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Dressings and topical agents for treating pressure ulcers

Review

Intervention

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First published:
22 June 2017

Editorial Group:
Cochrane Wounds Group

DOI:
10.1002/14651858.CD011947.pub2 View/save citation

Cited by (CrossRef):
0 articles Check for updates

Abstract

English

Background

Pressure ulcers, also known as bedsores, decubitus ulcers and pressure injuries, are localised areas of injury to the skin or the underlying tissue, or both. Dressings are widely used to treat pressure ulcers and promote healing, and there are many options to choose from including alginate, hydrocolloid and protease-modulating dressings. Topical agents have also been used as alternatives to dressings in order to promote healing.

A clear and current overview of all the evidence is required to facilitate decision-making regarding the use of dressings or topical agents for the treatment of pressure ulcers. Such a review would ideally help people with pressure ulcers and health professionals assess the best treatment options. This review is a network meta-analysis (NMA) which assesses the probability of complete ulcer healing associated with alternative dressings and topical agents.

Objectives

To assess the effects of dressings and topical agents for healing pressure ulcers in any care setting. We aimed to examine this evidence base as a whole, determining probabilities that each treatment is the best, with full assessment of uncertainty and evidence quality.

Search methods

In July 2016 we searched the Cochrane Wounds Specialised Register; the Cochrane Central Register of Controlled Trials (CENTRAL); Ovid MEDLINE; Ovid MEDLINE (In-Process & Other Non-Indexed Citations); Ovid Embase and EBSCO CINAHL Plus. We also searched clinical trials registries for ongoing and unpublished studies, and scanned reference lists of relevant included studies as well as reviews, meta-analyses, guidelines and health technology reports to identify additional studies. There were no restrictions with respect to language, date of publication or study setting.

Selection criteria

Published or unpublished randomised controlled trials (RCTs) comparing the effects of at least one of the following interventions with any other intervention in the treatment of pressure ulcers (Stage 2 or above): any dressing, or any topical agent applied directly to an open pressure ulcer and left in situ. We excluded from this review dressings attached to external devices such as negative pressure wound therapies, skin grafts, growth factor treatments, platelet gels and larval therapy.

Data collection and analysis

Two review authors independently performed study selection, risk of bias assessment and data extraction. We conducted network meta-analysis using frequentist mega-regression methods for the efficacy outcome, probability of complete healing. We modelled the relative effectiveness of any two treatments as a function of each treatment relative to the reference treatment (saline gauze). We assumed that treatment effects were similar within dressings classes (e.g. hydrocolloid, foam). We present estimates of effect with their 95% confidence intervals for individual treatments compared with every other, and we report ranking probabilities for each intervention (probability of being the best, second best, etc treatment). We assessed the certainty (quality) of the body of evidence using GRADE for each network comparison and for the network as whole.

Main results

We included 51 studies (2947 participants) in this review and carried out NMA in a network of linked interventions for the sole outcome of probability of complete healing. The network included 21 different interventions (13 dressings, 6 topical agents and 2 supplementary linking interventions) and was informed by 39 studies in 2127 participants, of whom 783 had completely healed wounds.

We judged the network to be sparse: overall, there were relatively few participants, with few events, both for the number of interventions and the number of mixed treatment contrasts; most studies were small or very small. The consequence of this sparseness is high imprecision in the evidence, and this, coupled with the (mainly) high risk of bias in the studies informing the network, means that we judged the vast majority of the evidence to be of low or very low certainty. We have no confidence in the findings regarding the rank order of interventions in this review (very low-certainty evidence), but we report here a summary of results for some comparisons of interventions compared with saline gauze. We present here only the findings from evidence which we did not consider to be very low certainty, but these reported results should still be interpreted in the context of the very low certainty of the network as a whole.

It is not clear whether regimens involving protease-modulating dressings increase the probability of pressure ulcer healing compared with saline gauze (risk ratio (RR) 1.65, 95% confidence interval (CI) 0.92 to 2.94) (moderate-certainty evidence: low risk of bias, downgraded for imprecision). This risk ratio of 1.65 corresponds to an absolute difference of 102 more people healed with protease modulating dressings per 1000 people treated than with saline gauze alone (95% CI 13 fewer to 302 more). It is unclear whether the following interventions increase the probability of healing compared with saline gauze (low-certainty evidence): collagenase ointment (RR 2.12, 95% CI 1.06 to 4.22); foam dressings (RR 1.52, 95% CI 1.03 to 2.26); basic wound contact dressings (RR 1.30, 95% CI 0.65 to 2.58) and polyvinylpyrrolidone plus zinc oxide (RR 1.31, 95% CI 0.37 to 4.62); the latter two interventions both had confidence intervals consistent with both a clinically important benefit and a clinically important harm, and the former two interventions each had high risk of bias as well as imprecision.

Authors' conclusions

A network meta-analysis (NMA) of data from 39 studies (evaluating 21 dressings and topical agents for pressure ulcers) is sparse and the evidence is of low or very low certainty (due mainly to risk of bias and imprecision). Consequently we are unable to determine which dressings or topical agents are the most likely to heal pressure ulcers, and it is generally unclear whether the treatments examined are more effective than saline gauze.

More research is needed to determine whether particular dressings or topical agents improve the probability of healing of pressure ulcers. The NMA is uninformative regarding which interventions might best be included in a large trial, and it may be that research is directed towards prevention, leaving clinicians to decide which treatment to use on the basis of wound symptoms, clinical experience, patient preference and cost.

Plain language summary

English

Which dressings or topical agents are the most effective for healing pressure ulcers?

Dressings and topical agents for treating pressure ulcers

Review question

We reviewed the evidence about the effects of dressings and topical agents (such as ointments, creams and gels) on pressure ulcer healing. There are many different dressings and topical agents available, and we wanted to find out which were the most effective.

Background

Pressure ulcers, also known as bedsores, decubitus ulcers and pressure injuries, are wounds involving the skin and sometimes the tissue that lies underneath. Pressure ulcers can be painful, may become infected and affect people's quality of life. People at risk of developing pressure ulcers include those with limited mobility - such as older people and people with short-term or long-term medical conditions - and people with spinal cord injuries. In 2004 the total yearly cost of treating pressure ulcers in the UK was estimated as being GBP 1.4 to 2.1 billion, which was equivalent to 4% of the total National Health Service expenditure.

Topical agents such as ointments, creams or gels are applied to unhealed pressure ulcers and left in place to treat the wound; they may be covered with a dressing. Some of these treatments have been compared with each other in trials, usually comparing two treatments at a time. We used a method called 'network meta-analysis' to bring together all the trial results of different treatments in a reliable way. We hoped that this method, which compares all treatment options, would help us find out which was the best treatment for healing pressure ulcers.

Study characteristics

In July 2016 we searched for randomised controlled trials looking at dressings and topical agents for treating pressure ulcers and that gave results for complete wound healing. We found 51 studies involving a total of 2947 people. Thirty-nine of these studies, involving 2127 people, gave results we could bring together in a network meta-analysis comparing 21 different treatments. Most participants in the trials were older people; three of the 39 trials involved participants with spinal cord injuries.

Key results

Generally, the studies we found did not have many participants and results were often inconclusive. This problem carried over into the network meta-analysis and made the findings unclear. As a result, it was unclear whether one topical agent or dressing was better than another. Some findings for individual comparisons may be slightly more reliable. Protease-modulating dressings, foam dressings or collagenase ointment may be better at healing than gauze; but even this evidence is not certain enough to be an adequate guide for treatment choices.

Certainty of the evidence

We judged the certainty of the evidence to be very low or low. The next step might be to do more research of better quality to see which dressings or topical agents could best heal pressure ulcers.

This plain language summary is up to date as of July 2016.

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