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Paediatric burns patients: Reasons for admission at a tertiary centre



M.J. Marino^{a,1}, R.M. Kimble^{a,2,*}, K.A. Stockton^{b,3}

^a Stuart Pegg Paediatric Burns Centre, Royal Children's Hospital, Brisbane, Australia

^b Centre for Burns and Trauma Research, Queensland Children's Medical Research Institute, University of Queensland, Australia

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ABSTRACT

Aim and method: The aim of this study was to determine the reasons why children with burns are admitted upon primary presentation to a tertiary burns centre. The study was a retrospective chart review of all children admitted to the Stuart Pegg Paediatric Burns Centre with a burns injury over an 18 month period.

Results: A total of 159 children with an overall median age of 25 months were included in the study. The reason for admission was able to be determined in all but two of these patients, and categorised into either severity, region of body burnt, social reasons, timing of presentation, geographical reasons, age and other. The majority of children (45%) were admitted for severity, followed by region of body burnt (24%) and social reasons (11%). One third of children were admitted because of reasons other than the biology of the burn itself (severity or body region).

Conclusion: The findings of this study demonstrate that it is not just children with severe burns who are admitted. One third of children are admitted because of the impact of the burn injury on the family, not because of a need for immediate management of the burns injury itself. The full impact of paediatric burns on our healthcare system is not solely determined by the physical characteristics of the burn itself.

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1. Introduction

Burns are one of the most common causes of injury with presentation to hospital in children and adults globally [1]. Burns in children are associated with significant physical and psychological morbidity, often utilising long term management by both medical and allied health staff [2,3]. Medical management is

often initiated in hospital emergency departments (DEM) and is continued either with admission to hospital and/or in a dedicated burns outpatient department. The majority of paediatric patients with burns injury that attend hospital emergency departments are managed as outpatients and do not get admitted [4–6]. Most centres in middle to high income countries have admission rates of 10–20% [1,7]. In another study only 10% of those that presented to DEM with burns were admitted [8], whilst up to a quarter of

* Corresponding author at: Level 7 Lady Cilento Children's Hospital, Raymond Tce, South Brisbane, Queensland 4029, Australia. Tel.: +61 7 3636 1278.

E-mail addresses: mattmarino51@gmail.com (M.J. Marino), royk@uq.edu.au (R.M. Kimble), k.stockton@uq.edu.au (K.A. Stockton).

¹ Mater Children's Hospital, Brisbane, Australia.

² Paediatric Surgery UQ, Lady Cilento Children's Hospital, Brisbane, Australia.

³ CCBTR, Australia.

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those treated as an outpatient were admitted at a later stage [9]. Burns in children are also a significant cost to the healthcare system [10].

Whilst it is intuitive that admission following a presentation to an emergency department for a burn would be based principally on the severity of the burn, clinical experience shows that there are many other factors which lead to admission. Rates of admission are well published in the literature but what is yet to be reported is why exactly children are admitted. The aim of this study was to determine the reasons for admission of all children with burns, who presented to The Stuart Pegg Paediatric Burns Centre (SPPBC), a tertiary level paediatric burns centre based at the Royal Children's Hospital (RCH) Brisbane, over an 18 month period.

2. Methods

The study utilised data from The Queensland Paediatric Burns Registry (QPBR), a database containing information on all patients less than sixteen years of age who attended the Royal Children's Hospital (RCH) Brisbane with a burn. Ethics approval was obtained prior to commencement of this study from the Queensland Children's Health Services Human Research Ethics Committee, based at the RCH (HREC 14/QRCH/156). With parental/guardian consent, data was prospectively obtained by completion of a detailed pro forma completed at the time of presentation to the RCH DEM. The pro forma includes information on:

- Patient demographics
- Events preceding the burn injury
- First aid given at the scene and in hospital
- Characteristics of the burn such as depth, site and body surface

Further information including length of admission and operation details is also recorded. The SPPBC uses the Shakespeare classification for burn depth which classifies burns as superficial (erythema only), superficial partial thickness, deep dermal partial thickness and full thickness [11].

Charts were reviewed in order to ascertain the reason for admission. Relevant data were initially identified on the database to facilitate chart review. The dataset was password protected and access was available only from within the Centre for Children's Burns and Trauma Research (CCBTR). Once the reason for admission was obtained, it was recorded on the dataset which was de-identified for subsequent analysis. All patients admitted upon first presentation between January 1st 2013 and June 30th 2014 inclusive, were included in the study. Children were considered admitted if treated as an inpatient for greater than four hours.

2.1. Data analysis

Statistical analysis was performed using SPSS software (version 22). Due to the non-normal distribution of age and length of stay, data is presented as median and interquartile range (IQR). Mann Whitney *U* test was utilised to compare length of stay between groups. Two tailed *p* values of <0.05 were considered to be statistically significant.

3. Results

The total number of paediatric patients admitted in the 18 month period was 164. Of these, all consented to having their information recorded in the QPBR. Five patients consented only to having their data stored de-identified, and their chart was therefore unable to be reviewed to determine reason for admission. As such, they were excluded from analysis, leaving 159 patients. Ninety-six children (60%) were males and 63 (40%) were female, with an overall median age of 25 (IQR 15,75) months at the time of injury (see Table 1). One hundred and fifteen patients (72%) were admitted for over 24 h with the median duration of admission of these children being 3 (IQR 1, 10) days.

The reason for admission was able to be ascertained by chart review in all but two of the 159 patients. Documentation in these charts was either absent or did not clearly identify a reason for admission. Upon reviewing individual charts, the underlying reason for admission was able to be categorised into seven different groups:

Table 1 – Characteristics of paediatric burns patients based on reason for admission.

Category	n	Overall %	Median age months (IQR)	n ATSI	% ATSI	Median length of stay (days)	% Deep	Median % TBSA	% with operation
Severity	72	45.3	30 (16, 92)	9	13	9 (2, 17)	69	10	82
Region of body	38	23.9	22 (15, 48)	4 ^a	11	1 (1, 4)	40	2	18
Social	18	11.3	24 (15, 67)	5	28	2 (1, 4)	39	1	28
Geographical	13	8.2	45 (15, 98)	2	15	1 (1, 3)	46	2	38
Timing	8	5.0	30 (10, 84)	0	0	^c	13	1	0
Age	4	2.5	3 (1, 4)	1	25	2 (1, 3)	25	3	0
Other	4	2.5	71 (24, 139)	0	0	2 (0.3, 4)	25	3	25
Indeterminable ^b	2	1.3	–	1	–	–	–	–	–
Overall	159	100	25	22	14	2	51	3	49

^a Two people from this group did not know, or identify ATSI status.

^b Only demographics and contribution to totals are included.

^c Median stay less than 12 h.

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