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Community asthma management of emergency department patients: A pilot study of adherence with national consensus guidelines

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ABSTRACT

Objective:

To determine whether the outpatient management of ED patients with asthma adheres to Australia's asthma consensus guidelines

Methods:

Adult patients, under treatment for asthma, were administered a validated questionnaire. Data on their outpatient management were collected and analysed descriptively.

Results:

Of 51 patients, 14 smoked and 35 did not undergo regular GP review. Twenty-one patients had a good understanding of a written asthma action plan although only 15 owned one. Fourteen patients used no preventer medication. Patients were only able to identify a mean of 3.4 asthma triggers.

Conclusion:

Most patients' management does not adhere to Australian guidelines.

Key words:

asthma, emergency department, general practice, guidelines, management

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INTRODUCTION

Australia's consensus asthma guidelines were produced by the National Asthma Council (NAC) and are outlined in the 'Australian Asthma Handbook'¹. They classify patients according to their symptom control and risk of adverse outcomes, with a step-wise management approach. To guide the patient, the written 'Asthma Action Plan' has been developed.²

It has been reported that patients with asthma do not always receive appropriate medication, often have poor asthma knowledge, and fail to follow asthma action plans.³ We aimed to determine the adherence of patients attending the Emergency Department (ED) with Australia's asthma guidelines, in order to inform the development of a more comprehensive study.

METHODS

We undertook a voluntary, cross-sectional survey in three EDs (February-May 2016) after Ethics Committee approval. When a researcher was available, patients aged 18-65 years, under outpatient treatment for asthma (with/without this ED diagnosis) had a validated questionnaire³ administered. Data were collected on demographics, medical history, asthma knowledge, medications and management, and the understanding and use of asthma action plans. Patients were classified, by a non-blinded investigator (DT), as having good, partial or poor asthma control accordingly to NAC guidelines.¹ The study outcome was adherence of outpatient asthma management with components of the NAC guidelines¹, especially asthma reviews, plans and medication.

RESULTS

Fifty one patients were enrolled. The majority were relatively young, female, overweight/obese and well-educated (Table 1). More than one quarter smoked. Almost all patients possessed a reliever medication (e.g. salbutamol puffer) and approximately three quarters possessed a preventer (e.g. corticosteroid inhaler), including those with poor control. Thirty five (68.6%, 95%CI 54.0-80.5) patients did not undergo regular asthma reviews by a health professional and only 10 (19.7%, 95%CI 10.3-33.6) had reviews at least six monthly. Eight (15.7%, 95%CI 7.5-29.1) had attended the ED with asthma more than once in the last year and seven (13.7%, 95%CI 6.2-26.9) had experienced a previous ICU admission.

Less than one third of patients had either a good understanding of a written asthma action plan or possessed one (Table 2). Less than one half of those who possessed a plan actually followed it. Also, less than one half of patients had ever had spirometry.

Overall, patients were each able to identify a mean (SD) of 3.4 (1.5) asthma triggers. Cigarette smoking was identified by 33 (64.7%, 95%CI 50.0-77.2) patients. However, less than one half identified any of: cold air, allergies, exercise or respiratory infections as triggers. Overall, the patients were each able to identify a mean (SD) of 1.0 (0.8) pathophysiological changes in asthma. Fifteen (29.4%, 95%CI 17.9-44.0) could not identify any change. Bronchospasm, airway swelling and increased secretions were reported by 34 (66.7%, 95%CI 52.0-78.6), 6 (11.7%, 95%CI 4.9-24.6) and 10 (9.6%, 95%CI 10.30-33.6)

patients, respectively. For both triggers and changes, the responses from the three asthma control groups differed little.

DISCUSSION

This study suggests that the adherence of ED patients with Australian asthma management guidelines is poor. Almost all patients had a reliever medication although only three quarters possessed a preventer, even in those groups whose asthma was partially or poorly controlled. These findings suggest under-treatment and are consistent with other reports.⁴ The reasons for this under-treatment are not known but may relate to low rates of review, inadequate evaluation of the patients' asthma control status with inappropriate prescribing, poor patient knowledge and lack of patient adherence.

The smoking rate (27.5%) in our subjects was substantially higher than the 14.5% reported for the Australian population.⁵ Furthermore, more than one third did not identify smoking as an asthma trigger. Our findings suggest that asthma education about the hazards of smoking is lacking.

The importance of providing subjects with education in asthma self-management, including self-monitoring, inhaler technique, written action plans and medical review, is well described.^{1,3} Despite this, we found that the understanding, ownership and use of asthma action plans was poor and regular asthma reviews were very infrequent. For each of the three asthma control groups, patient understanding of asthma triggers and pathophysiological

changes was also poor. These findings may partly relate to the infrequency of asthma reviews or the quality of patient asthma education.

This study is limited by the small sample size and number of EDs, convenience sampling and recall bias.

CONCLUSION

Among ED patients, outpatient asthma management is generally not adherent to Australian guidelines. There are major deficiencies in review, medication regimens, the possession and use of written asthma action plans and patient asthma knowledge. The reasons for these findings are not known and further studies are recommended.

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Nil

This project was unfunded.

The authors declare no competing interests

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Table 1. Patient demographics and asthma histories
asthma severity group

patient characteristic, n (%) unless otherwise noted	asthma severity group			all patients (n=51)
	good control (n=17)	partial control (n=15)	poor control (n=19)	
age, years, mean \pm SD	42.2 \pm 14.6	34.7 \pm 14.4	39.7 \pm 10.2	39.1 \pm 13.1
male gender	10 (58.8)	5 (33.3)	3 (15.8)	18 (35.3, 95%CI 22.8-50.0)
overweight/obese	9 (47.4)	6 (40.0 [†])	13 (76.5)	28 (56.0, 95%CI 41.4-69.7)
current smoker	4 (23.5)	5 (33.3)	5 (26.3)	14 (27.5, 95%CI 16.3-42.0)
possessed private health insurance	8 (47.1)	3 (20.0)	8 (42.1)	19 (37.3, 95%CI 24.5-52.0)
education beyond year 12	10 (58.8)	11 (73.3)	8 (42.1)	29 (56.9, 95%CI 42.3-70.4)
>5 exacerbations in the last year	0 (0.0)	3 (20.0)	10 (52.6)	13 (25.5, 95%CI 14.8-39.9)

>1 ED visits in the last year	0 (0.0)	2 (13.3)	6 (31.6)	8 (15.7, 95%CI 7.5-29.1)
ICU admissions	1 (5.9)	1 (6.7)	6 (31.6)	8 (15.7, 95%CI 7.5-29.1)
possessed a reliever medication	16 (94.1)	15 (100.0)	18 (94.7)	49 (96.1, 95%CI 85.4-99.3)
possessed a preventer medication	12 (70.6)	11 (73.3)	15 (78.9)	38 (74.5, 95%CI 60.1-85.2)

† data available for 14 of 15 subjects

Table 2. Patient asthma action plan knowledge

patient variable, n (%)	asthma severity group			all patients (n=51)
	good control (n=17)	partial control (n=15)	poor control (n=19)	
good understanding of an action plan	6 (35.3)	3 (20.0)	7 (36.8)	16 (31.4, 95%CI 19.5-46.0)
possessed an action plan	3 (17.6)	5 (33.3)	7 (36.8)	15 (29.4, 95%CI 17.9-44.0)
always followed their action plan	2 (66.7)	1 (20.0)	4 (57.1)	7 (46.7, 95%CI 22.3-72.6)
good understanding of peak flow	6 (35.3)	3 (20.0)	7 (36.8)	16 (31.4, 95%CI 19.5-46.0)
possessed a peak flow meter	4 (23.5)	5 (33.3)	11 (57.9)	20 (39.2, 95%CI 26.2-53.9)
had ever had spirometry	6 (35.3)	5 (33.3)	10 (52.6)	21 (41.2, 95%CI 27.9-55.8)

Outpatient Asthma Management Project**Data from Medical Record**Gender: male female

Age:years

Main ethnic background:

Private Health Insurance no yesConsent obtained to participate no, do not proceed yes, proceed with the questionnaire

Apart from today, how many times in the last 12 months has your asthma worsened?

 none once 2-5 6-10 >10

Apart from today, how many times in the last 12 months have you been to the ED with asthma?

 none once 2-5 6-10 >10

How often have you ever been admitted to the intensive care unit due to asthma?

 none once 2-5 >5

Do you currently smoke?

 no yes, cigarettes/day?

Do you have any other exposures to cigarette smoke? (i.e. partner smokes)

 no yes, detailsWhat is the **highest** level of education you have attained? < year 12 year 12 TAFE university degree graduate cert/diploma
 masters/doctorate

What is your approximate weight?kg

What is your approximate height?cmft.....inches

Are all your vaccinations up to date?

 yes no

When was your last influenza vaccination?

 <1 year 1-3 years >3 years never had one

When was your last pneumococcal vaccination?

 <1 year 1-3 years >3 years never had one

Asthma Study Questionnaire, version 2, 2/12/2015

Asthma Control Test

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In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?

All of the time Most of the time Some of the time A little of the time Not at all

During the past 4 weeks, how often have you had shortness of breath?

> once/day once/day 3-6 times/week 1-2 times/week not at all

During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?

e4 times/week 2-3 nights/week 1 night/week < 1 night/week Not at all

During the past 4 weeks, how often have you used your reliever medication?

e3 times/day 1-2 times/day 2-3 times/week d once/week not at all

How would you rate your asthma control during the past 4 weeks?

not controlled poorly c'd somewhat c'd well c'd completely c'd

Some drugs prevent asthma from worsening while others relieve the symptoms when it does worsen. Which drugs do you take to prevent or relieve your asthma?

Drug	How often do you take this?
	<input type="checkbox"/> 4 hrly <input type="checkbox"/> 6 hrly <input type="checkbox"/> 8-12 hrly <input type="checkbox"/> daily <input type="checkbox"/> most days <input type="checkbox"/> exacerbation
	This is a <input type="checkbox"/> preventer <input type="checkbox"/> reliever <input type="checkbox"/> both
	<input type="checkbox"/> 4 hrly <input type="checkbox"/> 6 hrly <input type="checkbox"/> 8-12 hrly <input type="checkbox"/> daily <input type="checkbox"/> most days <input type="checkbox"/> exacerbation
	This is a <input type="checkbox"/> preventer <input type="checkbox"/> reliever <input type="checkbox"/> both
	<input type="checkbox"/> 4 hrly <input type="checkbox"/> 6 hrly <input type="checkbox"/> 8-12 hrly <input type="checkbox"/> daily <input type="checkbox"/> most days <input type="checkbox"/> exacerbation
	This is a <input type="checkbox"/> preventer <input type="checkbox"/> reliever <input type="checkbox"/> both
	<input type="checkbox"/> 4 hrly <input type="checkbox"/> 6 hrly <input type="checkbox"/> 8-12 hrly <input type="checkbox"/> daily <input type="checkbox"/> most days <input type="checkbox"/> exacerbation
	This is a <input type="checkbox"/> preventer <input type="checkbox"/> reliever <input type="checkbox"/> both
	<input type="checkbox"/> 4 hrly <input type="checkbox"/> 6 hrly <input type="checkbox"/> 8-12 hrly <input type="checkbox"/> daily <input type="checkbox"/> most days <input type="checkbox"/> exacerbation
	This is a <input type="checkbox"/> preventer <input type="checkbox"/> reliever <input type="checkbox"/> both
	<input type="checkbox"/> 4 hrly <input type="checkbox"/> 6 hrly <input type="checkbox"/> 8-12 hrly <input type="checkbox"/> daily <input type="checkbox"/> most days <input type="checkbox"/> exacerbation
	This is a <input type="checkbox"/> preventer <input type="checkbox"/> reliever <input type="checkbox"/> both

Asthma Study Questionnaire, version 2, 2/12/2015

Who do you usually see for **routine** management of your asthma?

- GP asthma clinic/specialist allied health worker other
- I do not have routine checkups

How often do you have routine checkups of your asthma?

- weekly monthly 6 monthly yearly more than yearly
- I do not have routine checkups – only see a doctor when my asthma worsens

Who taught you **the most** about your asthma?

- GP asthma clinic/specialist allied health worker pamphlets/handouts
- friends/family other

Can you tell me what a peak flow measurement is?

- good understanding (how rapidly I can blow out, decreases when asthma worsens, guides Rx)
- poor understanding (one or two of above items)
- no idea

How often do you measure your peak flow?

- at least daily 2-3 times/week weekly monthly when my asthma worsens never
- I do not have a peak flow meter

Do you know your best peak flow measurement?

- yes no I do not have a peak flow meter

Did you measure your peak flow today?

- yes no I do not have a peak flow meter

How often do you have a spirometry test of your lungs?

- never had one every 6 months every year every 2 years less often

Describe the steps you would take (in sequence) in the event of worsening of your asthma
(Outline steps of asthma management plan if offered by the patient)

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Can you tell me what happens to the lungs during an asthma attack?

- bronchospasm airway lining swelling increased secretions could not give answer

Can you tell me any factors that may cause a worsening of asthma for some people?

- | | | |
|--|--|--|
| <input type="checkbox"/> allergies | <input type="checkbox"/> exercise | <input type="checkbox"/> respiratory infections |
| <input type="checkbox"/> cigarettes, smoke, fumes | <input type="checkbox"/> cold air | <input type="checkbox"/> occupational, household irritants |
| <input type="checkbox"/> emotional upsets, stress | <input type="checkbox"/> house dust mite | <input type="checkbox"/> laughing, coughing |
| <input type="checkbox"/> certain foods, food additives | <input type="checkbox"/> some drugs | <input type="checkbox"/> no predisposing factors known |

Can you tell me some danger signs which, if you experienced them, you would immediately seek emergency medical care?

- | | |
|---|--|
| <input type="checkbox"/> Severe breathing problems | <input type="checkbox"/> Symptoms get worse very quickly |
| <input type="checkbox"/> Reliever has little or no effect | <input type="checkbox"/> Difficulty saying sentences |
| <input type="checkbox"/> Blue lips | <input type="checkbox"/> Drowsiness |

Can you tell me what an Asthma Action Plan is?

- good understanding (written plan, from a doctor, staged actions when asthma worsens)
 poor understanding (partial understanding of above)
 no idea

Do you have an Asthma Action Plan?

- no yes, who provided you with this plan?.....

Do you follow your Asthma Action Plan when your asthma worsens?

- always most of the time sometimes rarely never

A complimentary or alternative medication (CAM) is any product including herbal remedies, vitamins, minerals and natural products that may be purchased without a prescription at a health food store, supermarket or from alternative medication magazines and catalogues for the purpose of self-treatment.

Do you ever use a CAM to prevent or relieve your asthma?

- no
- | | | | |
|--|----------------------------------|----------------------------------|----------------|
| <input type="checkbox"/> yes: name of CAM..... | <input type="checkbox"/> prevent | <input type="checkbox"/> relieve | frequency..... |
| name of CAM..... | <input type="checkbox"/> prevent | <input type="checkbox"/> relieve | frequency..... |
| name of CAM..... | <input type="checkbox"/> prevent | <input type="checkbox"/> relieve | frequency..... |

Community Asthma Management of Emergency Department patients:

A pilot study of adherence with National Consensus Guidelines

(Community Asthma Management)

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