



The accuracy of burn TBSA estimation in referrals to a regional burns unit



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Background:

Estimation of burn size is a critical first step in the management of the burned patient. It guides management in determining resuscitation fluids, referral and transfer to specialist centres.

The literature suggests that initial referral total burn surface area (TBSA) estimations tend to be inaccurate compared to final TBSA as determined by a burn specialist in theatre. There is a general trend for referring centres to overestimate TBSA^{2,3,4}, particularly in children^{5, 6 7}. This has potential to cause patient harm from inappropriate resuscitation, or from inappropriate transfers of patients away from their homes and support networks.

Aim:

To document the accuracy of referral burn TBSA estimation to a regional burns unit; to review the care they received prior to and at transfer; and identify any factors that may impact on this.

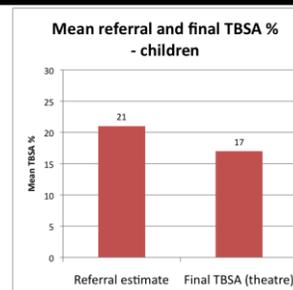
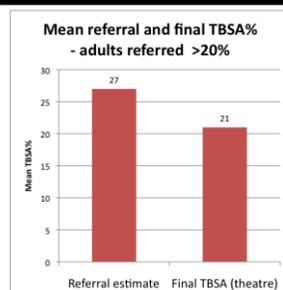
Method and study design:

- Study design: Retrospective audit
- Cohort: Consecutive patients referred to the Wellington Regional Burn Unit with referral TBSA >10%
- Time period: 2013-2017
- Location: Wellington Regional Burn Unit, Hutt Hospital, Lower Hutt
- Primary variable: accuracy of initial TBSA estimation compared to final theatre estimation.
- Secondary variables: patient demographics, mode of injury, estimated TBSA, final TBSA, time to arrival, appropriate fluid resuscitation, appropriate cooling at time of injury, 30 day complications.

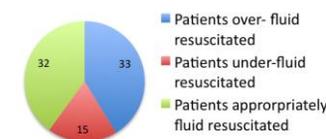
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Results:

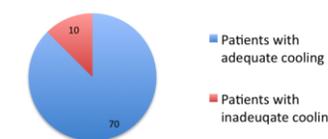
Total patients referred TBSA >10%	80 patients
Children (age <16 years)	14 patients
All adults	66 patients
Adults >20% TBSA referral	22 patients
Mean difference between referral and final TBSA, all patients	2% (p= 0.01)
Mean difference between referral and final TBSA, adults referred >20%	6% (p= 0.0003)
Mean difference between referral and final TBSA, children	4% (p= 0.06)
Patients adequately cooled prior to arrival at specialist burns unit	70
Patients who received appropriate fluid resuscitation initiated by referring unit	32



Fluid resuscitation initiated by referring centre



Cooling prior to arrival at regional burns unit



Discussion:

In assessing our primary outcome, we found overestimations in TBSA at referral compared to final TBSA in children (p = 0.06) and statistically significant overestimations in adults with referral estimation >20% (p=0.0001). This is consistent with the literature that suggests a trend to overestimate burns.

We did not find any correlations between particular referring centres, ethnicity, burn type, or time to presentation, and inaccuracy in TBSA estimation. We found poor documentation of whether there had been adequate cooling. Only 70 of our patients received “adequate cooling” (defined as 20 minutes of cool running water within 3 hours of burn). Another important finding was that of inappropriate fluid resuscitation initiated by the referring centre, with more centres over-prescribing than under-prescribing resuscitation fluid.

Conclusions:

There is a general trend to overestimate burns referred to our centre; particularly in adults >20% and children.

This audit has identified that more education for peripheral centres in estimating TBSA and caring for the burned patient is needed to improve patient care. We have an outreach education programme in place for this.

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References:

Please refer to abstract