



ORIGINAL ARTICLE

Measuring the financial and productivity burden of paediatric hospitalisation on the wider family network

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Aim: To estimate the non-medical out-of-pocket costs for families with a child in hospital.

Methods: This study was a survey of 225 parents of paediatric inpatients on nine wards of an Australian public paediatric teaching hospital on two separate days. Our primary outcomes were the costs associated with: (i) time taken off work to care for the child in hospital; (ii) time off work or contributed by family and friends to care for other dependents; and (iii) travel, meals, accommodation and incidental expenses during the child's stay. Demographic data included postcode (to assess distance, socio-economic status and remoteness), child's age, ward and whether this was their child's first admission.

Results: Mean patient age was 6.5 years (standard deviation 5.2). On an average per patient day basis, parents took 1.12 days off work and spent 0.61 (standard deviation 0.53) nights away from home, with 83.8% of nights away at the child's bedside. Parents spent Australian dollars (AUD)89 per day on travel and AUD36 on meals and accommodation. Total costs (including productivity costs) were AUD589 per patient day. Higher costs per patient day were correlated with living in a more remote area (0.48) and a greater travel distance to the hospital (0.41). A higher number of days off work was correlated (0.69) with number of school days missed.

Conclusion: These results demonstrate the considerable time and financial resources expended by families caring for a child in hospital and are important inputs in evaluating health-care interventions that affect risk of hospitalisation and length of stay in paediatric care.

Key words: hospital care; non-medical costs; out-of-pocket costs; paediatrics.

What is already known on this topic

- 1 Parents are highly involved in the care of their children when admitted to hospital.
- 2 Few studies have attempted to assess the non-medical, out-of-pocket costs associated with a child's admission.
- 3 The absence of data means that cost-effectiveness studies of interventions designed to impact paediatric admissions include health system costs but not costs incurred by families.

What this paper adds

- 1 New data on families/carers' non-medical, out-of-pocket costs associated with paediatric admissions in a large Australian teaching hospital.
- 2 Identification of factors associated with these out-of-pocket costs.
- 3 Estimation of the cost and productivity burden for families with a child in hospital.

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Conflict of interest: The authors confirm that the funding agencies had no role in the study design, data collection and analysis, writing the report or decision to submit the paper for publication. An employee of one of the sponsors helped with the study design and is a co-author of the report. The other sponsors were not involved in the design, data collection and analysis, in writing the report or submitting it for publication.

Accepted for publication 25 February 2018.

Evaluating patient safety and quality interventions in health care have traditionally focused on health system outcomes such as mortality and morbidity. Assessing broader measures of the impact on patients can be challenging in children¹ as patient-reported quality-of-life measures that are used in adult studies are often not validated in younger age groups.^{2,3} Paediatric care is also complicated by the impact of a child's illness on the family as parents are encouraged to actively participate in their child's care when in hospital,^{4,5} and a child's admission involves the whole family as parents juggle jobs and other care commitments.⁶ Family involvement means that, in addition to measuring the health system resources associated with care, evaluating improvements in paediatric care needs to include an assessment of the out-of-

pocket expenses borne by the parents and families. These out-of-pocket costs include both medical costs and non-medical costs.⁷ Medical out-of-pocket costs, such as fees for medical services and medications, will vary depending on health-care funding and insurance arrangements. Non-medical costs include direct costs associated with travel and accommodation and indirect costs relating to time off work. These costs are magnified where a child is admitted to a specialised paediatric facility situated far from their home.⁸ A review of economic evaluations in paediatric cancer estimated that non-medical costs were less than 10% of medical costs.⁹ However, the impact on family budgets can be significant, with non-medical costs ranging from 0.2 to 283% of annual income.⁹ Methods to assess non-medical costs include travel diaries, but data collection can be difficult due to low completion rates.¹⁰ Surveys have been used to specifically assess food, travel and accommodation costs but rarely combine these in a comprehensive and consistent way across hospital specialties.^{11–13}

The lack of consistent measurement of non-medical costs makes it difficult to evaluate the full impact of quality and safety improvements of health care for children.⁹ The aim of this study was to provide a comprehensive assessment of the changes to family work practices, care arrangements and other costs associated with a child's admission in order to assess the financial and productivity impact of a child's stay in hospital on the wider family network.

Methods

Study design, setting and context

We conducted a census survey of all consenting parents on nine wards (study wards) on two separate days in 2016 (Wednesday, 26 October and Wednesday, 16 November) at The Children's Hospital at Westmead, a publicly funded, tertiary paediatric referral hospital in Sydney, New South Wales, Australia. As part of a larger project on medication safety,¹⁴ parents and carers on the study wards of this project (which excluded oncology, intensive care, and emergency departments) were invited to participate in the survey.

Design and administration of the survey

Building on a previous survey used in paediatric orthopaedic wards,¹³ a survey was developed on the Qualtrics online survey platform (<http://www.qualtrics.com>), allowing surveys to be completed on computers, tablets and smart phones. The survey was piloted and revised by the research team and approved by a multidisciplinary steering committee comprising paediatricians, pharmacists and health services researchers. This final version of the survey comprised 16 questions and was approved by the hospital ethics committee. The questions related to the time off work, accommodation requirements, arrangements for taking care of other dependents (e.g. other children), schooling arrangements and other costs incurred by the parents and carers during their child's admission (Fig. 1). The survey collected information from the day of admission to the end of the survey day. Survey team members received hospital approval and underwent survey training.

On the survey days, the team approached all eligible parents on the wards during the survey days. Parents were eligible to participate unless the patient was in protective or infectious

isolation, but surveyors did not approach parents who were showing overt signs of distress. Consenting parents were offered the choice of completing a paper survey by themselves or an electronic version of the survey with the surveyors (i.e. surveyors read out the questions and possible response categories and then recorded participants' responses on the online survey form). All chose to complete the electronic survey. The de-identified survey data were uploaded to the secure Qualtrics platform at Macquarie University.

Estimating travel and other costs

Costs were assessed for different variables (Table 1) using a 2016 price year and stated in Australian dollars (AUD). Costs in US dollars (USD) were converted using 2016 year-end average rates unless otherwise specified.¹⁵ The survey was designed to capture primary data on resource use, and we estimated the costs based on calculated unit costs except where parents reported the dollar value spent for each item. For example, travel costs of driving to and from the hospital were calculated from the distance to the hospital using residential postcodes and Australian Tax Office guidelines for estimating travel costs.¹⁶ Where these costs were not provided by the parents, we estimated the number of trips based on distance from the hospital and length of stay. We estimated meal costs based on the additional costs of dining in the hospital cafeteria compared to eating at home.^{17,18} Accommodation costs for parents staying at the family hostel were derived from the Hospital's website.¹⁸ Hotel costs were determined using the average cost of accommodation charged at 10 hotels within a 5 km radius of the hospital.

Monetising days off work and informal care

The productivity-related costs included days taken off work¹⁹ and the informal contribution from family, neighbours and friends who helped care for other children during the admission.²⁰ Productivity costs can be measured using average wage figures (human capital methods) or replacement costs (friction cost models).¹⁹ Friction costs are not recommended over the timescale of calculating incremental costs per day.²¹ We therefore used average wage rates,²² adjusted for on-costs (employment costs less salary costs),²³ to measure the productivity burden related to hospital admissions over 1 year. We used the same rate for paid and unpaid work.

Data analysis

The survey data were downloaded from the secure Qualtrics platform and analysed using Stata 13.1 (StataCorp, College Station, TX, USA). Costs and days off work were calculated on a per patient per day basis to allow for different lengths of stay. We report mean and median values and did not impute missing variables in the analysis, which is reflected in the number of respondent answers. We ran a pairwise correlation matrix to determine the associations between the demographic and cost variables: Patient age, whether it was the first admission, distance to the hospital, total cost per day, time off work per day, care required for other dependents, days of formal care (e.g. schooling and

Thank you for taking part in this survey. The aim of this survey is to understand some of the practical impacts that your child's current stay in hospital is having on your household and extended family and friends. This study is investigating the introduction of an electronic medication management system to improve the quality and efficiency of care delivery for patients in children's hospitals. Your answers to this survey are anonymous. We will be sharing the overall results of the survey with the hospital staff but you and your child will not be able to be identified. Do you agree to participate?

The survey requests some basic demographic information, followed by some questions about your child's current stay in hospital and the related costs to you and your family. We are concerned about costs and arrangements up until this point in time, not any possible future costs. Please only answer based on arrangements you have already made, and costs you have already incurred.

Q1 How old is your child?

- Years _____
- Months (Optional) _____

Q2 Which ward has your child been on during this stay? If your child has spent time on more than one ward, please state the ward where they have spent the most time.

Q3 Is this the first time your child has been admitted to hospital?

- Yes
- No

Q4 How many days has your child spent in hospital, so far, during the current admission?

- Days _____

Q5 What is the postcode of your primary residence/ home?

- Postcode _____
- Don't know/ rather not say

Q6 During your child's current stay in hospital, are you and/or your partner staying away from home?

- Yes
- No

Q7 How many nights' accommodation for you, and/or your partner, have you needed to arrange so far for this stay?

- Number of nights for you _____
- Number of nights for your partner _____

Fig. 1 Survey questions.

Q8 Where have you and/ or your partner been staying? Please select all that apply and specify the number of nights you have stayed.

- With family or friends - Number of nights _____
- At the hospital (bedside)- Number of nights _____
- Hotel or other paid accommodation - Number of nights (for this part of the question please count two people in a shared room as one) _____
- Hospital Hostel- Number of nights _____

Q9 Has your child missed attendance from any of the following due to their current stay in hospital? Please mark all that apply and indicate time missed in days.

- No
- Long day care _____
- Pre-school _____
- Family day care _____
- In home care _____
- Outside of school hours care _____
- Public school (primary or secondary) _____
- Private school (primary or secondary) _____
- TAFE/ College/ etc. _____

Q10 Have you/ family members/ friends/ neighbours/ others taken time off paid or non-paid (volunteer) employment due to your child's current stay in hospital?

- No
- Family members including yourself
- Friends/ neighbours
- Others

Q11 How many days have been taken off work in total?

- Total days _____

Q12 Do you have other members of your family, such as other children or elderly parents, who are dependent on you for supervision and care?

- Yes
- No

Fig. 1 Continued

other care) that were missed due to admission and postcode-related indicators for socio-economic status and geographic remoteness.²⁴ We used a 5% significance level and Bonferroni correction for the numbers of pairs in the matrix.²⁵

Ethics

Sydney Children's Hospitals Network Human Research Ethics Committee HREC/15/SCHN/370.

Q13 What additional arrangements have you needed to make to care for these dependents during this hospital stay and for how many days have they been required?

- None
- Family members _____
- Friends/ neighbours _____
- Formal babysitters/ nannies _____
- Day care/ childcare centre _____
- Outside of school hours care _____
- Sibling Care at the hospital _____
- Other _____

Q14 Has any family member/ friend/ neighbour referred to in the previous question had to take time off paid or non-paid (volunteer) employment to care for your other dependents during this hospital stay? Please select all that apply.

- No
- Family member
- Friend/ neighbour
- Other

Q15 How many days have been taken off in total?

- Total _____

Q16 Please describe any other special arrangements that you have had to make while your child is currently in hospital. This may include travel to and from the hospital, meals eaten out, mobile internet devices, travel costs relating to your other children, etc. Please enter the costs in the separate section.

- Parking _____
- Other transport costs _____
- Meals _____
- Hospital facilities - laundry, Sibling Care etc _____
- Other Costs _____
- None

Thank you for completing this survey.

Fig. 1 Continued

Results

In total, 255 surveys were completed: 123 surveys were completed on the first survey day and 132 on the second day. The study wards contained a total of 164 beds. Of the 265 parents

approached, 10 (3.8%) declined to take part in the survey. Nine respondents did not reveal their postcodes, and one did not provide length-of-stay data.

Demographic data (Table 2): Patient ages ranged from 0 years (11 days) to 18 years, with a mean age of 6.5 years (standard

Table 1 Unit and estimated cost assumptions

Travel	Distance estimated from main town in parent's residential postcode to Children's Hospital Westmead site. Costs estimated using Australian Tax Office guidelines of AUD0.66/km. We assumed daily trips for those living <50 km, twice weekly trips for those living 50–150 km and weekly trips for those living >150 km unless otherwise specified
Parking	Car parking costs of AUD17.00 assumed per day unless other figures were supplied. A monthly car park fee of AUD190.00/month was used for longer stays
Other travel costs	Other travel costs included specified air fares, bus fares, road tolls and taxis
Accommodation costs	Hotels: AUD152.5 per night based on the average of five lowest price hotels within a 5-km radius of the hospital. Hostel: costs estimated for the Parent Hostel Westmead at AUD22 for one night and AUD44 per night for longer stays
Meals	The average cost of a meal at home was estimated at AUD3.75, using Australian Securities Investment Commission estimates of a weekly grocery bill of AUD314 for a couple with two children. The price of a meal eaten out was estimated using the average price at the hospital canteen (AUD15). Meal costs were calculated using the incremental rate of AUD11.25 where parents specified the number of meals and a ratio (3.75/15) where they specified the amounts spent
Sundries	Laundry at AUD3 per load with one load estimated for every 4 days of stay where indicated. Clothing was estimated from costs from a local supermarket
Wages	Australian average weekly wages figures at a daily rate of \$276.23 (including 15% oncosts). The same rate was applied to paid and unpaid work

AUD, Australian dollars.

deviation (SD) 5.2, median 5.0 years). The mean length of stay, from admission to the end of the survey day, was 5.6 days (SD 12.0), with a lower median value (2.0 days) due to the number of day-stay patients (27.8% of total). This was the first admission for 78 patients (30.6%). The socio-economic data demonstrate that 30.5% of families surveyed were in the lowest three deciles and 30.9% in the most advantaged three deciles; 88.6% of families were living in Sydney metropolitan postcodes, with 10.9% in regional areas and only one family in living in a remote area.

Days off work (Table 3): In answer to Q10 in the survey, 178 (69.8%) responded that an average of 5.3 days (SD 8.9, median 3.0 days) were taken off work to care for their child in hospital. An additional 52 (20.4%) responded to Q14 in the survey, that an average of 4.0 days off work (SD 4.1, median 2.0 days) was needed to care for other dependents. Each patient day was associated with a mean 1.12 (SD 1.4, median 1.0) days off paid or volunteer work during the admission.

Table 2 Demographic data

	Mean	SD	Min	Max	Sum	Median	<i>n</i>
Patient length of stay (days including survey day)							
Total	5.6	12	1	158	1432	2	254
Patient age, years							
Total	6.5	5.2	0.1	18		5	255
First admission							
Yes					78		30.6
No					177		69.4
Remoteness by postcode							
	Number of families			% in each code			
Major cities	218			88.6			
Inner regional	20			8.1			
Outer regional	7			2.8			
Remote	1			0.4			
Socio-economic status by decile†							
							% of families
1							10.57
2							15.85
3							4.07
4							11.79
5							1.63
6							19.51
7							5.28
8							1.22
9							12.2
10							17.89

†Lower decile reflects an area of lower socio-economic status. Max, maximum; min, minimum; SD, standard deviation.

Accommodation and non-travel costs (Table 3): A total of 162 (63.5%) respondents and 56 (22.0%) partners spent time away from home, with a mean 0.61 nights per patient day; 82.8% of nights were spent at the bedside and 8.8% at the hospital's hostel. The estimated costs for meals, accommodation and sundries came to a total of AUD36 (USD28.02) per patient day (SD 50.84, median 22.50).

Travel costs (Table 3): Excluding the nine respondents who did not provide a postcode, we estimated that the average round trip distance to the hospital was 166.1kms (SD 547.8, median 46.4 km). We estimated mean travel costs of AUD292 per family for the admission up to the day of the survey or a mean AUD89 (USD69) per patient per day (SD 142, median 39).

Arrangements to care for other dependents and formal care (Table 4): Parents arranged care for other dependents for 0.56 (SD 0.60) days per patient day. Other family members contributed 93.6% of this extra care, and neighbours provided the remaining 6.4% (Table 3). A child's admission resulted in them missing 0.81 (SD 1.75) days of formal care per patient day, with 86.5% related to schooling.

Correlation analysis (Table 5): The days off work was correlated (0.69) with the number of formal care days missed (0.69)

Table 3 Days off work and travel and other costs

	Mean	SD	Min	Max	Median	<i>n</i> (%)
Days off work caring for the child in hospital						
Parents and family member						178 (70)
Friends and neighbours						1 (<1)
No days off						76 (30)
Caring for child in hospital	5.3	8.9	0.5	90	3	
Days off work caring for other dependents (<i>n</i> = 193)†						
Parents and family members						49 (25)
Friends and neighbours						3 (25)
No days off						141 (73)
Caring for other dependents	4	4.1	0.3	20	2	52 (20)
Total days off work	4.5	8.6	0	90		
Days off work per patient day	1.1	1.4	0	14.5	1	
Parent nights away from home						
Respondent	3.2	5.6	0	36		162 (64)
Partner	0.9	3.4	0	30		56 (22)
Total nights away	4.1	7.4	0	60		
Nights away per patient day	0.6	0.6	0	5	0.7	
Accommodation (nights)						
Family and friends	4	4	1	12		3%
Hospital bedside	5	6.3	1	36		66%
Hotel	4.7	5.8	1	16		4%
Parent/Family hostel	8.9	9.3	1	30		4%
Total accommodation nights	4	6.6	0	42		
Accommodation per patient day	0.6	0.6	0	5	0.7	
Travel costs (AUD)‡						
Driving costs	214.44	379.21	0	2939.11		245 (96)
Parking costs	51.53	86.36	0	612		208 (82)
Other travel costs	368.41	692.92	5	3000		31 (12)
Total travel costs	292.85	462.02	0	3089.11		
Travel costs per patient day	89.24	141.9	0	1028.12	38.61	
Travel costs per patient day (USD)	69.4				30.04	
Other costs (AUD)‡						
Meals	117.38	190.66	5	1575		216 (85)
Sundries	86.29	153.82	0	1050		63 (25)
Accommodation	46.2	261.72	0	2704		
Total other costs	166.95	382.96	0	3295.25		
Other costs per patient day	36.02	50.84	0	372.5	22.5	
Other costs per patient day (USD)	28.02	39.55			17.51	
Travel and other costs (AUD)‡						
Total costs	459.8	735.76	6.34	5530		
Total costs per patient day	125.26	169.54	0.56	1095.6	62.95	
Total costs per patient day (USD)	97.45				48.98	

†Respondents only completed this question if they need to arrange care for other dependents during their child's stay in hospital. ‡Annual average exchange rates, year ending 31 December 2016: 1 Australian dollar (AUD) = 0.778 US dollar (USD).¹⁵ Max, maximum; min, minimum; SD, standard deviation.

and to a lesser extent with the number of days arranged to care for other dependents (0.29). Higher costs per patient day were correlated between living in rural and remote areas (0.48) and a greater travel distance to the hospital (0.41). Living in rural and remote areas was also correlated with lower salaries (0.36) and lower socio-economic status (0.24).

Measuring the productivity burden and total costs (Table 6): To measure productivity costs we combined the results of our days off work and the 31 809 annual admissions for informal care analysis in 2013–2014 at the study hospital²⁶ and an average length of stay for 0–19-year-olds of 2.6 days (see Table 6).²⁶

Using an average weekly wage rate of AUD120²² and on-costs of 14.96%,²³ we estimated a productivity burden of AUD25.49 million relating to days off work, AUD12.83 million in informal care and AUD10.36 million in travel and other costs, equivalent to AUD589 (USD458) per patient day.

Discussion

Assessing the costs associated with a child's stay in hospital has traditionally been measured from the perspective of the health-care system. This study significantly contributes to understanding

Table 4 Formal and dependent care arrangements

	Mean	SD	Min	Max	Sum	Median	%
Formal care missed due to admission							
Long day care	1.9	0.7	0.5	3	18.5		4
Pre-school	4.2	8.2	0.5	36	83.5		8
Family care	4.4	2.1	0	6	9		1
In home care	1.5	1	1	3	6		2
Out of school care	—	—	—	—	—		0
Private school	5.6	7.8	0.5	60	591.5		41
Public school	10.2	28.5	1	120	173		7
Technical College/University	—	—	2	2	2		0
Total	3.5	9.5	0	120	883.5	1	
Formal care per patient day	0.81	1.8	0	21		0.8	
Dependent care arrangements							
Family members	3.8	5.7	0.5	36	530		55
Friends and neighbours	2.8	2.4	0.5	10	36.5		5
Babysitters	3.3	3.2	1	7	10		1
Day care	1.8	1	1	3	7		2
Out of school care	—	—	—	—	—		0
Other	—	—	—	—	—		0
Sibling care at hospital	1	—	—	—	1		0
Total	2.9	4.6	0	36	584.5	1	
Dependent care per patient day	0.56	0.6	0	3		0.5	

—, Not available; Max, maximum; min, minimum; SD, standard deviation.

the costs of a child’s admission from the perspective of parents and the wider family network. This approach is particularly important when evaluating the cost-effectiveness of paediatric health service interventions due to the higher level of family involvement in care when compared to adult patients. Our study focused on non-medical costs, which are not affected by differences in health funding systems. We included the productivity costs in the analysis in order to demonstrate the impact on society of a child’s hospitalisation but note that this is not necessarily a direct cost to parents as families may not be penalised for taking time off work in the short term, and voluntary time provided can also be viewed as an opportunity cost.

Our survey showed that, on average, parents took 1.1 days off work, with mean non-medical costs of AUD125 (USD97) per

patient day. This compares to a 2013 US study of paediatric orthopaedic patients (*n* = 50), which estimated a mean 0.9 days off paid work per patient day.¹³ That study also calculated average costs per day, including travel, food and accommodation, of USD126 (AUD126 using 2013 average exchange rates of 0.9987).¹⁵ From an Australian perspective, the estimated costs of meals and parking per parent day ranged from AUD19–32 (in 2004 terms).¹² A further study on childhood cancer estimated non-medical costs at AUD1000 per year (in 2002 terms) per patient.⁸ Different denominators make comparisons difficult, and the cancer study included non-hospital costs. In addition, cancer patients may have different requirements from general paediatric care.

We found that days off work were most often incurred by parents with children who attended formal care. This suggests that

Table 5 Correlation matrix

	Off work	Cost	Formal care	Patient age	First	Distance	SEIFA	ARIA	Income
Days off work per patient day	1.00								
Travel and other costs per patient day	0.24	1.00							
Formal care per patient day	0.69		1.00						
Dependent care per day	0.29								
Patient age			0.25	1.00					
First admission				−0.20	1.00				
Distance from hospital		0.41				1.00			
SEIFA							1.00		
ARIA		0.48				0.34	−0.24	1.00	
Weekly household income							0.89	−0.36	1.00

Only correlation values significant at 5% are shown. ARIA, rural and remote location; SEIFA, socio-economic indexes for areas.

Table 6 Summary analysis of non-medical out-of-pocket costs

Productivity costs analysis	
Annual admissions at study hospital 2013–2014 (a) ¹⁸	31 809
Average length of stay (b) ²⁶	2.60
Total patient days (a × b = c)	82 703.40
Travel and other costs per patient day (d)	125.26
Days off work per patient day (e)	1.12
Informal care days per patient day (f)	0.56
Average daily earnings (g) ²²	\$240.28
On-cost multiplier (h) ²³	1.15
Fully loaded daily wages (g × h = i)	\$276.23
Total non-medical out-of-pocket (OOP) costs	
Travel and other costs (c × d)	\$10 359 378.26
Productivity costs for days off work (c × e × i)	\$25 485 681.31
Productivity costs for informal care (c × f × i)	\$12 827 366.49
Total non-medical OOP costs for study hospital (2013–2014)	\$48 672 426.06
Total non-medical OOP costs per patient day (AUD)	\$588.52
Total non-medical OOP costs per patient day (USD)	\$457.86

Annual average exchange rates, year ending 31 December 2016:
1 Australian dollar (AUD) = 0.778 US dollar (USD).¹⁵

parents with children attending school and other formal care were more likely to be in employment and therefore required time off work during the admission. Those required to travel longer distances were, not surprisingly, found to have higher costs, demonstrating the greater financial burden for those residing further away from the hospital. In addition, those living in rural and remote areas not only had the cost of greater travel distances but were also associated with lower socio-economic status and lower family incomes.

Our study collected information about the time taken off work for the admission up to the end of the survey day. However, we have likely underestimated the costs of hospitalisation. One parent commented that although his child was only in hospital for 1 day, he or his wife had to take a week off work to cope with their child's recovery and rehabilitation following discharge from hospital. In future studies, information of such additional time off work could be collected, for example, using a prospective diary-based method. Another area for future study is the longer-term impact on the employment of parents in households with a sick child.²⁷ Some parents revealed that they had given up paid employment due to the nature of their child's illness. We did not include this in our results as we determined it would not be considered an incremental cost for that admission. We also note that our cost estimates do not include the rebates available to some parents through a government scheme to provide assistance for parents in rural and remote areas²⁸ as these costs are still incurred and are dependent on the location of the parents and availability of local specialists.

Other impacts include costs and availability of car parking.²⁹ One parent in our survey commented that the combination of fees, the uncertainty of finding a car space and trying to make the appointment time combined to create an extremely stressful situation. The burden of parking fees has been recognised by several state governments, with new rules for concessional rates

being introduced in 2017.^{30,31} However, these measures address the costs rather than availability of spaces and do not heed recommendations for free car parking for parents.¹²

The census nature of the survey allowed us to interview a wide range of parents across the nine study wards and provide analysis of the work, travel and care arrangements for the admission up to, and including, the date of the survey. However, surveying parents in real time resulted in the length-of-stay data that did not reflect complete admissions. To overcome this limitation, we present our results on a per patient day basis. Another limitation of the study is that results may not be directly scalable to other jurisdictions as the geographic information reflects the location of the hospital with respect to the paediatric population it serves.

Conclusion

Overall, this study provides a unique snapshot of the impact of a child's stay in a paediatric teaching hospital on 255 families across nine different wards and specialties. The total costs of AUD589 per patient day are significant, especially for families living in rural and remote areas and for those whose children have chronic illnesses requiring multiple admissions. Recurrent hospital admissions (69.4% of our survey population) pose a cumulative burden for families. Our results will be directly applied to assess the impact of any extra stay in hospital due to medication errors,¹⁴ but these cost data can assist in evaluating other interventions that impact length of stay. These results add weight to the consideration of alternatives for admission, such as hospital in the home programmes, especially for parents based in rural areas.³²

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