Back for more: a qualitative study of emergency department reattendance for asthma

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ABSTRACT

Objective: To explore the reasons why individuals recurrently present with asthma to hospital emergency departments.

Design: A predominantly qualitative study in which participants were interviewed in-depth about their asthma. Data on medication use, respiratory health and asthma knowledge were also collected, and asthma severity was determined from medical records.

Setting: A tertiary teaching hospital and a suburban hospital emergency department (ED) from 1 March to 30 April 2000, and a rural hospital ED from 1 July to 31 August 2000.

Participants: The participation rate was 32% of an initial 195 ED attendees (183 of whom were eligible) aged 18–70 years: 32 had presented to an ED for asthma care on more than one occasion over the preceding 12 months (reattendees), and 29 were non-reattendees.

Results: Two-thirds (22/32) of reattendees had chronic severe asthma and presentation to ED was deemed appropriate for 18 of these, indicated by recurrent severe asthma attacks despite seeking prior medical intervention. Reasons for re-presentation identified in a third of all reattendees included poor asthma knowledge, and financial and other barriers to medication use.

Conclusions: We identified potentially preventable issues in about a third of patients (most of whom had mild to moderate asthma) who recurrently presented to EDs for treatment. The remainder of the participants sought emergency asthma treatment appropriately after failing to respond to medical care, and this was frequently in accordance with their asthma management plans.

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EPISODES OF SEVERE ASTHMA should be mostly preventable with current best treatment, yet asthma remains one of the most common reasons why patients seek emergency care, both from general practitioners and hospital emergency departments.[1,2] Previous studies have shown that 62% of children and 40% of adults re-present for emergency department (ED) care within 1 year.[3] These high ED reattendance rates suggest that this group of patients is at increased risk of poor asthma outcomes. The notion that ED attendance for asthma may be prevented by optimal asthma care has been supported by the Victorian Government's description of asthma as an "ambulatory care sensitive condition".[4]

A number of ideas have been proposed as to why some individuals recurrently seek emergency care for asthma. Primarily, these relate to the inability to obtain ongoing medical care because of personal, social or economic reasons. The American experience points to a lack of primary care as a reason for recurrent presentations, although the differences in social welfare and healthcare systems between the US and Australia make this less likely to be a reason in Australia.[5] A less frequently discussed explanation is that patients who attend repeatedly may have more severe disease.[6,7]

Effective interventions to prevent ED reattendance for asthma will depend on understanding why this occurs. Our qualitative study explores the reasons why patients present to ED on multiple occasions, and may help to identify possible modifiable factors

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METHODS

Our recruitment of patients has been described previously.[8,9] For this study, we looked specifically at patients who reattended emergency departments within 12 months. Of an initial 195 ED attendees, 62 (32%) completed their participation in the study (Box 1). Briefly, data were collected from all consenting individuals who attended a city teaching hospital and a suburban hospital in the 2 months from 1 March to 30 April 2000, and a regional hospital between 1 July and 31 August 2000, for emergency asthma care.

Semistructured indepth interviews were conducted, exploring participants' history of asthma and decision to present to the ED. Demographic data were collected, as well as responses to the European Community Respiratory Health Survey[10] and Asthma Knowledge Questionnaire.[11] Interviews were recorded and transcribed. Chronic asthma severity was determined from medical records according to the Australian Asthma Management Guidelines,[12] and was thus predominantly based on medication use before emergency presentation. Acute severity was determined by peak expiratory flow measurements on presentation to the ED, in comparison with British Thoracic Society guidelines.[13]

Classification of reattendees

Both the quantitative (European Community Respiratory Health Survey Questionnaire) and qualitative data (interview transcripts) were analysed to identify participants who had presented to the ED more than once in the past 12 months. Thirty-two participants (52%) were categorised as reattendees, and their characteristics were compared with non-reattendees. Four members of the research team (JAD, DPG, KS, RAA) independently compared the data for each reattendee to ascertain reasons for the presentation to the ED, and their appropriateness. The researchers then met to discuss their conclusions, and consensus was reached in each case. It was assumed that managing acute severe or life-threatening asthma in a community setting rather than a hospital ED was inappropriate.

Statistical analysis

The demographic information and questionnaire data were analysed with SPSS.[14] Fisher's exact test was used to assess associations between categorical variables. Differences between continuous variables were assessed with Student's *t* or Mann–Whitney U tests. Interview transcripts were examined for emergent themes, and N4 and NVivo[15] were used for data management. The SPSS dataset was also imported into N4 and NVivo to facilitate triangulation of the qualitative and quantitative data and enrich the analysis. The qualitative analysis has been described in detail elsewhere.[8]

Ethical approval and consent

Our study was approved by the ethics committee of each hospital and written informed consent was obtained from each participant.

RESULTS

Of the 183 eligible people aged between 18 and 70 years who attended the hospitals, 62 completed the interview phase (23 from the city teaching hospital, 29 from the suburban hospital and 10 from the regional hospital).

Asthma history

Significantly more reattendees than non-reattendees had severe chronic asthma ($P = 0.007$; Box 2). Reattendees had significantly more admissions to hospital in the previous 12 months than non-reattendees ($P = 0.029$; Box 2). Nearly half the reattendees (15/32) were taking prednisolone at the time of interview.

Number of asthma attacks

Reattendees had more asthma attacks in the previous 12 months than non-reattendees (median number, 3 v 2; Mann–Whitney $U = 278.5$; $P = 0.025$), and were slightly less likely to present with a severe attack than non-reattendees (14 [44%] v 15 [52%]; $P = 0.810$; Box 2).

Reasons for emergency department attendance

Fourteen reattendees (44%) had attended a general practitioner for asthma care in the 4 weeks before their ED presentation, eight of these within 7 days, in an attempt to prevent their asthma from worsening. Nineteen reattendees (59%) stated that a respiratory tract infection led to their last presentation (a similar proportion to the non-reattendees), while six (19%) reported sudden shortness of breath as the reason for their presentation. Other reasons for presentation are listed in Box 3.

Two-thirds of reattendees (22/32) had severe chronic asthma. After careful analysis of asthma history and ED presentation in this severe group, we concluded that four of their presentations were probably preventable. Two might have been preventable with a reduction in medication cost:

> "I can't afford it [Flixotide; Allen & Hanburys] financially. It's another $23 . . . I'm trying to compensate by using more Ventolin, more Atrovent" (man in his 60s).

The other two might have been preventable with increased knowledge of asthma and asthma management:

> "I felt a bit strange [attending emergency] . . . I wasn't too sure . . . if it was really asthma, because my attacks . . . started about 3 years ago. . . . the first time . . . it was what I would call an asthma attack, whereas I couldn't breathe. . . . it didn't come back for a year. . . . I wasn't sure if it was asthma or not because I didn't know anything about asthma" (man in his 40s with an asthma knowledge score of 21/31).

The remaining presentations were for acute severe or life-threatening asthma and not obviously preventable. For example, the result of a respiratory tract infection (RTI) which had not been prevented by medical intervention:

> "I had a chest infection . . . And I was in there [hospital] for 5 days. . . . When I came home they said you should be right now and they didn't give me a script or any Rulide [Aventis Pharma]. . . . it just flared up again" (woman in her 50s).

Importantly, three of the four patients in the chronic severe group who presented with mild or moderate acute asthma had previously had severe life-threatening asthma resulting in multiple

1: Recruitment of patients[8]

Status	No. (%)
Study participant	62 (32%)
Consented but not interviewed	13 (7 %)
Not contactable	65 (33%)
Refused	43 (22%)
Died*	1 (0.5%)
Discharge diagnosis not asthma*	11 (6%)
Total	195

* Not considered eligible.

2: Demographic information and asthma history for emergency department reattendees and non-reattendees for asthma

Characteristic	Reattendees (n=32)	Non-reattendees (n=29)
Mean age	39 years	39 years
Male	11 (58%)	8 (42%)
Female	21 (50%)	22 (50%)*
Occupation		
Managerial/professional	5 (16%)	9 (31%)
Clerical/sales/service	11 (34%)	13 (45%)
Labourers	4 (13%)	0
Retired/unemployed	5 (16%)	5 (17%)
Home duties	7 (22%)	2 (7%)
Have private health insurance	12 (38%)	13 (45%)
Have a Health Care card†	15 (47%)	10 (34%)
Chronic asthma severity		
Mild	7 (22%)	9 (31%)
Moderate	3 (9%)	11 (38%)
Severe	22 (69%)	9 (31%)
Acute asthma severity		
Mild	7 (22%)	5 (17%)
Moderate	11 (34%)	9 (31%)
Severe	14 (44%)	15 (52%)
Mean asthma knowledge score‡ (95% CI)	21.6 (20.2–23.0)	19.8 (17.8–21.8)
Hospital admissions in last 12 months§		
None	7 (22.6%)	9 (31%)
1–2 admissions	16 (51.6%)	20 (69%)
3–5 admissions	4 (12.9%)	0
> 5 admissions	4 (12.9%)	0
Smoking	8 (25%)	12 (41%)
Daily	6	9
Weekly	1	1
Less than weekly	1	2
Have an action plan	17 (53%)	17 (59%)

*One study participant did not complete the questionnaire data and was excluded from further analysis. † Health Care cards are issued to low income earners and pensioners. Holders of cards receive subsidies for treatment and medication. ‡ Range of scores, 6–29. § One reattendee did not answer this question.

3: Asthma severity and reasons for emergency department attendance

Chronic asthma severity	Reason for attendance	Number of patients
Mild	Respiratory tract infection	2
	Shortness of breath	3
	Medication use — concerns	2
Moderate	Respiratory tract infection	1
	Shortness of breath	1
	Medication use — cost	1
Severe	Respiratory tract infection	16*
	Shortness of breath	2
	Medication use — cost	2*
	Run down or weather	2
	Desensitisation	1

* One participant who presented because of a respiratory tract infection could not afford medication.

intensive care unit admissions, and their emergency presentation with clinically mild or moderate asthma was therefore deemed appropriate.

There were 10 reattendees who did not have severe chronic asthma (Box 3). Four of these patients had low asthma knowledge scores (< 20/31), including one who presented with acute severe asthma, suggesting that asthma education may be a useful intervention.

Other factors identified in this group were poor use of medication, lack of access to specialist care, failure to have a medication review and cost barriers to taking medication (Box 3), as illustrated in the following statements:

> "... I hate taking medication ... the doctor recently said there's no long-term problems ... I was scared that if I took it too often when I didn't need it that I'd get immune to it ... I didn't want to become dependent on having to take preventative medication ... I kept thinking, oh well, you know, I'll take it during the bad times, 3 or 4 months of the year where it seems to be worse" (woman in her 20s).

> "I had an old reserve thing in my pocket which was use by date long past ... I've got a lot of old sprays. But maybe if I had a fresh salbutamol ... it would have been alright. ... that's what the doctor seemed to think" (man in his 60s).

> "I got cut off my benefits and I couldn't afford medication ... had an attack and no medication. They just thought it was my neglect, but I just didn't have any money to buy anything" (man in his 30s).

The analysis therefore identified issues that might be usefully addressed in only 11 of the 32 reattendees. The remainder of the patients had severe chronic asthma with acute exacerbations that had not been controlled despite seeking medical help in most instances (Box 4).

DISCUSSION

This qualitative study of individuals presenting with asthma to hospital EDs in city, metropolitan and rural areas provides unique insights into why people repeatedly seek emergency care. Two-thirds of recurrent attendees had severe chronic asthma, and nearly half of these presented to EDs with severe

4: Preventable emergency department attendances for asthma

Chronic asthma severity	No. of cases	No. preventable	Potential solutions
Mild	7	2	Asthma education
		2	Improved medication use
		1	Access to specialist, and asthma education
Moderate	3	1	Asthma education, and reduction in medication cost
		1	Medication review
Severe	22	2	Reduction in medication cost
		2	Asthma education

acute asthma; we believe their attendances were an appropriate use of hospital resources.

Potential measures for preventing hospital presentations were identified in about a third of patients, predominantly those with chronic mild and moderate asthma. These measures are shown in Box 4. Among participants who presented with mild or moderate acute asthma, three had severe chronic asthma and had had previous life-threatening attacks. For these participants, presentation to the ED with mild or moderate asthma was indicative of careful attention to preventive asthma management plans. In this small group with likely brittle asthma, presentation to an ED is an important resource for managing the threat of precipitate attacks.

We invited consecutive ED attendees in a range of geographic locations to participate in our study during recruitment periods. Our recruitment rate was only 32%, despite strenuous attempts to contact individuals after presentation; this is probably partly a result of the transient nature of the population attending EDs. Our response rate raises legitimate questions about the generalisability of our findings, but does not invalidate our qualitative conclusions where thematic saturation was reached (ie, no new themes emerged), nor the comparisons drawn between non-reattenders and reattenders to the ED. To improve participation rates, future studies would need to be prospective, conducted at the time of ED attendance, probably by means of questionnaires.

Further limitations of our study include the fact that participants from the city and suburban hospitals were recruited during autumn, while those at the regional hospital were recruited in winter. However, this did not appear to reflect a difference in the triggers that led to ED presentations, as most were thought to be the result of RTIs. The link between RTIs and both asthma exacerbations[16] and hospital admissions[17] is well established. Nearly 60% of the ED reattendees stated that their presentation for emergency asthma care was brought about by a respiratory infection.

For many of these, a visit to their general practitioner had failed to prevent their asthma worsening, leading to the need for eventual hospital care. This is consistent with recent findings showing that deterioration in asthma in patients using inhaled medications for prevention was often sudden and prolonged.[18] This suggests that inhaled preventive therapies may not sufficiently ameliorate airway responses to infections, and that more aggressive therapy with oral corticosteroids may be necessary to prevent severe exacerbation.

We know that 15 of the 32 reattendees in our study were taking prednisolone to manage their severe asthma. However, we did not ascertain whether all of these individuals had received high-dose prednisolone before presenting to the ED. Our findings suggest that doctors should consider the use of short courses of high-dose oral corticosteroids in patients with exacerbations of asthma attributed to infections, to prevent emergency presentations.

The inability of three reattendees to afford medication influenced their multiple presentations to the ED. Treatment costs for asthma include both medication and medical consultations. Costs are therefore high in patients with severe asthma. Previous work by our group[9] has shown high treatment costs are further compounded by diminished employment opportunities for people with asthma, and resulting low socioeconomic status. These findings lead us to recommend consideration of specific financial assistance for asthma management in people with severe asthma to prevent emergency re-presentations.

Another modifiable reason for ED representation was lack of asthma knowledge. Existing evidence shows that asthma education is beneficial when delivered in the context of regular medical review and a written asthma management plan.[3] Current Australian data suggest that the ownership of written asthma action plans is declining, despite their being promoted to health professionals and the community in national asthma guidelines in the last decade.[19,20,21] Clearly, new strategies are needed within primary care to ensure that asthma care meets current standards of best practice. One approach may be to promote greater access to asthma nurse educators. Currently in Australia, such access is not uniform, and methods of payment for this service are not generally subsidised by health insurance. Given the financial disadvantage already experienced by many people with asthma, additional cost subsidies are indicated if this mechanism is to be effective. Alternatively, the government-funded Asthma 3+ Visit Plan may provide GPs with an incentive to provide asthma education, written asthma management plans and regular review.[22] The efficacy of the Asthma 3+ Visit Plan in preventing ED presentations and re-presentations with asthma, recently confirmed in children, is yet to be confirmed in adults.[23]

Overall, our detailed analysis of recurrent hospital ED attendees suggests that emergency department presentation was appropriate for most reattendees with severe chronic asthma, at least on the index presentation. Remediable factors exist in only a third of cases. Solutions primarily involve removing barriers to medical care and improving asthma education. Our findings further indicate the important role of respiratory infections in this group and emphasise the need for a prospective study to inform clinical use of short

courses of oral corticosteroids in infective exacerbations of asthma, compared with continued or increased maintenance therapy with inhaled corticosteroids.

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COMPETING INTERESTS

Neither the Cooperative Research Centre for Asthma nor the Commonwealth Department of Health and Ageing had any role in the study design, data collection, analysis or interpretation, other than approving the original funding submissions.

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