Where are Children Seen in Australian Emergency Departments? Implications for Research Efforts

Jolene CJ Lim, Meredith L Borland, Paul M Middleton, Katie Moore, Amith Shetty, Franz E Babl, Robert S Lee, Jason Acworth, Catherine Wilson, Martin Than, Simon Craig, on behalf of ACEM EDEN and the PREDICT Network

ACEM EDEN: Australasian College for Emergency Medicine Emergency Department Epidemiology Network
PREDICT: Paediatric Research in Emergency Departments International Collaborative

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Abstract

 Objective
With most paediatric emergency research in Australia conducted at tertiary EDs, it is important to understand how presentations differ between those at tertiary paediatric EDs and all other EDs.

**Methods**

Retrospective epidemiological study assessing paediatric case-mix and time-based performance metrics (aged 0-14 years) obtained from a national health service minimum dataset for the 2017-18 financial year, comparing tertiary paediatric EDs and all other EDs. We defined a “major tertiary paediatric hospital” as one which was accredited for training in both paediatric emergency medicine and paediatric intensive care.

**Results**

Of the 1,695,854 paediatric ED presentations, 23.8% were seen in nine major metropolitan tertiary paediatric hospitals. Reasons for presentations were more distinctive between cohorts among children aged 10-14 years, where psychiatric illness (5.2% vs. 2.5%) and neurological illness (4.5% vs. 2.5%) were more commonly seen in major tertiary paediatric EDs. Australian Indigenous children were significantly less likely to present to tertiary paediatric EDs (3.0%), compared with other EDs (9.7%), (OR 0.27, 95%CI 0.26 -0.27). Whilst median waiting times were longer in major tertiary paediatric EDs (28 minutes [IQR 11 – 65]) than in other EDs (20 minutes [IQR 8-48], $P<0.001$), patients were also less likely to leave without being seen (5.5 % in tertiary paediatric EDs vs. 6.9% in other EDs; OR 0.80 [95%CI 0.78 – 0.81]).

**Conclusions**

This study identified key areas of difference in paediatric presentations between tertiary paediatric EDs and other EDs. It is vital to broaden paediatric ED research beyond tertiary paediatric centres, to ensure relevance and generalisability.

(250 words)

**Key words:** paediatric, emergency presentation, health service research, case-mix, time performance
Introduction:

There were over 8 million ED attendances in Australia during the 2017-18 financial year, leading to more than 2.4 million hospital admissions.\textsuperscript{1} To date, routinely collected data, including demographic information, mode of arrival, triage category, principal diagnosis, and ED disposition, have been primarily used by government to monitor performance against time-based targets\textsuperscript{1} and to assist with service planning.\textsuperscript{2} The ACEM Emergency Department Epidemiology Network (EDEN) was formed in 2018, with the secondary use of administrative and clinical data for detailed epidemiological research as one of its main priorities.

Published research priorities for emergency medicine\textsuperscript{3} and paediatric emergency medicine\textsuperscript{4} have focused on issues relevant to clinicians working in large tertiary hospitals – where most research currently occurs. It is unclear whether these are relevant to, or reflect the work of, clinicians and researchers in non-tertiary settings. In 2009, the Paediatric Research in Emergency Departments International Collaborative (PREDICT) published comprehensive data on paediatric attendances in 11 hospitals affiliated with the network.\textsuperscript{5} The report published key epidemiological data from each member site and included all states in Australia except the Northern Territory and Tasmania.

Recently, these data were compared to paediatric presentations at the Royal Darwin Hospital (RDH). Significant differences to original PREDICT sites – mostly based in metropolitan hospitals - included higher rate of presentation and admission among Indigenous children, and higher rates of head injury, cellulitis, and adolescent presentations at RDH.\textsuperscript{6} Little is known about how presentations differ between major tertiary paediatric hospitals and all other hospitals providing care for children. Understanding these differences will help us to determine the external validity of research conducted in tertiary settings, and whether focused non-tertiary research priorities need to be developed.

This study aims to compare (a) ED case-mix and (b) time-based ED performance between major tertiary paediatric hospitals and all other hospitals (i.e. non-tertiary) reporting data to the Australian government. This should add to the existing knowledge on paediatric emergency presentations in Australia, and inform national priorities in service delivery, education and research.
Methods:

Retrospective epidemiological study of paediatric data obtained from the National Non-Admitted Patient Emergency Department Care Database (NNAPEDCD); a comprehensive database comprising episode level ED patient data, managed by the Australian Institute of Health and Welfare (AIHW) for all reporting public hospitals from individual state and territory health authorities.

Data and Definitions

As the AIHW reports demographic data in 5-year age groups, we defined paediatric patients as those aged 0-14 years. We defined a “major tertiary paediatric hospital” as one which had accreditation from both ACEM for paediatric emergency medicine (PEM) training,7 and the College of Intensive Care Medicine (CICM) for Paediatric Intensive Care Unit (PICU) training.8 Information on accreditation status was obtained from the each college’s website.

Episode-level ED patient data included demographic information, mode of arrival, triage category, diagnosis information, episode end status, waiting time from presentation until treatment commencement and total length of stay (LOS) in ED. Diagnosis information was provided in major diagnostic blocks (MDBs) and principal diagnosis.1 Most states and territories classified patients’ principal diagnosis using the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM)9; however, nearly 80% of patient diagnoses in New South Wales (NSW) EDs were classified using SNOMED-CT-AU.10 For the purpose of reporting principal diagnoses, all diagnosis information was mapped to a single classification (to 3-character categories in ICD-10-AM) using mapping files provided by the Independent Hospital Pricing Authority.1

Statistical analysis

Data were analysed and compared by calculating the percentages and the associated 95% confidence intervals (CI), based on the ‘Wilson’ Score interval method. Pearson Chi-Square tests were used for comparison of categorical variables, with P<0.001 considered statistically significant in view of the large sample size. For dichotomous variables, odds ratios (ORs) and 95% CI were calculated. Time-based measures were analysed and presented as median, interquartile range (IQR) and 90th percentile (hours:minutes), and median comparisons derived using the Mann-Whitney U test. Data were analysed using IBM SPSS Statistics 23.0 (IBM Corp, Armonk, NY, USA).

State and territory health authority approval was obtained for release of their data by the AIHW and each jurisdictional data custodian. Ethics approval was obtained from the South Australian Department of Health and Wellbeing Human Research Ethics Committee (HREC/20/SAH/33).
Results:

**Demographics and distribution of paediatric patients**

Nationally, ED presentations during the 2017-2018 financial year for the 284-reporting public EDs exceeded 8 million (n=8,017,492), an average of 21,966 presentations daily. Of these, 21.2% (n=1,695,854) were for paediatric patients, who were over-represented among ED patients when compared with their proportion in the wider Australian population (18.8%). Almost a quarter of these paediatric patients presented to major tertiary paediatric EDs (23.8%, n=402,935) (Figure 1).

Nine hospitals in the database met our definition for major tertiary paediatric hospital: three from Queensland, two from New South Wales, two from Victoria, and one from each of South Australia and Western Australia. All were located in metropolitan areas. Of the 275 remaining hospitals, 88 (32.0%) were in metropolitan areas, and 103 (37.5%) were accredited for ACEM training.

Table 1 shows the comparison of paediatric patient demographics and distribution between major tertiary paediatric EDs and all other EDs. More than half of the paediatric presentations were children aged under five years. The largest number of paediatric presentations were seen during winter, whilst the smallest number were seen during summer. Boys comprised 56% of all presentations. Aboriginal and Torres Strait Islander (ATSI) paediatric patients were significantly less likely to present to major tertiary paediatric EDs (3.0%) than other EDs (9.7%), (OR 0.27, 95% CI 0.26–0.27).

There were no major tertiary paediatric EDs identified in Tasmania, the Australian Capital Territory or the Northern Territory, which together comprise 5.4% of national paediatric presentations. New South Wales (NSW) contributed to the largest proportion of presentations to non-tertiary EDs. NSW non-tertiary EDs also saw 5.6 times more paediatric patients than tertiary paediatric EDs, which was greater than that observed for the other jurisdictions. However, NSW was the only jurisdiction that reported presentation data from smaller emergency care facilities, rather than just EDs.

Ambulance arrivals made up a greater proportion of presentations to major tertiary paediatric EDs (11.5%) compared to other EDs (7.9%), (OR 1.51, 95% CI 1.49–1.53). Older paediatric patients (aged 10-14) were more likely than those in other age groups to arrive at ED by ambulance (Table 2). Compared with children attending other EDs, presentations to major tertiary paediatric EDs were slightly more likely to be classified as ATS 1 and ATS 2 (OR 1.11, 95% CI 1.09–1.12) and ATS 4 (OR 1.37, 95% CI 1.36–1.38).

Children attending major tertiary paediatric EDs were less likely to be seen on time, particularly those classified as ATS 3-5 (Table 2). Median and 90th percentile of waiting time to treatment commencement were longer in major tertiary EDs [median 28 minutes, IQR (11–65); 90th percentile:
119 mins] compared with other EDs [median 20 minutes (IQR 8–48); 90th percentile: 93mins], P<0.001. However, a relatively smaller proportion of tertiary paediatric ED patients “did not wait” or “left at own risk” compared to other EDs (OR 0.80, 95% CI 0.78–0.81).

Compared with other EDs (13.5%), paediatric presentations to major tertiary EDs (25.2%) were more likely to be admitted to the same hospital (OR 2.17, 95% CI 2.15–2.19), and less likely to be referred to another hospital for admission (OR 0.16, 95% CI 0.15–0.17). The highest hospital admission rate was seen among patients aged 0-4 years.

**Diagnosis information, by major diagnostic blocks (MDBs) and principal diagnosis**

Variation in MDBs were seen across age groups, with those aged under 5 more commonly presenting with respiratory system illness and infectious diseases, while patients in older age groups (5-14 years) more commonly presented with injury-related presentations (Table 3). Importantly, there were quite similar MDB profiles seen among patients attending major tertiary paediatric EDs and other EDs, particularly for patients aged 0-4 years and 5-9 years. Interestingly, patients across all age groups were more likely to present to other EDs than tertiary paediatric EDs for injury, single site, both major and minor, with these presentations making up 49.3% of the total presentations to other EDs for those aged 10-14 years. In contrast, patients aged 10-14 years who attended tertiary paediatric EDs were more likely to present for psychiatric illness and neurological system illness than those in this age group who presented to other EDs. Consistent with the comparison of MDBs, the ten most common principal diagnoses for different paediatric age groups were similar between tertiary paediatric EDs and other EDs (Supplementary Table).

**ED Length of Stay (LOS)**

Paediatric patients presenting to tertiary paediatric EDs generally stayed longer in the ED, compared with those presenting to other EDs (Table 4), which was also reflected in the percentage of patients staying greater than 4 hours. The 90th percentile LOS for paediatric presentations in tertiary EDs was 5 hours and 43 minutes (for all presentations) and this increased to 8 hours and 17 minutes for those admitted to hospital. Importantly, just over half (56%) of paediatric patients were admitted within 4 hours, while 11% stayed over 8 hours in the ED before ward admission.
Discussion:

Of children presenting to EDs in Australia, more than 20% are seen in nine major metropolitan tertiary paediatric hospitals. The remaining EDs – numbering over 270 individual departments - see more than three-quarters of all children, and a greater overall number of critically ill patients. Presentations were similar between the two types of hospital, however, more than 90% of all presentations of ATSI children were seen outside tertiary paediatric EDs. As 63% of ATSI children aged 0-14 years live outside major cities, a non-tertiary paediatric EDs is likely to be their closest option.

All emergency physicians with a FACEM qualification have some training in paediatric emergency medicine, however, major tertiary paediatric centres often have a higher proportion of subspecialty PEM-trained doctors and nurses with postgraduate paediatric experience. Children presenting to major tertiary paediatric EDs have a longer median waiting time and ED LOS than those presenting to other hospitals. Interestingly, they also are less likely to leave without being seen. The reasons for this are unclear, but may in part be due to patients and their families being willing to wait longer for what is considered to be a more specialised care, or that these EDs see arguably higher acuity patients, as evident in their higher ambulance arrival and hospital admission rates.

Current research priorities in paediatric emergency medicine – both from Australia and internationally - reflect the views of clinicians mostly working in research-active tertiary paediatric EDs, with limited input from those working in other EDs, and minimal involvement of patients and their families. In addition, most of these priorities are focused on children unwell enough to require hospitalisation.

Given the relatively large case load of established paediatric EDs, there are strong economic and logistic reasons to conduct randomised controlled efficacy trials in children attending these departments. These include established academic affiliations, sufficient infrastructure and experience to negotiate ethics and governance hurdles, and sufficient cases meeting study inclusion criteria to ensure recruitment within a reasonable timeframe.

However, a key, yet often neglected step is the translation of research findings into wider clinical practice, particularly when most research occurs in the minority of children presenting to tertiary centres – the so-called “ivory towers”. External validity of studies conducted exclusively in a tertiary paediatric setting may have limitations. PREDICT has successfully expanded the network to include non-tertiary suburban and regional sites with >35 sites actively participating in research projects. Two current PREDICT studies on head injuries and bronchiolitis each include 22 non-tertiary sites.
Furthermore, randomised controlled trials reflect only one aspect of research. Detailed observational and epidemiological studies are necessary in the non-tertiary EDs where patterns of disease and degrees of illness may be entirely different to those seen in tertiary settings. The finding that over 90% of all presentations of ATSI children are to non-tertiary paediatric EDs leads to the inescapable conclusion that teaching hospital research and epidemiology alone will never equip physicians to deliver the best care to these patients. Similarly, research conducted exclusively in paediatric EDs does nothing to tell us how to best integrate the care for children into a general ED which also cares for ill and injured adults.

If we aim to improve care for all Australian children attending EDs, we must determine priorities for paediatric research in the wider ED setting, better understand how care is currently delivered, and identify opportunities for practice improvement. This work requires engagement, participation and support of health services, clinicians, patients and families in various types of hospitals across the country at different stages of the research journey.20

It is critical to determine how to best implement new evidence into care in non-tertiary paediatric settings, then to evaluate effectiveness of the implementation. Important methods to determine effectiveness of knowledge translation include before-and-after observational studies (to determine practice prior to and after the introduction of an intervention), mixed methods research, stepped wedge study designs and cluster randomised trials, which allow the assessment of the impact of an intervention across multiple hospitals while reducing the need to obtain patient-level data.21-23

The increasing use of electronic medical records provides an additional opportunity to access more than just administrative data. Analysis of large scale granular clinical data will allow us to better understand differences in local pathology, degrees of illness, socioeconomic disease determinants, practice patterns, approaches to diagnosis and management, and to identify patterns which may incorporate all of these variables in accurate predictive models.

Limitations

Our study was limited by the quality of the available administrative data. The AIHW collates data from all states and territories, and each jurisdiction has slightly different approaches.1 Some states provide data for all types of hospitals, including small regional and rural departments, while others do not. In particular NSW provides data from facilities that do not meet ACEM’s definition of an ED (a department specifically designed and staffed to provide 24 hour emergency care).24 Further, inaccurate diagnostic coding may occur, as most ED diagnostic codes are entered by busy clinicians with multiple competing priorities and limited training in health-care coding.25 There may be
variations in diagnosis coding across EDs, for instances, non-tertiary EDs were more likely to report non-specific diagnoses (Supplementary Table) in the principal diagnosis coding.

Conclusions

Most research on children presenting to EDs in Australia is conducted in a small number of tertiary paediatric hospitals. However, more than three-quarters of all Australian children seeking emergency care present to other hospitals. Current research based in tertiary paediatric centres may not completely address priorities for the majority of children attending EDs. There is a need to prioritise, conduct research and translate new paediatric knowledge into practice in hospitals outside the tertiary setting.

(2447 words)
References:


Table 1 Patient demographics and distribution of paediatric patients presenting to Australian EDs, comparing major tertiary and all other EDs

<table>
<thead>
<tr>
<th>Major tertiary paediatric EDs</th>
<th>All other EDs</th>
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<td>No.</td>
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<td>No.</td>
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<tr>
<td><strong>Total no. Paediatric ED presentations</strong></td>
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<td><strong>Age (years)</strong></td>
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<td>0-4</td>
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† Excluded data from the Australian Capital Territory and Tasmania as the ethnicity status was not provided.

Note: All comparisons reported statistically significance (P<0.001) in Chi-square test.
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<th>By age group</th>
<th>Major tertiary paediatric EDs</th>
<th>All other EDs</th>
<th>OR† (95%CI)</th>
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<td>Ambulance</td>
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<td>0.0%</td>
<td>0.0%</td>
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<td>5.5%</td>
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<tr>
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<td>99.8%</td>
</tr>
<tr>
<td>ATS 2 (seen in 10mins)</td>
<td>81.6%</td>
<td>86.2%</td>
<td>84.8%</td>
</tr>
<tr>
<td>ATS 3 (seen in 30mins)</td>
<td>59.9%</td>
<td>62.4%</td>
<td>63.1%</td>
</tr>
<tr>
<td>ATS 4 (seen in 60mins)</td>
<td>59.2%</td>
<td>64.3%</td>
<td>67.6%</td>
</tr>
<tr>
<td>ATS 5 (seen in 120mins)</td>
<td>86.4%</td>
<td>88.1%</td>
<td>89.5%</td>
</tr>
<tr>
<td><strong>Episode end status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admitted</td>
<td>26.6%</td>
<td>23.0%</td>
<td>23.9%</td>
</tr>
<tr>
<td>Departed</td>
<td>66.6%</td>
<td>71.7%</td>
<td>72.5%</td>
</tr>
<tr>
<td>Referred to other hospital for admission</td>
<td>0.3%</td>
<td>0.2%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Did not wait/left at own risk</td>
<td>6.5%</td>
<td>5.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Died in ED</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

† OR (Odds ratio) quantifies the odds of each variable, comparing the total number between major tertiary paediatric EDs and non-tertiary paediatric EDs.
Table 3 Ten most common major diagnostic blocks by age group, comparing paediatric presentations to major tertiary EDs and other EDs

<table>
<thead>
<tr>
<th>Age 0–4 years (%)</th>
<th>Major tertiary EDs n= 229,247</th>
<th>All other EDs n= 663,060</th>
<th>Major tertiary EDs n= 95,954</th>
<th>All other EDs n= 322,519</th>
<th>Major tertiary EDs n= 77,734</th>
<th>All other EDs n= 307,340</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory system (18.8%)</td>
<td>Respiratory system (18.9%)</td>
<td>Injury, single site, major (23.5%)</td>
<td>Injury, single site, major (27.1%)</td>
<td>Injury, single site, major (27.4%)</td>
<td>Injury, single site, major (32.0%)</td>
<td></td>
</tr>
<tr>
<td>System infection/parasites (15.2%)</td>
<td>Injury, single site, major (15.6%)</td>
<td>Digestive system (16.0%)</td>
<td>Digestive system (12.5%)</td>
<td>Digestive system (14.1%)</td>
<td>Injury, single site, minor (17.3%)</td>
<td></td>
</tr>
<tr>
<td>Injury, single site, major (13.7%)</td>
<td>System infection/parasites (14.3%)</td>
<td>Respiratory system (8.7%)</td>
<td>Injury, single site, minor (10.1%)</td>
<td>Injury, single site, minor (13.0%)</td>
<td>Digestive system (10.0%)</td>
<td></td>
</tr>
<tr>
<td>Digestive system (12.3%)</td>
<td>Digestive system (10.8%)</td>
<td>Injury, single site, minor (8.0%)</td>
<td>Respiratory system (8.8%)</td>
<td>Psychiatric (5.2%)</td>
<td>Musculoskeletal/connective tissue system (5.5%)</td>
<td></td>
</tr>
<tr>
<td>Illness of ear, nose &amp; throat (8.0)</td>
<td>Illness of ear, nose &amp; throat (9.9)</td>
<td>System, infection/parasites (7.5%)</td>
<td>Illness of ear, nose, &amp; throat (8.4%)</td>
<td>Neurological system (4.5%)</td>
<td>Respiratory system (4.3%)</td>
<td></td>
</tr>
<tr>
<td>Illness of skin, subcutaneous tissue, breast (5.1%)</td>
<td>Illness of skin, subcutaneous tissue, breast (5.0%)</td>
<td>Illness of ear, nose, &amp; throat (6.5%)</td>
<td>System, infection/parasites (6.4%)</td>
<td>Musculoskeletal/connective tissue system (4.4%)</td>
<td>Illness of ear, nose, &amp; throat (4.1%)</td>
<td></td>
</tr>
<tr>
<td>Injury, single site, minor (3.7%)</td>
<td>Injury, single site, minor (4.3%)</td>
<td>Illness of skin, subcutaneous tissue, breast (4.6%)</td>
<td>Illness of skin, subcutaneous tissue, breast (4.9%)</td>
<td>Respiratory system (4.0%)</td>
<td>Illness of skin, subcutaneous tissue, breast (3.4%)</td>
<td></td>
</tr>
<tr>
<td>Neurological system (2.8%)</td>
<td>Neurological system (2.1%)</td>
<td>Neurological system (3.5%)</td>
<td>Musculoskeletal/connective tissue system (3.5%)</td>
<td>System infection/parasites (3.4%)</td>
<td>System infection/parasites (2.7%)</td>
<td></td>
</tr>
<tr>
<td>Newborn/neonate illness (2.0%)</td>
<td>Newborn/neonate illness (1.8%)</td>
<td>Musculoskeletal/connective tissue system (3.2%)</td>
<td>Neurological system (2.0%)</td>
<td>Illness of skin, subcutaneous tissue, breast (3.3%)</td>
<td>Neurological system (2.5%)</td>
<td></td>
</tr>
<tr>
<td>Urological system (1.5%)</td>
<td>Musculoskeletal/connective tissue system (1.2%)</td>
<td>Blood/immune system (1.8%)</td>
<td>Urological system (1.5%)</td>
<td>Illness of ear, nose, &amp; throat (2.9%)</td>
<td>Psychiatric (2.5%)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Exclude major diagnostic blocks classified as ‘Other presentation’ and ‘Not stated’
Table 4  ED length of stay (median & 90th percentile) and proportion of visits completed within a specified time frame, by age group of paediatric patients.

<table>
<thead>
<tr>
<th></th>
<th>Major tertiary paediatric EDs</th>
<th>All other EDs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-4</td>
<td>5-9</td>
</tr>
<tr>
<td>Median ED LOS (hr:min)</td>
<td>2:34</td>
<td>2:32</td>
</tr>
<tr>
<td>90th percentile ED LOS (hr:min)</td>
<td>5:45</td>
<td>5:35</td>
</tr>
<tr>
<td>Proportion of visits completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;4hr</td>
<td>77.1%</td>
<td>78.0%</td>
</tr>
<tr>
<td>4-&lt;8hr</td>
<td>18.8%</td>
<td>18.5%</td>
</tr>
<tr>
<td>8-&lt;12hr</td>
<td>2.7%</td>
<td>2.4%</td>
</tr>
<tr>
<td>12hr+</td>
<td>1.4%</td>
<td>1.2%</td>
</tr>
<tr>
<td>24hr+</td>
<td>111 (0.05%)</td>
<td>37 (0.04%)</td>
</tr>
<tr>
<td>ED stay &gt;8 hr</td>
<td>4.1%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Admitted patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90th percentile ED LOS (hr:min)</td>
<td>8:22</td>
<td>8:05</td>
</tr>
<tr>
<td>Proportion of visits completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;4hr</td>
<td>56.3%</td>
<td>56.7%</td>
</tr>
<tr>
<td>4-&lt;8hr</td>
<td>32.5%</td>
<td>33.0%</td>
</tr>
<tr>
<td>8-&lt;12hr</td>
<td>7.0%</td>
<td>6.5%</td>
</tr>
<tr>
<td>12hr+</td>
<td>4.2%</td>
<td>3.8%</td>
</tr>
<tr>
<td>24hr+</td>
<td>95 (0.2%)</td>
<td>32 (0.1%)</td>
</tr>
<tr>
<td>ED stay &gt;8 hr</td>
<td>11.1%</td>
<td>10.2%</td>
</tr>
</tbody>
</table>

Note: ED LOS with negative values, zero values and stays of >16,000 minutes, or when the time of departure recorded was earlier than the time of treatment commencement, were all treated as missing values and excluded from the analysis.
Figure 1 Consort flow diagram revealing paediatric presentations to major tertiary paediatric EDs and all other EDs in Australia (2017-18)

Total number of presentations to 284 Australian ED sites (2017-2018)
   n=8,017,492

Number of patients in study defined as Paediatric cohort (age <14 years)
   N=1,695,854

Paediatric patients presenting to Major tertiary paediatric ED
   n=402,935 (23.8% of N)
   Admitted n=101,731 (25.2%)
   Departed n=277,719 (68.9%)
   Other outcome n=23,485 (5.8%)

Paediatric patients presenting to all other ED
   n=1,292,919 (76.2% of N)
   Admitted n=174,003 (13.5%)
   Departed n=1,008,119 (78.0%)
   Other outcome n=110,797 (8.5%)
Author/s:
Lim, JCJ; Borland, ML; Middleton, PM; Moore, K; Shetty, A; Babl, FE; Lee, RS; Acworth, J; Wilson, C; Than, M; Craig, S; Eden, A

Title:
Where are children seen in Australian emergency departments? Implications for research efforts

Date:
2021-01-03

Citation:

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