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Support surfaces for treating pressure ulcers

Review

Intervention

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Abstract

English

Background

Pressure ulcers are treated by reducing pressure on the areas of damaged skin. Special support surfaces (including beds, mattresses and cushions) designed to redistribute pressure, are widely used as treatments. The relative effects of different support surfaces are unclear.

Objectives

To assess the effects of pressure-relieving support surfaces in the treatment of pressure ulcers.

Search methods

We searched: The Cochrane Wounds Group Specialised Register (searched 15 July 2011); The Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library* 2011, Issue 3); Ovid MEDLINE (2007 to July Week 1 2011); Ovid MEDLINE (In-Process & Other Non-Indexed Citations, July 14, 2011); Ovid EMBASE (2007 to 2011 Week 27); EBSCO

CINAHL (2007 to 14 July 2011). The reference sections of included studies were also searched.

Selection criteria

We included published or unpublished randomised controlled trials (RCTs), that assessed the effects of support surfaces for treating pressure ulcers, in any patient group or setting, that reported an objective measure of wound healing.

Data collection and analysis

Data extraction and assessment of risk of bias were performed independently by two review authors. Trials with similar patients, comparisons and outcomes were considered for pooled analysis. Where pooling was inappropriate the results of the trials were reported narratively. Where possible, the risk ratio or mean difference was calculated for the results of individual studies.

Main results

We identified 18 trials of support surfaces for pressure ulcer treatment, involving 1309 participants with samples sizes that ranged from 14 to 160. Of three trials comparing air-fluidized devices with conventional therapy, two reported significant reductions in pressure ulcer size associated with air-fluidized devices. Due to lack of reported variance data we could not replicate the analyses. In relation to three of the trials that reported significant reductions in pressure ulcer size favouring low air loss devices compared with foam alternatives, we found no significant differences. A small trial found that sheepskin placed under the legs significantly reduced redness and similarly a small subgroup analysis favoured a profiling bed compared with a standard bed in terms of the healing of existing grade 1 pressure ulcers. Poor reporting, clinical heterogeneity, lack of variance data and methodological limitations in the eligible trials meant that no pooled comparisons were undertaken.

Authors' conclusions

There is no conclusive evidence about the superiority of any support surface for the treatment of existing pressure ulcers. Methodological issues included variations in outcomes measured, sample sizes and comparison groups. Many studies had small sample sizes and often there was inadequate description of the intervention, standard care and co-interventions. Individual study results were often inadequately reported, with failure to report variance data common, thus hindering the calculation of mean differences. Some studies did not report P values when reporting on differences in outcomes. In addition, the age of some trials (some being 20 years old), means that other technologies may have superseded those investigated.

Further and rigorous studies are required to address these concerns and to improve the evidence base before firm conclusions can be drawn about the most effective support surfaces to treat pressure ulcers.

Plain language summary

English

Support surfaces for treating pressure ulcers

Pressure ulcers (also called pressure sores, decubitus ulcers and bed sores) are ulcers on the skin caused by pressure or rubbing at the weight-bearing, bony points of immobilised people (such as hips, heels and elbows). Different support surfaces (e.g. beds, mattresses, mattress overlays and cushions) aim to relieve pressure, and are used to cushion vulnerable parts of the body and distribute the surface pressure more evenly.

Support surfaces are used alongside other treatments such as wound dressings to treat pressure ulcers and this review has reviewed studies that compared different types of support surface. Low-tech support surfaces included foam filled mattresses, fluid-filled mattresses, bead-filled mattresses, air-filled mattresses and alternative foam mattresses and overlays. High-tech support surfaces included mattresses and overlays that are electrically powered to alternate the pressure within the surface, beds that are powered to have air mechanically circulated within them and low-air-loss beds that contain warm air moving within pockets inside the bed. Other support surfaces included sheepskins, cushions and operating table overlays.

We are unable to draw any firm conclusions about the relative effects of support surfaces for treating pressure ulcers because the evidence base is weak. Current trials have failed to provide robust evidence due to small sample sizes, poor reporting of results and poor quality of study conduct and design. Further rigorously conducted research into the use of support surfaces for treating pressure ulcer surfaces is required.