



## ORIGINAL ARTICLE

# How is care provided for patients with paediatric trauma and their families in Australia? A mixed-method study

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**Aim:** This study describes clinical staff opinions on the availability and suitability of resources to provide trauma care to children and their families and any perceived strengths, gaps and potential interventions to strengthen care.

**Methods:** A mixed-method study was conducted in five Australian paediatric trauma centres. The trauma coordinator at each site participated in a structured interview to determine models of care and trauma activity at their site. This informed the development of an electronic survey, which sought staff opinion on child and family access to services and perceived gaps in care.

**Results:** Five trauma coordinators were interviewed, and 214 clinicians (medical, nursing, allied health) from New South Wales, Victoria, South Australia and Queensland completed the survey. Each site had a trauma director and coordinator, and there was variance in resource availability. Almost all survey participants (92.5%) considered their hospital met the physical needs of injured children, 68.2% thought that the psychosocial needs of children were met and 82.1% thought that the needs of families were met. The least accessible services reported were clinical psychology/family counselling, mental health and behaviour management services. No routine follow-up support services post-discharge for the child or their families were identified.

**Conclusion:** Staff providing care for injured children report that physical needs are better met than psychosocial needs. There is variability in resource levels across paediatric trauma centres. A coordinated model of care that provides psychosocial care both during hospitalisation and post-discharge could reduce this gap in care for injured children and their families.

**Key words:** family; injury; models of care; paediatric; psychosocial.

## What is already known on this topic

- 1 Reduced parental physical and psychosocial well-being consistently predicts poorer child adjustment following severe injuries.
- 2 In-hospital and post-discharge psychosocial support has been shown to improve the recovery and well-being of injured children and their families.
- 3 Trauma centres should provide both effective clinical care and psychological support to injured children and their families.

## What this paper adds

- 1 Our study highlighted a lack of adequate psychosocial support provided to injured children and their families in Australian paediatric trauma centres.
- 2 The least accessible services for injured Australian children are clinical psychology, family counselling and mental health.
- 3 A trauma-support role dedicated to coordination of psychosocial care both during hospitalisation and post-discharge is likely to improve continuity of care and monitoring of physical and psychosocial care for injured children and their families.

Injury is a leading cause of hospitalisation of Australian children, with more than 1000 children hospitalised after sustaining an injury every week.<sup>1</sup> In Australia, a protocol for urgent transfer to the nearest regional or major paediatric trauma service is invoked

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if an injured child meets certain criteria indicating that they may have sustained a serious injury.<sup>2-4</sup> Serious injury in a child is a significant life event that can cause residual, physical and psychological morbidities and have a negative impact on family dynamics, threatening the entire family unit.<sup>5,6</sup> More than 60% of parents of children hospitalised after a serious injury are likely to meet the psychological criteria for acute stress disorder.<sup>7</sup> Both children and parents are more likely to develop post-traumatic stress disorder symptoms following injury than a new diagnosis of diabetes mellitus type 1 or cancer in the child.<sup>8</sup>

The literature exploring the experiences of parents of critically ill children recommend early interventions in the treatment of patients with paediatric trauma and their families.<sup>8,9</sup> Trauma centres are expected to have a minimum level of resources to

provide effective clinical care, but the extent to which this occurs in Australia is varied,<sup>10</sup> and in paediatric trauma centres, it is unknown if there are any routine in-hospital or post-discharge psychosocial support services in place in Australia for families of an injured child.

This study aims to explore the services available to the injured child and their family in Australian paediatric trauma centres, specifically, to describe clinical staff opinions on the availability and suitability of resources to provide trauma care to children and their families and any perceived strengths, gaps and potential interventions to strengthen care.

## Methods

This sequential mixed-method study<sup>11</sup> was conducted at five paediatric trauma centres in four Australian states (New South Wales, Victoria, South Australia and Queensland). Ethics approval was obtained from each site, and participant anonymity was ensured. In the first phase (March to May 2014), following consent, a telephone interview was conducted with each site's trauma nurse coordinator (TNC), which was audio recorded and transcribed verbatim. This provided a broad contextual and demographic background on existing paediatric trauma models of care and resources at each site. Information was obtained on the number of wards and clinical staff (allied health, nursing, medical) who provide care for patients with trauma and their families at any time point to facilitate capture of all eligible staff in Phase 2.

Findings from Phase 1 informed development of a 22-question electronic staff survey, which was piloted for context relevancy and ease of use then distributed by the TNC via a link emailed to the staff between May and October 2014. The participants were asked to answer each question in relation to patients with major trauma. The survey sought opinion using a five-point Likert scale on (i) the availability of and ease of access to inpatient, allied health and additional services for the family; and (ii) the follow-up of the patient and their family following discharge. Two main areas of needs were investigated – physical and psychosocial. Physical needs were defined as resources providing medical care such as clinical staff and services. Psychosocial care is defined as the provision of psychological, social and spiritual care.<sup>12</sup> Each question had a free text component to explain their response and identify any perceived strengths or gaps in care, as well as their opinions as to what interventions might work to address gaps in care and service delivery.

Survey data were imported into STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES (IBM, Chicago, IL, USA) and descriptive statistics performed. The qualitative data from the TNC interviews and open-ended survey responses were combined and managed in NVIVO version 10 then analysed using directed content analysis to determine categories.<sup>13</sup> In an iterative process of comparison and aggregation of codes, the research team reached consensus on the final categories. The responses were analysed by participant site and profession. As there was no difference between the groups, the responses were presented collectively.

## Results

Two hundred and fourteen clinicians completed the survey. The participants were mostly women (83.2%), with slightly more than

half from New South Wales (57.9%) and nearly a quarter from South Australia (22.9%). The proportions of occupation type were representative of the paediatric trauma care workforce (53.7% nurses, 20.1% doctors, 25.7% allied health). There was a wide range of major trauma admission rates, and higher admission rates were not necessarily accompanied by greater trauma staffing resources (Table 1). Almost all (92.5%) the participants thought that their hospital met the inpatient physical needs of children with major injuries, two-thirds thought (68.2%) that the inpatient psychosocial needs of injured children were met and 82.1% thought that the support needs of families were met.

Most participants agreed that there was ease of access to a wide range of allied health services for patients with paediatric trauma (range 57.1 to 93.2%), particularly social work (93.2%), play therapy (91.4%) and pain management services (89.7%). The participants reported that the least accessible allied health services were clinical psychology/family counselling (10.5%), mental health (10.2%) and behaviour management services (9.1%). No site had a dedicated social worker that followed the injured child and their family from admission to discharge, rather, care was handed over at each phase, for example, from the intensive care unit to the ward or clinical speciality, such as neurosurgical or orthopaedic. Most participants agreed that access to additional support services met the needs of families of patients with paediatric trauma; the exceptions were access to food outlets and family accommodation (Table 2). The majority of the participants agreed that it was easy to refer to outpatient services for the patients with paediatric trauma, particularly the fracture clinic and outpatient brain injury rehabilitation. The least accessible outpatient services for families were respite and financial support (Table 3), although 15.4% of the respondents indicated that they were not sure of the outpatient resource availability for the child.

## Qualitative findings

Three main categories were developed from the content analysis of integrated interview and open-ended survey responses from 158

**Table 1** Study site major trauma admissions and trauma service resources

Paediatric hospital	Site 1	Site 2	Site 3	Site 4	Site 5
Trauma admissions 2013					
ISS > 12 (major), <i>n</i>	84	64	71	41	128
ISS > 15 (severe), <i>n</i>	65	39	62	34	92
ICU admissions, <i>n</i>	65	23	79	29	122
Trauma service human and data resources					
Director (FTE)	0.2	0.2	1	0.2	0.5
Fellow (FTE)	0.2	0	0	0	0
Registrar (FTE)	0	Sometimes	Yes	0	0
Trauma coordinator (FTE)	1	0.6	2	1	1
Trauma case manager (FTE)	0	0.6	0	0	0.3
Trauma data manager (FTE)	1	0.54	1	0	0.5
Trauma registry	Yes	Yes	Yes	Access	Excel

FTE, full-time equivalent.

**Table 2** Participant opinion on whether there is ease of access to services for families of patients with paediatric trauma in Australian paediatric trauma centres

Type of service	Agree/Strongly agree, n (%)	Neither agree nor disagree, n (%)	Disagree/Strongly disagree, n (%)
Social work	187 (90.3)	13 (6.3)	7 (3.4)
Psychology/Counselling	93 (72.1)	22 (17.1)	14 (10.9)
Accommodation	128 (69.2)	37 (20.0)	20 (10.8)
Meal vouchers	87 (71.9)	26 (21.5)	8 (6.6)
Interpreter service	164 (80.0)	30 (14.6)	11 (5.4)
Chaplaincy service	166 (83.8)	29 (14.6)	3 (1.5)
Recreation/Play area	166 (89.2)	18 (9.7)	2 (1.1)
School	177 (88.5)	17 (8.5)	6 (3.0)
Child protection unit	172 (90.1)	17 (8.9)	2 (1.0)
Consumer involvement and multicultural health	75 (72.8)	27 (26.2)	1 (1.0)
Learning difficulties clinic	26 (70.3)	11 (29.7)	0 (0.0)
Family accommodation services	96 (69.6)	31 (22.5)	11 (8.0)
Food outlets	105 (70.5)	27 (18.1)	17 (11.4)
Charity/Star Foundation	126 (82.9)	21 (13.8)	5 (3.3)
Welfare office	38 (76.0)	11 (22.0)	1 (2.0)
Voluntary transport coordinator	22 (81.5)	5 (18.5)	0 (0.0)
Patient care assistant	36 (78.3)	10 (21.7)	0 (0.0)

**Table 3** Participant opinion on whether there is ease of access to services offered to patients with paediatric trauma and their families as part of outpatient care

Type of service	Agree/Strongly agree, n (%)	Neither agree nor disagree, n (%)	Disagree/Strongly disagree, n (%)
Services for paediatric patients			
Fracture clinic	165 (90.7)	13 (7.1)	4 (2.2)
Outpatient brain injury rehabilitation	140 (85.4)	18 (11.0)	6 (3.7)
Child and family health service	63 (70.0)	24 (26.7)	3 (3.3)
Social work	120 (80.5)	24 (16.1)	5 (3.4)
Monitoring/Follow-up (e.g. by nurses or social work)	88 (75.2)	26 (22.2)	3 (2.6)
Outpatients clinic services for families	168 (88.4)	19 (10.0)	3 (1.6)
Outpatient social work	73 (77.7)	14 (14.9)	7 (7.4)
Follow-up phone calls	64 (68.1)	23 (24.5)	7 (7.4)
Psychology service	43 (68.3)	16 (25.4)	4 (6.3)
Mental health service	37 (69.8)	11 (20.8)	5 (9.4)
Respite care	15 (62.5)	6 (25.0)	3 (12.5)
Care giver support group	19 (61.3)	11 (35.5)	1 (3.2)
Financial services	8 (61.6)	3 (23.1)	2 (15.4)
Counselling	34 (72.3)	9 (19.1)	4 (8.5)
Legal	8 (80.0)	1 (10.0)	1 (10.0)

of the 214 respondents: strengths in care; gaps in care; and interventions to strengthen care.

**Strengths in care**

The participants identified a range of strengths in provision of physical and psychosocial care at their respective hospitals. In relation to physical care, the participants predominantly pointed to good teamwork and a well-established trauma service as key strengths. They spoke highly of their colleagues and the positive multidisciplinary culture at their hospital where there was a commitment to a common goal – looking after the best interests of the child and family. Trauma nurse coordinators were also seen as a valuable resource that provided care coordination, ensuring an effective and timely management of the needs of the child and family.

Referrals to different services were reported as efficient and easy to conduct. Generally, hospitals had electronic referral systems in place where referrals were followed up within 24 h. Social work was perceived as a key strength and essential to provide comprehensive psychosocial care to children and their families, incorporating support, counselling and practical assistance. Social work was reported as supported at some sites by other staff including clinical psychologists, psychiatrists, chaplains, Starlight room captains and clown doctors.

**Gaps in care**

In relation to physical care, the participants identified that while this was generally provided well, there were some areas that could be improved. Staff-related gaps included a general lack of allied health staff or insufficient availability over 7 days. The participants felt that while the initial emergency assessment of the patient was generally well conducted, ongoing care was not always well conducted (e.g. because no particular team took responsibility for decisions). Some specialty teams were perceived as only focusing on their particular area and not addressing the whole child, and it was perceived that there was sometimes a lack of communication between specialty teams. In some hospitals, there was a perceived lack of coordination or continuity of care when children transitioned between teams or were moved from the intensive care unit to the wards.

Service provision-related gaps in physical care reported by the staff included that some services were not available 24/7 (e.g. radiology after midnight). Rehabilitation services were a recurring gap; in some hospitals, there was lack of a rehabilitation ward, a 7-day-a-week rehabilitation program or day program.

...we only have an inpatient rehabilitation service for brain injured patients. Those with complex injuries and physical disability do not have coordinated rehabilitation care from an allied health perspective... (Survey response)

The participants recognised the importance of psychosocial care for children and families but identified that a lack of time or training interfered with their ability to provide this. Other perceived gaps identified in psychosocial care included a lack of social workers, counsellors, psychologists or psychiatrists to address the child’s and family’s mental health and psychosocial needs; lack of follow-up of families; lack of budget for essential provisions, such

as food and clothing, for families; lack of parking and laundry services for families; limited interpreter services over the whole 24-h period; and lack of accommodation for families. In the hospital, the staff reported a lack of waiting rooms for families and age-appropriate resources on trauma for both children and their families to read. The participants expressed a need for non-English speaking parental support, particularly for recent refugees. One participant cited an underuse of pastoral and spiritual care resources.

The most prominent gap perceived by the staff was a lack of availability of social workers and having locum rather than permanent social workers who were familiar with the needs of families with trauma. Further, the majority of admissions occurred over the weekend, and although some hospitals had on-call social workers, this coverage was perceived as limited by the staff, and they were usually only called if a family was considered to be in crisis. Some hospitals had social workers that the staff perceived either lacked specific counselling training or were inundated with admissions and could not keep up with the demand. The emergency department (ED) was commonly identified as a setting where there was a perceived large gap in the availability of social workers to spend the time needed to support distraught family members.

...we had a little girl [in ED with severe head injuries after a family member reversed over her with a car]... we had the social worker, myself and three ED nurses and we needed everybody because we had 20 family members there for 7 h, and family members who were attempting to self-harm and hurt themselves... [due to grief] (TNC).

Follow-up of families post-discharge was a noticeable gap identified by the staff particularly for families in rural areas. The staff reported that there was no formal follow-up policy for family psychosocial well-being.

...you feel like you're sending them off, just this resource-rich place that you sit in where you offer them the world and then you send them off and say 'see you later – good luck' (TNC)

### Interventions to strengthen care

Interventions identified by the staff to strengthen care focused on improving existing services as well as the addition of new services and personnel. Some staff reported that their hospitals provided them with regular education and training on aspects of psychological first aid – an area they considered vital for staff working closely with seriously injured children and their families. Using this technique helped the staff provide support for patients and their families and manage the stress and trauma they themselves feel when caring for seriously injured children

The staff also suggested that an additional specialist personnel could considerably enhance care. For patients with trauma, having one contact dedicated to their care throughout their hospital stay was seen as especially important as often these families had many points of contacts from different departments within the hospital. The TNC was perceived by the staff to be the one person who most often provided a continuing service throughout the child's admission and as a result, was often the person who developed rapport

with the child and their family. However, the TNCs found this difficult to achieve with the competing priorities of their role.

If we had more staff, for example, a nurse case manager, we could have more clinical cover, we could cover Saturdays and Sundays... we could do more education... we could promote our guidelines and policies and advocacy... we could do more with our disaster preparedness... we could ring [patients and their families] after discharge...the list is endless [TNC]

### Discussion

This mixed-method study highlighted the wide range of clinical and additional support services available for the injured child and their family; however, access to these services varies by hospital, time of day/night and by hospital department. It appears that psychosocial care during hospitalisation is highly dependent on social work staffing, and post-discharge follow-up is generally scarce.

A focus on the coordination of psychosocial care from the acute hospital phase to at least 2 years post-discharge would provide the benefits of continuity, monitoring and rescreening of physical and psychosocial care for both the child and family.<sup>14,15</sup> Addressing this gap in care is critical as ultimately, the effect of the trauma may have developmental implications for the child's future.<sup>16</sup> Up to 55% of severely injured children have physical disabilities 1 year after major trauma,<sup>17</sup> and of those, up to 30% have persistent or potentially life-long disability. Psychosocial problems in 20–50% of children post-severe injury have been reported for at least 2 years after the injury even after controlling for age, gender and maternal socio-economic status.<sup>17,18</sup>

Psychosocial support for parents was identified as limited at our study sites. This has also been reported more widely as a major gap in holistic family-centred care.<sup>19</sup> Children are dependent on their families for their physical, emotional and social needs, and reduced parental psychosocial well-being has been shown to consistently predict poorer child adjustment.<sup>16</sup> It is estimated that for parents who have a child with a serious injury, 20–40% are at risk of developing depression or anxiety<sup>20</sup> and between 10–30% of developing post-traumatic stress disorder.<sup>21</sup> Risk factors for poor psychological outcomes in parents are diverse, and the injury trajectory is complex for families to navigate successfully. Children and their parents have different requirements at different times.<sup>22</sup> Each requirement needs to be assessed and addressed to prevent long-term negative physical and psychosocial impacts for the child and for family members. It is likely that adoption of a role dedicated to the ongoing care coordination of injured children and their families would go some way to addressing this gap. Trauma coordination roles in the adult trauma population have been shown to improve both patient and health service outcomes.<sup>23</sup> However, these roles are limited to the hospitalisation phase of care, and there has been limited evaluation in the paediatric context.

Services for the physical care of the child were generally well-addressed in the acute phase in all hospital sites; however, there was a perception that rehabilitation services and trauma service staffing were not commensurate with patient admission rates. This phenomenon is common to the majority of Australian and New Zealand trauma services, most of which do not meet the human resource criteria set out in the Royal Australasian College of

Surgeons Australasian Trauma Verification Program.<sup>10,24</sup> Currently, governments designate trauma centres independently of verification standards despite evidence that the verification process improves patient and system outcomes.<sup>25</sup>

There were some limitations to this study. As the staff invited to participate in the study were permitted to invite other staff involved in the care of patients with paediatric trauma and their families, the actual number of staff who were invited to participate in the survey is not known and a response rate cannot be calculated. It is also likely that some eligible staff were on leave and did not receive the invitation to participate, and that some respondents who provide care for injured children and their families were not aware of all available resources. This is an Australian study, and given different health care contexts, care should be taken if using the results for wider comparisons. Future research should include the opinions of the child and their families and a longitudinal study exploring parental needs of severely injured children is in progress.

## Conclusion

The staff providing care for injured children report that physical care needs are generally well-addressed in the acute phase of care and better met than psychosocial needs in Australian paediatric trauma centres. A model of care that provides coordination of psychosocial care both during hospitalisation and post-discharge could reduce this gap in care for injured children and their families.

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