

First Aid, Skin Type and Post-Burn Complications: A Retrospective Inpatient Study in a Regional Burns Centre

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Introduction

The accepted first aid for thermal burn injury is 20 minutes of cool running water within 3 hours of injury¹. In practice, this is frequently omitted or delivered for an insufficient amount of time.

International research, largely from the United States^{2,3}, has also suggested potential disparities in burn outcomes among patients with darker skin; this has not been well characterised within a UK inpatient burns population.

Methods

A retrospective review of adult burn referrals was undertaken. Extracted variables included:

- 🔥 *Demographics (age, sex, ethnicity)*
 - 🔥 *Injury characteristics (date, mechanism/site, depth, %TBSA)*
 - 🔥 *Healthcare presentation factors (delay to presentation, length of stay, ICU days)*
 - 🔥 *Management and outcomes (wound cultures, clinical burn wound infection, graft take, time to healing, hypertrophic scarring, need for scar interventions)*
 - 🔥 *Comorbidities (diabetes status, neuropathy where documented)*
- First aid provision was categorised into:
- 🔥 No first aid

🔥 <20 minutes cool running water

🔥 ≥20 minutes cool running water

🔥 Undocumented

FST was assigned from medical photography if available. Statistical analysis utilised multivariable regression alongside Kruskal–Wallis and chi-squared testing.

References

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- DiPaolo, Nicola et al. "Race and Ethnicity Influences Outcomes of Adult Burn Patients." *Journal of burn care & research : official publication of the American Burn Association* vol. 44,5 (2023): 1223-1230. doi:10.1093/jbcr/irad033

Purpose of Study



To describe local variation in burn first aid provision and assess associations with inpatient burn outcomes.



To describe the distribution of Fitzpatrick Skin Types (FST) among burns inpatients and explore whether outcomes differ between FST groups.

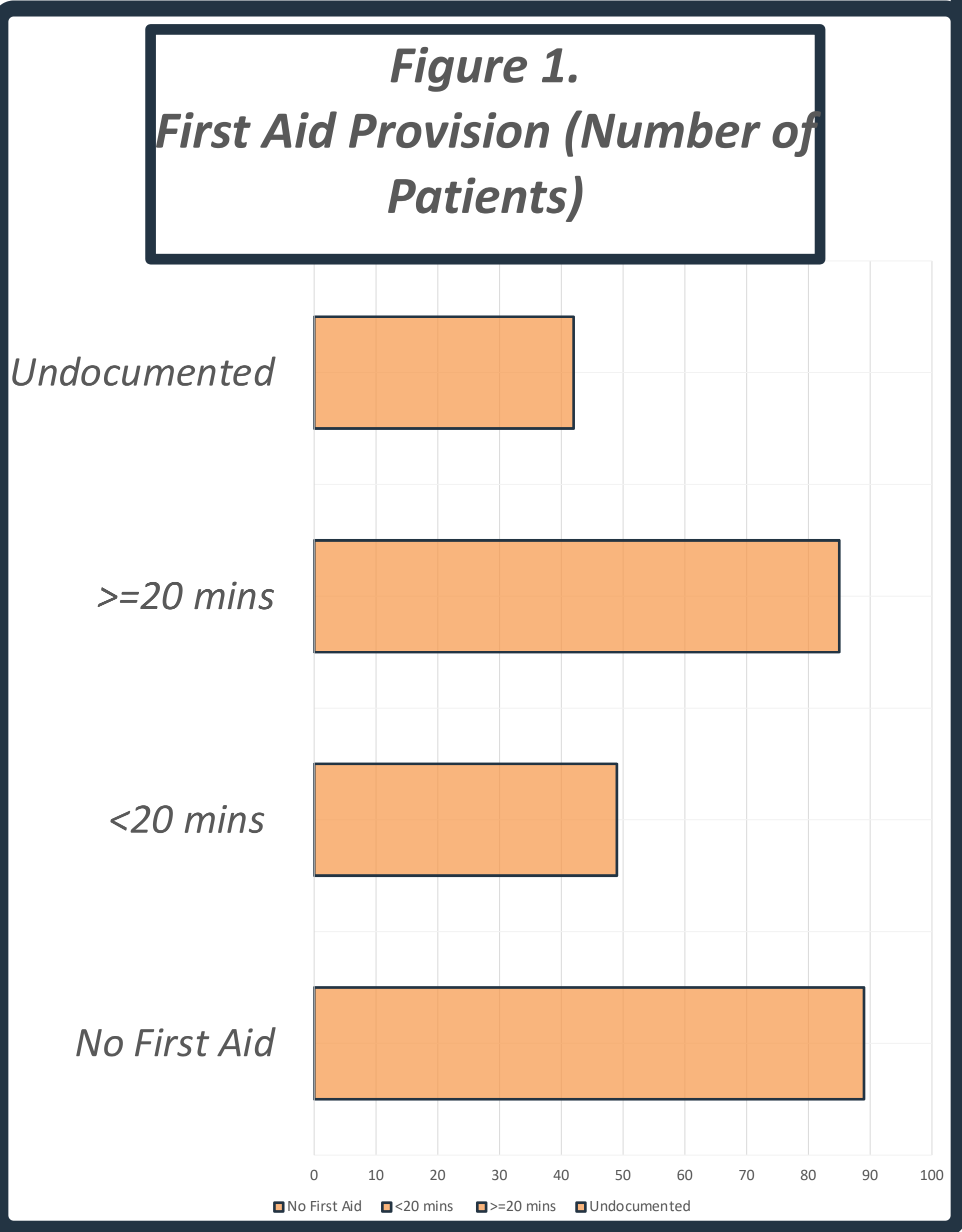
Results

308 patients were screened; 43 were excluded due to insufficient data; (n=265). Within 3 hours of injury, 33.6% received no first aid, 18.5% received <20 minutes of cool running water, and 32.0% received ≥20 minutes; first aid went undocumented in 15.8% of patients (see figure 1).

Poorer first aid provision was associated with delayed presentation to healthcare (p<0.05). Longer delays in presentation were associated with subsequent clinical burn wound infection (p<0.05). Among patients with diabetes, 56.7% had no first aid and 10 had documented neuropathy.

No significant association was identified between first aid category and clinical BWI, ICU admission, wound healing time, graft failure rates or length of hospital stay.

FST analysis was limited by missing photography and a lack of diverse skin types. 82.3% of the sample were of white ethnicity.



Conclusions

- 🔥 Burn first aid provision in this region is inconsistent and is associated with delayed presentation to healthcare.
- 🔥 Delayed presentation was associated with clinical burn wound infection, although causality can not be inferred.
- 🔥 No association demonstrated between first aid provision and longer-term inpatient burn outcomes.
- 🔥 Predominance of white ethnicity amongst local severe burn inpatients.
- 🔥 Prospective work is warranted which includes standardised documentation of first aid and objective skin type.