Enzymatic wound debridement
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CRD summary
This review concluded that collagenase ointment was more effective than placebo for debridement of leg ulcers, pressure ulcers and partial thickness burns. Evidence on other comparisons and impact on wound healing was limited or equivocal. The small size and uncertain quality of included studies and poor reporting of the review mean the reliability of these conclusions is unclear.

Authors' objectives
To assess the efficacy of the enzymatic debriding agents collagenase and papain-urea in removal of necrotic tissue from the wound bed and the impact of this on healing.

Searching
MEDLINE, CINAHL (from 1960 to February 2008) and Cochrane Database of Systematic Reviews databases and Google Scholar were searched. Search terms were reported. Only studies published in English or that had an English-language abstract were eligible for inclusion.

Study selection
Prospective and retrospective comparative studies that assessed enzymatic debridement using collagenase or papain-urea with or without chlorophyllin for the treatment of pressure ulcers, leg ulcers or burn wounds were eligible for inclusion. The primary outcome was time required to remove visible necrotic material from the wound bed. Time to wound healing was a secondary outcome.

Comparators used in included studies were placebo ointment, silver sulfadiazine, autolysis and the alternative assessed treatment (collagenase versus papain-urea). There was considerable variation in the populations of the included studies; these ranged from children with partial thickness burns to older adults with pressure ulcers.

The authors did not state how the studies were selected for the review.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how data were extracted for the review.

Methods of synthesis
The studies were combined in a narrative synthesis grouped by the comparison and outcome assessed.

Results of the review
Nine studies were included in the review: eight randomised controlled trials (RCTs) and one cohort study. Total sample sizes were not always reported; at least 320 patients were included.

Five studies that compared collagenase ointment to placebo consistently found that the active treatment resulted in more rapid and effective removal of necrotic tissue from pressure ulcers, leg ulcers and partial thickness burn wounds. A comparison of collagenase and papain-urea based ointments found faster removal of necrotic tissue, but no difference in time to healing.

The cohort study found collagenase treatment to be equivalent to surgical debridement and that treatment with both techniques may reduce the need for surgical excision in children with partial thickness burns.

The only study that reported wound healing outcomes found that partial thickness burns over up to 25% of the body
healed more quickly with collagenase than with silver sulfadiazine treatment.

**Authors' conclusions**
Collagenase ointment was more effective than placebo ointment for debridement of leg ulcers, pressure ulcers or partial thickness burns. Is unclear how effective it was relative to autolytic debridement plus a polyacrylate dressing. There was limited evidence that papain-urea based ointment removed necrotic material in pressure ulcers faster than collagenase ointment.

**CRD commentary**
The review question and the inclusion criteria were clear. The authors searched several relevant sources. The limitation of the review to published studies with a minimum of an English abstract increased the chances that relevant studies were omitted and publication and language biases were introduced. The authors did not report that they used methods designed to reduce reviewer bias and error at any stage of the review process and did not report that they conducted a validity assessment of the included studies. The lack of a validity assessment made it difficult to assess the reliability of the evidence contributed by the included studies. Given the clinical heterogeneity of the included studies, the decision to employ a narrative synthesis appeared correct.

The authors' conclusions are in line with the evidence of the review. However, the small sample size and uncertain quality of the included studies and poor reporting of the review process made the reliability of the conclusions unclear.

**Implications of the review for practice and research**
**Practice:** The authors stated that enzymatic debriding agents provided an effective alternative for removal of necrotic material from pressure ulcers, leg ulcers and partial-thickness wounds and can be used for debridement of adherent slough and eschar. They may be useful as a primary agent when surgical or conservative sharp wound debridement were not feasible. Enzymatic agents should not be combined.

**Research:** The authors did not state any implications for further research.

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