



Paediatric Burn Care: a Re-Audit

The Adequacy of Cool Running Water First Aid

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BACKGROUND

Appropriate initial management of paediatric thermal burns is key to the **prevention** and **reduction** of **complications** to include scarring, chronic pain and sensory disturbance. The administration of **cool running water** not only serves an **analgesic function** but has been associated with significantly **improved patient outcomes**, including reduced odds of skin grafting ⁽¹⁾.

The present re-audit evaluates the first aid (FA) care of paediatric burn patients in the emergency department (ED) of the Royal Belfast Hospital for Sick Children (RBHSC). The FA treatment of paediatric burns patients was specifically examined in the context of **both pre-hospital and ED care**.

Our aim is to determine the **adequacy of cool running water FA** provided in the management of children with thermal burns.



STANDARD

NICE guidelines recommend all patients receive **20 minutes of cool running water** up to 3 hours following injury ⁽²⁾



INDICATOR

% of patients identified as having received adequate cooling time of 20 minutes in prehospital and ED settings



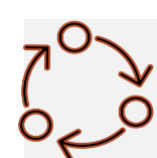
TARGET

100% of paediatric burns completing adequate cooling time of 20 minutes in ED, consecutively or cumulatively



REFERENCES

1. Griffin BR, Frear CC, Babl F, Oakley E, Kimble RM. Cool running water first aid decreases skin grafting requirements in Pediatric burns: a cohort study of two thousand four hundred ninety-five children. Ann. Emerg. Med. 2020; 75: 75–85.
2. International Best Practice Guidelines: Effective skin and wound management of noncomplex burns. Wounds International, 2014.
3. Wright EH, Tyler M, Vojnovic B, et al. Human model of burn injury that quantifies the benefit of cooling as a first aid measure. The British Journal of Surgery. 2019 Oct;106(11):1472-1479. DOI: 10.1002/bjs.11263.

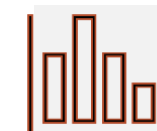


METHODOLOGY

Retrospective study of patients presenting with thermal burns in a three-month period.

- **1st Audit cycle:** October - December 2019
- **2nd Audit cycle:** May - July 2020

Electronic records were identified by coded diagnosis of 'burn' or 'scald' to evaluate recording of cool running water FA in pre-hospital & ED settings. Demographics, mechanism of burn, % body surface area, nature and duration of prehospital & ED FA were recorded. *Excluded:* non-thermal burn injuries.



RESULTS: 1ST CYCLE

50 patients identified: 28% without clear documentation

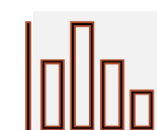
12% received **adequate pre-hospital** cooling

29% completed **adequate** cooling in **ED**



ACTION PLAN: 1ST CYCLE

- ✓ Results presented at local audit meeting with **re-education** of current guidelines & common pitfalls
- ✓ Commitment to engage in an **MDT approach** agreed amongst ED physicians, nursing staff and play therapists
- ✓ Re-audit in **six months**



RESULTS: 2ND CYCLE

27 patients identified: 8% without clear documentation

24% received **adequate pre-hospital** cooling

65% completed **adequate** cooling in **ED**

All children failing to complete cooling in ED (35%) were **under 2 years of age** and received between **10-20 minutes pre-hospital** cooling

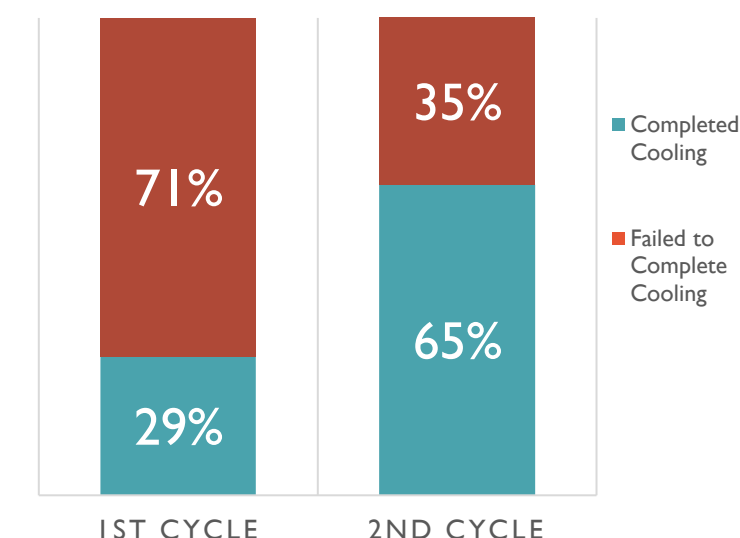


Figure 1: Split Bar Chart showing the percentage (%) of children completing cooling in ED in the first and second audit cycles.

> 100%
increase
in the completion of
adequate cooling



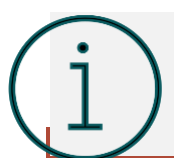
ACTION PLAN: 2ND CYCLE

- ✓ Feedback at local meeting highlighting the patient characteristics of those who fail to complete cooling e.g. the **under 2** demographic and those receiving between **10-20 minutes** pre-hospital cooling
- ✓ **Address barriers** to cooling in these groups
- ✓ Consider implementing a **tick-box prompt** on burns ED template to encourage and motivate staff in the documentation of cooling time
- ✓ Re-audit in **six months**



IMPROVE AWARENESS

Applying **cool running water for 20 minutes** could reduce the depth of the burn by **25%** ⁽³⁾



KEY FINDINGS

1. Re-audit revealed a **marked improvement** in completion of adequate cooling demonstrated in **65%** of children attending ED
2. Among children treated in ED, adequate cooling was lowest amongst those **aged under 2** and those who completed **between 10-20 minutes** cooling in the prehospital setting
3. Changes implemented resulted in **improved adherence** with NICE guidance & **documentation** of cooling practice by staff.