

# The need for an Australasian burns critical care standardised data collection tool

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We undertook an analysis of the critical care burns data collections currently available in Australasia. The intention of this study was to determine the relevance of available datasets addressing information pertaining to the critical care burns population.

Clinical registries maintain databases for prescribed patient populations and facilitate reliable benchmarking. The collection of prospective information may be used to improve understanding of conditions and enhance the quality of care delivered.<sup>1</sup> The combination of registry data at a national or international level generates large datasets that facilitate the study of patient outcomes and institutional comparisons in relatively rare conditions.<sup>2</sup> Patients eligible to be included in a registry need to fulfil specific inclusion criteria based on predetermined accepted definitions.<sup>3</sup>

Annually in Australia, about 1% of the population sustains a thermal injury.<sup>4</sup> Severe burn patients require admission to specialised intensive care units (ICUs) and are at risk of considerable morbidity and mortality.<sup>5</sup> There is little high quality evidence to guide clinical practice,<sup>6</sup> which may potentially explain the substantial variation in approach and outcomes.<sup>7,8</sup> There is a paucity of critical care burns data collection, and we contend that current datasets are inadequate to inform critical care management and facilitate ICU comparisons.

A comprehensive online search resulted in the Burns Registry of Australia and New Zealand (BRANZ) and the Australian and New Zealand Intensive Care Society Adult Patient Database (ANZICS APD) being identified as the most authoritative organisations collecting data for burns and critical care within Australasia respectively. Both registries cover all admissions across Australian and New Zealand ICUs and burns units.

The Burns Outcomes from Intensive Care (BOICE), a single centre Australian database, was identified and used as a foundation for comparison, with permission of the authors at the Royal North Shore Hospital, Sydney, New South Wales. We interrogated ANZICS APD and BRANZ to determine important critical care information available in BOICE but not included in these registries. Data dictionaries

from each database were collected and analysed, enabling a comparison with the BOICE data dictionary. Each field was ranked on three criteria, including matching, comparable and non-matching variables. Matching fields were defined by the variables matching in clinical context and the permissible values being identical. Comparable fields were defined by having a similar clinical context; however, the permissible values differ and may require manipulation to be compatible. Missing fields were defined by variables that were absent when compared with the BOICE data dictionary.

During the 2017–2018 financial year, the ANZICS APD recorded over 170 000 unique critical care episodes with 183 adult ICUs across Australia and New Zealand contributing to the collection. During the 2017–2018 period, BRANZ recorded 3549 patients admitted to burns units, with 17 specialist burns units contributing to the registry. The Australian Institute of Health and Welfare reported that 2.9% of thermal injuries for the 2017–2018 financial year required time in the ICU.<sup>9</sup> During the 2017–2018 period, BOICE recorded 27 patient admissions (Associate Professor Anthony Delaney, Staff Specialist Intensive Care, Royal North Shore Hospital, Sydney, NSW, Australia; personal communication). There are a wide range of international burn registries with varied data element collections.<sup>10</sup> The National Burn Repository generates an annual report produced by the American Burn Association which provides the characteristics and clinical course of burn patient admissions submitted across the United States and internationally. This is a highly inclusive database, but it lacks comprehensive critical care data.<sup>11</sup>

Table 1 provides a comparison of the current Australasian registries recording burn patients and the suitability of critical care data retrieved. Compared with BOICE, six of 114 (5.3%) fields in the ANZICS APD and nine of 114 (7.9%) fields in the Australian and New Zealand Burns Association (ANZBA) matched. Of 114 fields, 28 (24.6%) in the ANZICS APD and 23 (20.2%) in BRANZ were comparable. Furthermore, 80/114 (70.2%) fields were missing in the ANZICS APD and 82/114 (72%) fields were deemed missing in BRANZ. This represents a significant shortfall in the current registries

**Table 1. Comparison of current Australasian registries recording burn patients and the suitability for critical care data retrieval**

	BOICE	BRANZ	ANZICS APD
Year of commencement		2008	1992
Completeness of case ascertainment	Not described	Incomplete for critical care	Incomplete for burns
Completeness of the items for critical care	Incomplete	Incomplete	Incomplete
Comparability*	Low	Moderate	Moderate
Accessibility†	Low	High	High
Usefulness‡	High	Moderate utility for critical care analysis	Extremely limited utility for burns critical care analysis
Timeliness	Unknown	Eligible for inclusion within 28 days	Eligible for inclusion within 90 days
Matching fields	15	6	9
Comparable fields	51	28	23
Fields not matching	162	80	82
Total fields included	66	34	32

ANZICS APD = Australian and New Zealand Intensive Care Society Adult Patient Database; BOICE = Burns Outcomes from Intensive Care; BRANZ = Burns Registry of Australia and New Zealand. \* Comparability refers to the commonality and interchangeability of the data elements between the datasets. † Accessibility refers to how readily available the data can be accessed via public reports and datasets. ‡ Usefulness refers to the subjective utility of the data with respect to critical care.

also exists the potential to utilise probabilistic linkage<sup>7</sup> to deliver a more complete critical care burns dataset. However, this presents technical and governance challenges and would still require the addition of data elements to one or both existing registries. Therefore, we propose the development of a dedicated burns critical care database specifically to inform the intensive care management of this small but important group of patients. Non-interventional studies, conducted through the well established mechanism of patient registries, are a valuable approach to close data gaps where it is challenging to conduct randomised controlled trials.<sup>8</sup> The approach to selecting the data elements for inclusion could employ the Delphi method, as utilised by other groups dealing with specific patient cohorts.<sup>12-14</sup> We propose that a feasibility or pilot collection should then be undertaken over a 12-month period

regarding data collection for severe burns cases in intensive care settings. The total fields included were calculated by adding the number of matching and comparable fields in each registry, as non-matching fields cannot be used to link data elements in a proposed data linkage of these three datasets. The main intention is to demonstrate that many of the desired fields could not be found in existing Australasian registries (Table 1).

A dedicated critical care burns registry should ideally include information on patient demographic characteristics, circumstances resulting in the burn injury, pre-hospital evaluation, and resuscitation. The extent of the burn, emergency management and in-hospital interventions, physiological perturbations, complications and patient outcomes should also be included in this registry. There also exists a range of procedures and complications, such as escharotomies and inhalation injury, which are unique to thermal injury and should be recorded.

The options to be considered in order to generate a reliable critical care registry include the addition of critical care burns data to one of the pre-existing registries. There

to ensure the development of a useful critical care burns data collection tool. This should include the standardisation of the burns registry function, a minimum dataset, a data dictionary, and uniform data quality monitoring and reporting.

### Competing interests

No relevant disclosures.

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## POINT OF VIEW

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