, polyurethane or hydrogel against conventional dressings. Dextranomer was reported to significantly reduce healing time compared with paraffin gauze in a single study of poor methodological quality.

Comparison of advanced dressings. Pooled analyses of studies comparing hydrocolloids with polyurethane dressings failed to show significant differences between the groups. Other advanced dressings were compared inconsistently.

A meta analysis suggested no significant differences between the intervention and control groups in terms of adverse effects or withdrawals.

Authors’ conclusions

This review confirmed the efficacy of hydrocolloid dressings over moistened conventional dressings in healing pressure ulcers. There were insufficient data to establish with any certainty that other types of advanced dressings had greater efficacy than conventional ones. Furthermore, there was insufficient evidence to consider that one sort of advanced dressing was more effective than any other. Advanced dressings seemed to be relatively safe and tolerable, although local adverse events and withdrawals were poorly reported.

CRD commentary

The review addressed a clear question that was defined in terms of the participants, intervention, outcomes and study design. Several relevant sources were searched and attempts were made to minimise language bias. However the authors did not make any attempts to search unpublished sources or conference proceedings, which might have led to publication bias. Methods were used to minimise errors and bias in the review processes. Validity was assessed using specified criteria and the results of the assessment were partially reported.

The authors stated that only clinically comparable studies were combined in the meta-analyses. However, the reporting of information on the individual studies was limited, so it is not possible for the reader to confirm this. The authors also stated that their main finding on the effectiveness of hydrocolloids was robust to sensitivity analyses exploring statistical heterogeneity, but the findings of these and other analyses were not shown in the review. The authors’ conclusions seem appropriate, but should be interpreted in light of the fact that some key results were not clearly reported.
Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that numerous areas of uncertainty need further research. In particular, the efficacy of special dressings on infected ulcers; the development of objective measures of dressing performance; and the impact of advanced dressings on pain, quality of life, the patients' perceived health and preferences.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.