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Lack of a standardised UK care pathway resulting in national variations in management and outcomes of paediatric small area scalds

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ARTICLE INFO

Article history:
Accepted 1 April 2016

Keywords:
Paediatric
Scald
Biosynthetic dressing
Skin graft
Burn
Outcomes

ABSTRACT

Introduction: There is a paucity of evidence guiding management of small area partial thickness paediatric scalds. This has prevented the development of national management guidelines for these injuries. This research aimed to investigate whether a lack of evidence for national guidelines has resulted in variations in both management and outcomes of paediatric small area scalds across England and Wales (E&W).

Methods: A national survey of initial management of paediatric scalds ≤5% Total Body Surface Area (%TBSA) was sent to 14 burns services in E&W. Skin graft rates of anonymised burns services over seven years were collected from the international Burns Injury Database (iBID). Average skin grafting rates across services were compared. Length of stay and proportion of patients receiving general anaesthesia for dressing application at each service were also compared.

Results: All 14 burns services responded to the survey. Only 50% of services had a protocol in place for the management of small area burns. All protocols varied in how partial thickness paediatrics scalds ≤5% TBSA should be managed. There was no consensus as to which scalds should be treated using biosynthetic dressings.

Data from iBID for 11,917 patients showed that the average reported skin grafting rate across all burns services was 2.3% (95% CI 2.1, 2.6) but varied from 0.3% to 7.1% ($P < 0.001$). Service provider remained associated with likelihood of skin grafting when variations in the %TBSA case mix seen by each service were controlled for ($\chi^2 = 87.3$, $P < 0.001$). The use of general anaesthetics across services varied between 0.6 and 35.5% ($P < 0.001$). The median length of stay across services varied from 1 to 3 days ($P < 0.001$).

Discussion: A lack of evidence guiding management of small-area paediatric scalds has resulted in variation in management of these injuries across E&W. There is also significant variation in outcomes for these injuries. Further research is indicated to determine if care

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http://dx.doi.org/10.1016/j.burns.2016.04.001

Please cite this article in press as: Trevatt AEJ, et al. Lack of a standardised UK care pathway resulting in national variations in management and outcomes of paediatric small area scalds. Burns (2016), http://dx.doi.org/10.1016/j.burns.2016.04.001

pathways and outcomes are linked. An evidence-based national policy for the management of small area paediatric scalds would ensure that high quality, standardised care is delivered throughout E&W and variations in outcome are reduced.

1. Introduction

Over 50,000 paediatric burns per year are seen in A&Es across the UK [1]. 99% of these are small area burns covering less than 10% total body surface area (TBSA) and 70% are scalds [1]. Small area paediatric scalds can cause significant distress to both parent and child, particularly when scarring occurs [2]. Scarring can detrimentally affect function and has the potential to cause psychological distress, pain and pruritus [3,4]. Even small scars may be significant functionally, cosmetically or psychologically as the child matures. The risk of hypertrophic scarring is greatly increased where healing has not occurred within three weeks of burn [5–8]. At this point, evidence shows that skin grafting is useful to reduce the likelihood of hypertrophic scarring and thus improve outcome [7].

There are a number of management options available for small area paediatric scalds, but no nationally agreed care pathway. These injuries are therefore currently managed according to local guidelines and professional opinion without an evidence base [9]. Wounds are either cleaned in theatre under general anaesthesia, or on the ward using oral analgesia and sedation. Dressing choice can be broadly divided into non-biosynthetic non-adherent dressings and biosynthetic adherent dressings. Non-adherent dressings can generally be applied in the outpatient setting using oral sedation [10], however the scald must be re-dressed every 48 h, which is both costly and painful. Biosynthetic dressings benefit from a surgically clean wound and are usually applied to children under general anaesthesia. They are more expensive than non-biosynthetic dressings [11] but do not require changing and should remain in place until wound healing, thus potentially improving the patient experience.

Biosynthetic dressings are widely used for larger paediatric scalds where they have been shown to improve healing times and shorten hospital stays [12–14]. There is only limited evidence investigating whether these benefits are seen with small area scalds, and whether any benefits seen are significant enough to be cost-effective. This has prevented the development of a standardised NHS England care pathway for the management of small area paediatric scalds.

Knowledge of the clinical and cost-effectiveness of dressings and treatment strategies for such a common injury is important to the NHS from a cost and quality-of-care perspective. The Department of Health has demanded a focus on clinical outcomes and the quality standards that deliver these [15]. Since skin grafting is the standard intervention used when partial thickness small area paediatric scalds have failed to heal within three weeks [7], skin grafting rates can be used as an indirect measure of outcome in this patient population.

This study aims to investigate whether the lack of evidence for a national standardised care pathway has resulted in variations in management of small area paediatric scalds across burns services in England and Wales (E&W). This study also aims to compare patient outcomes for this common injury in young children across burns services in E&W.

2. Methods

A national survey of the management of paediatric small-area scalds in burns services across E&W was conducted between February 2014 and August 2014. The evaluation questionnaire (Appendix A) was designed by the Children's Burns Research Team with input from burn surgeons and specialist nurses. Both closed and open-ended questions were used in an attempt to provide a full overview of initial management at burn services in E&W and the criteria they used to select individual therapies. The survey design conformed with recently published guidance on producing effective surveys [16].

The survey was sent to lead nurses at the 14 burn services in E&W accepting children fulfilling our inclusion criteria (Table 1). Services had the option of completing the survey online or *via* an e-mailed word document. Non-responders were followed up with a phone call. All data was held anonymously and securely and no personal data was asked for or retained. All information received was anonymised, including the identity of the various services.

The questions were divided into four sections: service overview, protocol, initial care and post-acute care. The survey (Appendix A) included questions about the following aspects of initial management:

- Protocols in place for initial management.
- Factors that influenced initial management.
- Factors affecting choice of dressing.
- %TBSA at which management changed.

Each burn service was asked to specify the types of dressings they used for small area paediatric scalds. Open questions were used to reveal the key influencing factors which led to the use of adherent biosynthetic dressings rather

Table 1 – Inclusion criteria.

- Partial thickness scald (partial thickness burn caused by hot, non-fat liquid).
- Children of less than five years of age.
- Total body surface area (TBSA) of scald ≤5%.
- Primary admission.
- Treated at currently active paediatric burns services.

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