Why do children present to Emergency Departments? Exploring motivators and measures of presentation appropriateness for children presenting to a Paediatric Emergency Department.

Abstract

Objective

To compare the parental motivators and referring general practitioner's (GP's) reasons for advising emergency department (ED) attendance with the assessment of ED medical staff. To compare ED clinician opinion with other published methods that have attempted to define "primary care suitable" presentations to the ED.

Methods

A prospective observational study and series of surveys regarding the attendance of children presenting to a single tertiary paediatric ED. Surveys were distributed to the treating ED clinician, the child's parent/guardian, and the referring GP. Results between the three groups were analysed and compared.

Results

There were a total of 1069 presentations during the study period. 600 (58.4%, 95%CI 55.3%-61.4%) presentations were judged as "ED appropriate" by the

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treating ED clinician. When compared with methods used to retrospectively judge whether ED patients are considered “primary care suitable”, ED clinicians disagree between 22.4 and 38.8% of the time. For patients who presented directly to ED, 85.6% did so for a medical reason, whilst 32.1% did so for a GP access reason. Being referred by a GP improved the ED clinicians’ opinion of the appropriateness of the presentation (49.2% vs 73.9%, $p<0.05$)

Conclusions

We caution that many strategies attempting to “solve” the issue of increasing ED attendances by paediatric patients have been driven by opinion, and a better understanding of the motivators that drive this behaviour is needed. We believe the solution to increasing utilisation of Emergency Departments by children must be a balanced approach that addresses community expectations and appropriately resources EDs.

Introduction

Paediatric Emergency Medicine in Australia is currently going through a challenging period, with issues previously seen only in adult departments (such as access block) becoming more prevalent¹. Responding to these challenges requires a whole of hospital approach², as well as an in-depth understanding of the way in which Emergency Departments (EDs) are used by our community³. ED presentations in Australia are increasing at a greater rate than population growth⁴, particularly in children aged 0-4 years⁵; there were almost 7.2 million public hospital ED presentations in 2013/14, which represents a 7.2% increase from the previous year, and a 4.8% average yearly increase since 2009/10⁶. Over 1.5 million of those presentations were children under the age of 14⁶. In the tertiary paediatric referral hospital in which this study was based, paediatric presentations (age <19) increased 11.3% from 2012/13 to 2013/14⁷. Recent studies have suggested that it is neither a lack of primary care availability, nor the time of day (or night) that drives patients to come to the ED^{8,9} – however this remains a focus of national health policy.

Whilst research into adult departments is extensive, little has been undertaken to specifically address motivators for paediatric presentations. Previous studies have identified that parents expect to receive specialist level care, rapid diagnosis and treatment within the hospital setting, despite previous attendance at a general practitioner (GP)^{10,11}. A single Australian study showed 68% of

parents felt their condition was moderate to very serious, and 66% had sought prior medical advice¹². These studies have focussed on ATS (Australian Triage Scale¹³) triage 4 and 5 patients, using this as a surrogate marker for ‘ambulatory’ or ‘GP type’ patients; a methodology that has not been substantiated⁴.

Our primary aim was to examine the reasons parents attended the ED, and compare and contrast this to the assessment of the ED medical staff and the patient’s referring GP (if relevant). This prospective data would allow comparison to previously published assumptions. Our secondary aim was to compare our method with Australian published tools that have attempted to retrospectively define “GP suitable” or “primary care suitable” presentations to the ED.

Methods

This is a prospective observational study of children under 19 years of age who attended Monash Medical Centre, a tertiary paediatric ED with an annual census of 32,000. The study was performed over a 2-week period in October 2013, and was approved by hospital’s human research ethics committee.

The treating doctor distributed a written survey to patient’s guardians (TABLE 1), which was voluntarily returned to ED staff during or at the conclusion of treatment. The questions regarding reasons for attendance were based on

previously published qualitative research^{14,15}. The survey was accompanied by an explanatory coversheet. Patients were excluded if they presented without a guardian, could not speak English and were unable to complete the survey, or if the treating clinician felt presenting the guardian with a survey was inappropriate (such as in critical illness).

Medical staff were required to complete a clinician survey (TABLE 1) that was collected at discharge via a series of mandatory questions added to the routine computerized discharge screen. Failure to answer the questions prevented the clinician from completing the entire discharge process. Data was collected in the ED information system Symphony (Ascribe, Bolton, UK). After discharge a survey was sent to the referring GP when one was identified (TABLE 1).

Data entry and analysis was performed with Excel (Microsoft Corporation, Redmond, WA, USA) and Stata (StataCorp, College Station, TX, USA).

Clinicians' opinions of a patient's appropriateness of presentation were compared with those of parents and GPs, as well as three previously published tools used to assess primary care-suitability of ED patients. TABLE 2 presents the features of these methods published by the Australian Institute of Health and Welfare (AIHW)⁶, the Australasian College of Emergency Medicine (ACEM)¹⁶, and the Hospital and Health Service Performance Department of the Victorian Department of Health - Victorian Primary Care Treatment (PCT12)¹⁷, and a modified version of this measure (PCT4, which shortens the amount of time patients can spend in ED).

Results

There were a total of 1069 presentations during the study period. Figure 1 presents a summary, including subgroups, which underwent analysis. 1028 Clinician Surveys were completed during the period (response rate 96.2%), with 254 (23.8%) being filled out by consultant staff and the remainder by junior medical staff (paediatric and general residents, paediatric and emergency registrars). ED clinicians were asked if they felt a patient needed to come to Emergency ("ED appropriate"), or if they could have been seen and managed by a GP ("not ED appropriate"). A total of 600 (58.4%, 95%CI 55.3%-61.4%) presentations were judged as "ED appropriate" by the treating ED clinician. When broken down by ATS category (TABLE 3), a smaller proportion of attendances were felt to be appropriate as a less urgent ATS category was allocated. TABLE 4 compares previously published methods as applied to our data with the ED clinician impressions of presentation appropriateness. The opinion of ED clinicians disagreed with these methods between 22.4% and 38.8% of the time (depending on definition).

Parents completed surveys for 476 presentations (response rate 44.4%). When comparing patients who did and did not have a parent survey completed there was no statistically significant difference in demographics (mean age, sex,

discharge outcome, number of patients ATS 1, 2 or 3) or the number of patients judged as “ED appropriate” by treating clinician. The difference in mean triage category (Mean ATS; survey = 3.38, no survey = 3.28) was statistically significant but not clinically significant (difference 0.10, $p < 0.05$, 95%CI 0.00-0.20). The reasons parents choose to come to ED are presented in Figure 2. For the patients who presented directly to ED, 85.6% (285/333) did so for at least one medical reason (patient unwell, for a second opinion, for an investigation or procedure, or because they were a frequent patient of the health service), whilst 32.1% (107/333) did so for at least one GP access reason (no GP, long wait for GP or GP closed). Some parents nominated reasons in both categories, or multiple reasons in each.

Comparing clinician judgement on the appropriateness of the presentation with reported presentation origin (self-referral or GP referral) showed that being referred by a GP dramatically improved the ED clinicians’ opinion of the appropriateness of the presentation (49.2% vs 73.9%, $p < 0.05$, TABLE 5).

ED Clinicians were asked whether they thought the presentation to ED was avoidable, and if so sought their opinion on how to prevent it. Of the 1028 presentations surveyed, 379 (36.9%, 95%CI 33.9%-39.9%) were felt to be avoidable. As can be seen in Figure 3, the most common suggestion cited by ED clinicians to avoid the presentation was improved GP access.

Surveys were sent to the 143 referring GPs and 84 were received (response rate 58.7%). Twenty GPs stated that despite patients nominating them as their referring GP they either had no record of the patients' attendance on that day, or did not refer them to ED; presumably this was an error on the part of the parents or a misinterpretation of the question. Of the 64 valid responses, 84.4% (95%CI 73.6%-91.3%) cited the patient being "unwell/requires admission" or "wanted a second opinion" as one of the reasons for referral. However, twenty-three (35.9%, 95%CI 25.3%-48.2%) felt the referral to ED was avoidable; ten nominated phone advice and nine better access to outpatient clinics as the most helpful way to avoid referral.

Discussion

We present a novel prospective study, which compares opinions on reasons for ED presentation between parents, ED clinicians and General Practitioners. This is the first time such a comparison has been attempted for paediatric ED presentations.

In our entire cohort, ED clinicians felt ED attendance was appropriate 58.4% of the time. The higher the ATS category, the more attendances were felt to be appropriate. Despite this, 45% of ATS category 4 patients (and 35% of category 5

patients) were felt to be appropriate for the ED. The 14% of ATS 2 patients felt not to be appropriate for ED consisted of neonatal presentations. It is the practice at our institute to assign ATS 2 to all neonates regardless of presentation condition. The ATS is a measure of clinical urgency¹³, not complexity, and this may result in it performing poorly when trying to extrapolate its use to determine appropriate location of care in our study population.

We have found that widely used methods to determine the suitability of an ED presentation for general practice do not correlate well with the opinions of ED clinicians in our study. In addition, when compared with a large retrospective study of West Australian patients⁴, the proportion of paediatric patients presenting to our ED who meet these GP suitability criteria is greater (WA 2011 figures vs our study, ACEM 11.6% vs 14.8%, AIHW 25.0% vs 39.6%). The published rules did not agree with our clinicians opinion 22.4% to 38.8% of the time. It is of significant concern that these methods appear to incorrectly identify the patients presenting to a paediatric emergency department that could be treated in primary care. It is the authors' opinion that using such methods to make decisions about patient diversion strategies or Emergency Department funding levels would need to be considered within the local context and may not be generalisable.

Selection of a patient reduction strategy to implement has implications for success. A recent systematic review found a third of such methods resulted in no utilisation reduction, with very variable impact of various methods in generally poor quality studies¹⁸. Those methods aimed at pre-hospital diversion were the least effective (2 studies, 3-7% reduction in select target groups) and those aimed at patient education the most effective (21-80% reduction in select target groups)¹⁸

In our study, the vast majority of parents present to the emergency department because they feel the ED can provide a medical service to their child, rather than issues with GP access. 281/476 (59.0%) of parents stated they came to ED because their “child is sick and needs to come to hospital/Emergency”, and 178/476 (37.4%) presented for a second opinion. We believe this represents a specific health-care seeking behaviour of the community – there is concern about a child’s level of illness and an assumption that the Emergency Department is the most appropriate place to seek care. It seems more appropriate to address this concern with community education rather than programs directed at hospitals, however this health seeking behaviour may be resistant to change and appropriately resourcing EDs to cope with increasing paediatric presentations may be our only recourse. More research into parental motivators and community expectations prior to any attempts at modifying behaviour is clearly required.

Our data supports the role of the community GP as gatekeeper to hospital services; when parents self-presented to the ED, clinicians felt 49.2% of those presentations were appropriate, however this increased to 73.9% (difference 24.7%, 95%CI 14.9-33.5%) when the patient had first visited a GP.

In our study GP access is not the main driver for ED presentation. Of those who self-presented to ED, 223/333 (66.0%) presented for a reason other than GP access; most (212 parents) because they felt their child was very unwell. This is in stark contrast to ED clinician opinions of reasons an ED visit could be avoided, where better GP access is the most commonly cited reason. There is clearly a “disconnect” between the community expectations of what an Emergency Department and the health service should deliver and those of the staff that work in the system.

Limitations

We have chosen to use ED clinician opinion as the “gold standard” to determine whether a presentation was required; this approach has not been validated. Like the previously published methods quoted, clinician opinion in this study is a dichotomous measure and ignores the possibility patients may be both “ED appropriate” and “primary care suitable”. Results were only attained over a 2-

week period; differences in seasonality have not been explored. The survey questions were narrow in scope, and may have introduced bias by design. In addition, responder bias is possible given the voluntary nature of the survey. Although we received very high response rates from ED clinicians the response rates from parents and GPs were lower; due to the sequential design of the surveys the final response rates for the GP questions was very low (64 out of 1069 presentations), and an accurate response rate cannot be determined due to missing referral information. This is a potential source of bias, and future attempts to study this issue should address this poor response rate; this may be achieved by direct contact with parents and GPs by researchers.

Conclusions

This study is the first time parental motivations for presenting to the ED have been explored and compared with emergency clinician opinions regarding the presentation. This is a novel approach, and highlights several important motivators for attendance and challenges “accepted” opinion. Parental perception of urgency is a significant driver of ED attendance. Previously published tools used to retrospectively determine appropriateness of an ED attendance for primary care do not correlate with the opinion of ED clinicians.

Strategies attempting to “solve” the issue of increasing ED attendances by paediatric patients have in the past been driven by opinion and published tools, and further efforts need to be driven by a proper understanding of the motivators that drive this behaviour. We believe the solution to rapidly increasing utilisation of Emergency Departments by children must be a balanced approach that addresses community behaviour and appropriately resources EDs.

We believe our methodology has merit and is consistent with a patient focussed approach. We suggest that motivators for ED attendance need to be explored in a variety of different ED settings to adequately understand this complex healthcare seeking behaviour.

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JC and GB conceived and designed the study. JC, SC and AW designed and tested the data collection tools. JC was responsible for data collection and analysis. All authors made substantial contributions to the final manuscript.

TABLE 1; Survey questions**Parent Survey**

Have you been sent to Emergency by your GP?

YES – Why have you come to ED? You can select more than one.

- My child is sick and needs to come to hospital/emergency
- My child needs to be seen by a children's specialist or needs a second opinion
- My child needs blood tests or Xrays
- My child requires a procedure
- My child is a frequent patient of (health service)
- Other. Please describe

NO – Why have you come to ED? You can select more than one.

- My child is sick and needs to come to hospital/emergency
- My child needs to be seen by a children's specialist or needs a second opinion
- My child needs blood tests or Xrays
- My child requires a procedure
- My child is a frequent patient of (health service)
- We do not have a GP
- The wait for an appointment to see a GP was too long
- Our GP is not open at this time
- Other. Please describe

ED Clinician Survey

1. Do you think this patient needed to come to Emergency, or could they have been seen and managed by a GP?

(if GP) Why could have been seen in GP setting? (can choose more than 1)

- did not need admission, and well enough to be managed at home
- did not need any or urgent investigations (pathology/radiology)
- did not need a procedure
- needed a referral to outpatients, not the ED
- other

2. Is there anything that could have avoided this presentation? (can choose more than 1)

- phone advice from Emergency Consultant to GP
- better access to specialist clinics/outpatients
- Improved GP access
- better access to investigations in community
- improved access to direct ward admission
- other

GP Survey

1. Why did you send your patient to the Emergency Department (you can tick more than one option)

- the child was sick, and needed emergency management or admission to hospital
- for a second opinion, or for a specialist opinion
- for specific investigations (blood tests, radiology etc.) unavailable in community
- the child required a procedure unable to be performed in my rooms

2. Is there anything that could have avoided your patient having to come to Emergency?

- phone advice from an Paediatric Emergency Physician or Paediatrician
- better access to outpatient clinics
- better access to outpatient pathology or radiology
- after hours primary care services in my area

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TABLE 2; Primary Care Treatment criteria in Emergency Departments

Method	Referred	Admitted	ATS	Arrival	Other	Exclusions
PCT12	Not GP	Non-admitted	4 & 5	Not Ambulance	ED LOS<12 hrs	-
PCT4	Not GP	Non-admitted	4 & 5	Not Ambulance	ED LOS<4 hrs	-
ACEM	Self	Non-admitted	4 & 5	Not Ambulance	Medical consult<1hr	DNW or invalid consultation time
AIHW	-	Non-admitted	4 & 5	Not Ambulance, police or correctional	-	-

TABLE 3; Triage category of presentations vs ED Clinician opinion

	"ED appropriate" N=600		"Not ED appropriate" N=429	
	No. of patients	(%, [95% CI])	No. of patients	(%, [95% CI])
ATS 1	3	100, [43.9-100]	0	0, [0-56.2]
ATS 2	119	85.6, [78.8-90.5]	20	14.4, [9.5-12.2]
ATS 3	280	64.1, [59.5-68.4]	157	35.9, [31.6-40.5]
ATS 4	181	45.0, [40.2-49.9]	221	55.0, [50.0-59.8]
ATS 5	16	34.0, [22.2-48.3]	31	66.0, [51.8-77.8]
Chi-squared, p<0.05				

TABLE 4; Analysis of “GP patient” definitions

	Number meeting definition (N=1028)		Meet definition and judged “ED appropriate” by ED Clinician	
	No. of patients	(%, [95% CI])	No. of patients	(%, [95% CI])
AHIW	407	39.6 [36.6-42.6]	158*	38.8 [34.2-43.6]
ACEM	152	14.8 [12.8-17.1]	34*	22.4 [16.5-29.6]
PCT4	328	31.9 [29.1-34.8]	110*	33.5 [28.7-38.8]
PCT12	337	32.8 [30.0-35.7]	116*	34.4 [29.6-39.6]
*p<0.05, two tailed z-test				

TABLE 5; Referral origin vs. clinician judgement of appropriateness

	"ED appropriate"		Not "ED appropriate"	
	No. of patients	(%, [95%CI])	No. of patients	95%CI
Self-referral (N=333)	164	49.2, [43.9-54.6]	169	50.8, [45.4-56.1]
GP referral (N=142)	105	73.9, [66.2-80.5]	37	26.1, [19.5-33.8]
Chi-squared, p<0.05				

Figure Legends

Figure 1; Consort diagram of patient presentations during study period

Figure 2; Parental reasons for presenting to ED

Figure 3; Reasons ED Clinicians nominate for presentation being avoidable

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Learning Points

What is already known on this topic

Paediatric attendances to Emergency are increasing faster than population growth

Attempts at reducing this increase have not been successful

What this paper adds

Motivators driving ED attendance in children are complex

Previously published rules assessing GP “appropriateness” if patients do not agree with ED clinician opinion

Patients who have seen a GP first are much more likely to be “appropriate” for ED

Most parents attend ED because they feel their child is unwell and needs emergency care

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Why do children present to Emergency Departments? Exploring motivators and measures of presentation appropriateness for children presenting to a Paediatric Emergency Department.

Original Article

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