

## ***Executive summary***

# **The debridement of chronic wounds: a systematic review**

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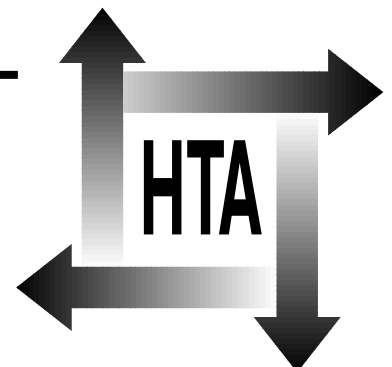
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**Health Technology Assessment  
NHS R&D HTA Programme**





## Executive summary

### Background

A wide variety of debridement methods and products are available, all of which have diverse properties, costs and levels of acceptability. There is currently wide variation in their use and a lack of consensus on how to treat specific wound types.

### Objectives

- To summarise the evidence for the relative effectiveness and cost-effectiveness of different debriding agents on wound healing.
- To identify areas for future research.

### Methods

#### Data sources

A range of electronic databases and several wound care journals were searched; organisations, manufacturers, researchers and healthcare professionals concerned with wound care were contacted for additional trials. The reference sections of obtained studies were also searched for further trials.

#### Inclusion criteria

Studies were considered for inclusion if they were randomised controlled trials (RCTs), published or unpublished, that assessed the effectiveness of a recognised debriding agent as identified by an expert panel, and assessed patients with chronic non-healing wounds (pressure sores, leg ulcers, sinuses and surgical wounds healing by secondary intention). Studies were only included if they used a quantifiable and objective measure of healing rate.

#### Data synthesis

For each trial an odds ratio and/or effect size was calculated for all objective outcomes. Where possible the analysis was performed on an intention-to-treat basis, and 95% confidence intervals were included when sufficient detail to allow their calculation was provided.

### Results

Forty-seven reports describing 35 RCTs were identified that met the inclusion criteria.

### Interventions

The following interventions were identified as agents that would be used primarily for wound debridement.

- Dextranomer polysaccharide beads or paste
- Cadexomer iodine polysaccharide beads or paste
- Hydrogels
- Enzymatic agents
- Adhesive zinc oxide tape
- Surgery or sharp debridement
- Larval (maggot) therapy.

Other interventions that are believed to have a debriding function, such as hydrocolloid dressings and antibiotics/antiseptics, were not included in this review as debridement was not the primary reason for their application.

No RCTs were found that evaluated the effectiveness of surgical debridement, larval therapy, or that compared debridement with no debridement.

#### ***Dextranomer polysaccharide beads or paste versus traditional or control treatment***

Nine trials met the inclusion criteria, five of which found a statistically significant difference between treatments: three favoured dextranomer polysaccharide, and two favoured traditional treatment.

#### ***Cadexomer iodine polysaccharide versus traditional or control treatment***

Nine trials met the inclusion criteria, of which three had a statistically significant result that favoured cadexomer iodine polysaccharide.

#### ***Hydrogels versus traditional or control treatment***

Only one trial out of four that compared a hydrogel with a traditional or control treatment found a statistically significant difference between treatments, which suggested a small benefit from treatment with a hydrogel dressing compared with a hydrocolloid dressing.

#### ***Enzymatic agents versus traditional or control treatment***

None of the five trials in this category showed a statistically significant outcome in favour of either treatment for wound closure. In fact, one trial showed an increase in wound size with both the enzyme collagenase and the control treatment; however, the increase was significantly less in the enzyme-treated group.

### **Adhesive zinc oxide tape versus traditional treatment**

A single trial meeting the inclusion criteria showed that adhesive zinc oxide tape was more effective in eradicating or reducing by more than 50% the necrotic area of diabetic foot ulcers than a hydrocolloid dressing.

### **Cadexomer iodine polysaccharide versus other debriding agents**

Two trials were comparisons with dextranomer polysaccharide and one trial was a comparison with a hydrogel. None of the trials had statistically significant results.

### **Dextranomer versus other debriding agents**

Four RCTs comparing dextranomer polysaccharide with another debriding agent included two trials with enzyme formulations, namely collagenase and streptokinase/streptodornase, and two trials using a hydrogel as the comparator. Only one of the two comparisons with a hydrogel showed a statistically significant benefit associated with the hydrogel.

### **Hydrogel versus hydrogel**

A single trial was found. There was no statistically significant difference between the two treatments.

### **Enzymatic agent versus enzymatic agent**

One trial that compared the enzyme preparation streptokinase/streptodornase with the enzyme trypsin was included in the review. No statistically significant difference between the two treatments was found.

### **Cost-effectiveness**

Cost-effectiveness has not been thoroughly assessed in studies of debriding agents. The unit cost for each treatment is stated in some studies, and a few contain further details on other important variables, such as nursing time or number of dressing changes. However, no study provides sufficient detail from which a reliable cost-effectiveness analysis can be constructed.

### **Conclusions**

No studies were found that compared debridement with no debridement and without these studies it is unclear whether wound debridement is a beneficial process that expedites healing.

There is insufficient evidence to promote the use of one debriding agent over another. There was only a single comparison between two

debriding agents that produced a significant result (hydrogel significantly reduced necrotic wound area compared with dextranomer polysaccharide paste).

### **Implications for policy**

There is little evidence to identify which agents are the most effective. Pending the availability of improved data on relative effectiveness, other considerations, such as cost-minimisation, may reasonably guide decisions on the use of debriding agents.

### **Recommendations for research**

Much of the research is of poor quality, and direct comparisons are few. In the trials reviewed, sample sizes were rarely sufficient to detect clinically important effects, and poor baseline comparability frequently confounded outcome measures. Several important messages can be identified for future studies.

- Recruitment numbers should be based on a sample size calculation.
- The proportion of wounds healed should be used as an objective outcome measure. Where healing rates are based on wound area, both the percentage and absolute change in area should be given.
- Experimental groups should be comparable at baseline.
- Baseline data and intervention details should always include a thorough description of how the patients were nursed and report the use of concurrent treatments, including secondary dressings.
- Comparisons between debriding agents are required and should use agents that are recommended for wounds of a similar nature.
- Assessment should be blind to treatment.
- Survival rate analysis should be adopted for all studies that assess wound healing.
- All RCTs should be published.
- Detailed cost-effectiveness analyses should be seen as a priority for future trials.
- The frequent use of surgical debridement and the increasing interest in larval therapy indicate that RCTs in these areas are needed.

### **Publication**

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# NHS R&D HTA Programme

The overall aim of the NHS R&D Health Technology Assessment (HTA) programme is to ensure that high-quality research information on the costs, effectiveness and broader impact of health technologies is produced in the most efficient way for those who use, manage and work in the NHS. Research is undertaken in those areas where the evidence will lead to the greatest benefits to patients, either through improved patient outcomes or the most efficient use of NHS resources.

The Standing Group on Health Technology advises on national priorities for health technology assessment. Six advisory panels assist the Standing Group in identifying and prioritising projects. These priorities are then considered by the HTA Commissioning Board supported by the National Coordinating Centre for HTA (NCCHTA).

This report is one of a series covering acute care, diagnostics and imaging, methodology, pharmaceuticals, population screening, and primary and community care. It was identified as a priority by the Pharmaceutical Panel and funded as project number 93/29/01.

The views expressed in this publication are those of the authors and not necessarily those of the Standing Group, the Commissioning Board, the Panel members or the Department of Health. The editors wish to emphasise that funding and publication of this research by the NHS should not be taken as implicit support for the recommendations for policy contained herein. In particular, policy options in the area of screening will be considered by the National Screening Committee. This Committee, chaired by the Chief Medical Officer, will take into account the views expressed here, further available evidence and other relevant considerations.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search, appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

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