

Primary Care Doctors' Practice in the Management of Adult Asthma Patients

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ABSTRACTS

There is apparent disparity between the international guidelines on asthma management and the current practice in reality. This can be attributed to both patient's and doctor's factors. This study examines the practice of asthma management by a group of family physicians using a self-administered questionnaire. This comprises questions relating to the main principles of asthma management set by international guidelines. The results showed that majority of the doctors (>90%) in the study reviewed patient's asthma status based on symptoms, educate their patients on types of asthma medications and advised them on allergen avoidance including smoking. Fewer of them (50 to <90%) check trigger factors or inhaled device technique, nocturnal symptoms or ER visits. Even fewer doctors (<50%) bothered to check the patient's peak expiratory flow rate (PEFR) or used spirometry.

Keywords: asthma, international guidelines, PEFR

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INTRODUCTION

Evidence-based guidelines are drawn up in various countries to assist doctors in the management of asthma. From the patient's perspective, many studies have shown that management of asthma in reality does not correlate well with the existing asthma guidelines. Two recent local studies^(1,2) showed that a significant proportion of patients do not use the metered dose inhaler correctly and do not use asthma "preventer" medications on par with their asthma severity. It is a double-edged problem, which could be attributed to the healthcare professionals' mode of asthma management and the patients' understanding of their condition and their physicians' method of treatment. This study looks into the practice of asthma management by primary care doctors from the healthcare providers' perspective. Asthma care can then be optimised through the application of appropriate practices by physicians,

which are being translated into true understanding and effectual execution by the patients.

OBJECTIVE

To assess the practice of primary care doctors on the management of bronchial asthma in adults in relation to the recommendations in the asthma guidelines.

METHODOLOGY

Study Population

The study population consists of three groups of doctors exposed to training in family medicine practice. They are:

1. Trainees under the Diploma of Family Medicine (GDFM) programme. They are private practitioners and doctors from the Ministry of Health.
2. Trainees under the Master of Medicine (MMedFM) programme. They are first and second year Ministry of Health trainee doctors currently working in the hospital.
3. Polyclinic doctors who receive in-house training on family medicine

The general practitioners are currently working either as locum or in single or group practices. They receive their Family Medicine training under the Private Practitioner Stream (PPS). The Polyclinic doctors can either work part-time or full time in the 16 polyclinics in various localities in Singapore. They comprise a heterogeneous group of doctors, including medical officers, third year MMedFM trainees and MMedFM trainers.

Exclusion criteria

The questionnaires are fielded on separate days for the three categories of doctors. Doctors who are exposed to the questionnaire on more than one of these sessions are allowed to answer once only.

Doctors who are absent on the day of survey for any reason will be excluded.

Questionnaire

The questionnaire consists of an introductory page and 21 self administered questions pertaining to:

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1. Assessment of severity of asthma
2. Monitoring of asthma status
3. Review of drug therapy
4. Assessment of drug delivery
5. Trigger factors

The questions are devised based on the broad principles and recommendations of asthma management in the BTS⁽³⁾, NAEPP⁽⁴⁾ and GINA⁽⁵⁾ guidelines.

Anonymity is maintained, as participants do not enter their names on the questionnaires to encourage truthful answers to the questions.

Operation of the survey

Group administrations of the questionnaires were conducted in three separate settings within the month of August 2000.

i. Polyclinic doctors

The nursing officer-in-charge of each of the 16 polyclinics was simultaneously informed of the study via e-mail one day before the survey. A soft copy of the questionnaire was attached to the e-mail. The nursing officer printed a set of the questionnaire and the introductory page for each of the doctor in their respective polyclinic. The questionnaires were distributed to the doctors on the morning of the survey and were collated by the nursing officers in the afternoon. There was no time limit to the duration, which the doctors took to complete the questionnaire. The questionnaires were returned to the principal investigator the day after the survey.

There was a delay in the transmission of the message to the nursing officers-in-charge of Bedok and Clementi polyclinics. These two polyclinics were temporarily closed due to renovations and housed in other polyclinics during the period of the survey. The surveys were conducted two weeks later in these two polyclinics using the same mode of operation.

The total number of polyclinic doctors on the day of survey was obtained by the manpower officer in the Family Health Service headquarters.

ii. MMedFM and GDFM trainees

The same set of questions was fielded to both the MMedFM and GDFM trainees during their monthly workshops on two separate Saturday afternoons respectively. Two FM trainers distributed the questionnaires during the workshop and collated them at the end of the workshop. The duration of each workshop was about three hours, including a 20-minute tea break.

The lists of the two different groups of trainees were obtained from the College of Family Physicians.

STATISTICAL ANALYSIS

Data was entered into Microsoft Excel software and simple mathematical calculations were conducted. Ambiguous and blank answers were examined and annulled by a panel of investigators and excluded in the calculations.

RESULTS

Response rate

The response rate of the MMedFM and GDFM trainees was 57.4% (70/122) and that from the polyclinic doctors is 74.3% (101/136).

There were a total of 12 ambiguous answers (blanks or both affirmative and negative answers for a single question): one from Q1i, two from Q1iii, 1iv, 2v and 4ii respectively and three from Q1ii. These answers constituted only 0.33% of the total number of questions from 171 participants.

Analysis of the responses

The various questions in the survey were ranked according to the percentage of affirmative answers of the entire group of doctors under study as well as each category of doctors. The ranking is subdivided into three groups as follows:

Table I - Group A:

Ranking responses with affirmative answers to a statement in the questionnaire equal and above 90%.

Table II - Group B:

Ranking responses with affirmative answers to a statement in the questionnaire of between 50 and 89%.

Table III - Group C:

Ranking responses with affirmative answers to a statement in the questionnaire of less than 50%.

DISCUSSION

The division into three groups is arbitrary but orientated towards bringing across important messages to family physicians in the management of adult asthma patients. Ninety percent and above is a figure easily recognised as the vast majority and such percentage of affirmative answers is considered to conform to the guidelines almost totally. In contrary, if more than half the doctors give negative answers, there is strong suggestion of an underlying defect in the fundamental issue of whether the respective practice is of clinical importance and relevance. The "intermediary" group of affirmative response deserves our attention. The reasons for the failure to execute the practice need to be explored in collateral studies. If current evidence supports such practices, they should be reinforced to optimise asthma

Table I. Group A: ranking response (>90%).

Rank	Q.No	Question	% Yes	Poly	GP	FM
1	1(i)	Do you assess the frequency of symptoms such as cough or wheeze?	98.8	99.0	100.0	100.0
2	3(iii)	Do you adjust the dosages of medications according to asthma control?	98.8	98.0	100.0	100.0
3	5(iii)	Do you advise smoking cessation for asthma patients who smoke?	98.2	98.0	100.0	95.2
4	3(ii)	Do you educate the use of 'preventer' and 'reliever' drugs for your asthmatic patients?	97.7	98.0	100.0	90.5
5	4(iii)	Do you check the compliance of drug therapy?	97.7	98.0	98.0	95.2
6	3(iv)	Do you consider 'add-on' medications if asthma is not controlled?	97.1	98.0	100.0	85.7
7	4(ii)	Do you advise use of spacer if patient is unable to use the inhaler device?	94.7	96.0	95.9	95.2
8	3(i)	Do you review the drug therapy of your asthma patients at each visit?	93.6	95.0	91.8	90.5
9	5(ii)	Do you advise avoidance of allergens?	90.6	86.1	100.0	90.1

Table II. Group B: Ranking response (between 50 and 89%).

Rank	Q.No	Question	% Yes	Poly	GP	FM
10	5(i)	Do you check for trigger factors?	86.0	79.2	98.0	90.5
11	4(i)	Do you check the device technique?	84.8	83.2	89.8	81.0
12	1(ii)	Do you assess the frequency of nocturnal symptoms?	81.9	81.6	93.9	66.7
13	2(ii)	Do you check the peak expiratory flow rate (PEFR)?	78.4	80.2	69.4	90.5
14	1(iii)	Do you enquire the number of ER visits for rescue therapy (ie neb beta agonist) in past six months?	77.8	68.7	91.8	95.2
15	1(iv)	Do you classify the severity according to the various asthma guidelines?	59.6	61.0	56.3	66.7
16	2(vi)	Do you formulate an asthma action plan for your patients?	53.2	44.6	65.3	66.7

Table III. Group C: Ranking response (less than 50%).

Rank	Q.No	Question	% Yes	Poly	GP	FM
17	6	Does this questionnaire influence your management of asthma in future?	49.1	46.0	54.2	57.1
18	2(v)	Do you use PEFR only for the moderate to severe asthmatic patients?	48.5	49.5	53.2	38.0
19	2(iv)	Do you use PEFR to monitor the severity for all asthmatic patients?	40.9	35.6	38.8	71.4
20	2(iii)	Do you use reversibility of PEFR with nebulised beta agonist to confirm asthma?	39.8	38.7	30.6	66.7
21	2(i)	Do you use spirometry for the diagnosis of asthma?	18.7	14.9	20.4	33.3

management. The target of the study will be to motivate the vast majority of doctors (i.e. gear towards achieving >90% of affirmative responses) towards carrying these evidence-based practices according to the guidelines.

1. Group A (90% and above)

The questions ranked one to nine in Table I all have percentage of affirmative answers in excess of 90%. The doctors surveyed educate their patients on essential concepts like use of 'preventer' and 'reliever' drugs, manage their patients by titrating treatment against symptom control, check compliance to treatment, and take a preventive approach by advising smoking cessation and avoidance of allergens.

The result of Group A show that the doctors surveyed focus on essential and practicable measures

in asthma treatment. They tend to rely on patients' symptoms rather than performing objective measurement of parameters. The severe time constraints faced by most of these doctors in their practice would explain why the areas of high agreement are all 'must have' in asthma management.

However, a local study showed that 33% of poorly controlled asthma patients were not on "preventer" medication such as inhaled corticosteroids⁽²⁾. Whether this reflects a lack of understanding of the types of asthma medications by the patients needs to be explored, if the answers by the doctors on their patient education correspond to their actual practice.

2. Group B (50% to 89%)

The questions, ranked 10 to 16, fall into this category.

They cover the issue of trigger factors, device technique, nocturnal symptoms, expiratory flow rates, ER visits and grading of severity.

Frequency of nocturnal symptoms, frequency of rescue therapy and presence of trigger factors are all important areas to check in detecting symptoms that suggest the need for better control and also preventive measures in asthma management. Nocturnal symptoms and ER visits in the preceding six months are indicators of patients' asthma activities⁽²⁾. This is an aspect of care which family physicians can devote more attention and incorporate in the routine assessment of their patients' asthma status.

A recent local study showed that only 7.1% of patients are able to perform all the steps in MDI technique correctly⁽¹⁾. This is in contrast to the 84.8% of respondents in the survey who claimed to do so for their patients. Checking of device technique is essential for proper application of inhaler therapy. In polyclinics and hospitals, this task is often devolved to the pharmacist or the nurse practitioner as the clinician may not have the time. This is another important area that would need reinforcement.

Classification of severity of asthma according to guidelines would help guide the family physician in treating asthma. In addition, it provides some warning when control is poor and the patient needs closer attention or referral to a specialist. In practice however, many doctors would have a regimen of titrating treatment according to control either by 'tailing-up' or 'tailing-down' from a convenient starting point. This approach works for most patient and is much easier to remember. Once again, practicality constrains the 'nice to have' measures.

Guided self-management plans for adults with asthma are widely advocated and seem to have some health benefits. In a Cochrane assessment of twenty-five randomised trials⁽⁶⁾, training programmes which enable people to adjust their medication using a written action plan, appear to be effective than other forms of asthma management. Another Australian study⁽⁷⁾ showed that written action plans were associated with a 70% reduction in the risk of asthma deaths. However, attempts to implement this approach have met with variable success and do not incorporate patients' views.

An asthma action plan empowers the patient to participate in his own care. The usage of this tool among respondents is only 53.2%. Several factors may contribute to this. A large number of asthma patients might have trouble understanding complicated action plans⁽⁸⁾. Indeed, many of the elderly patients in Singapore are less educated and cannot benefit from any written protocol. Thus, any

action plan proposed will have to be individualised and can range from a very basic regimen to a comprehensive protocol. Such an approach necessarily involves a fair amount of explanation and negotiation, and the time involved may dissuade the busy clinician. Furthermore, doctors may perceive the asthma action plan only to be what the asthma protocols recommend; whilst these protocols are often comprehensive, doctors may take a 'all or none' approach when their patients cannot cope. This might have further reduced their use of this tool.

Alan Jones et al in a qualitative study⁽⁸⁾ of nine focus groups consisting of medical practitioners, nurses and patients in south Wales showed that neither health professionals nor patients were enthusiastic about guided self-management plans. For different reasons, almost all participants were ambivalent about their usefulness nor relevance. It concluded that attempts to introduce self-guided management plans in primary care are unlikely to meet with success. A more patient centered, patient negotiated plan is needed for asthma care in the community.

3. Group C (less than 50%)

The questions ranked 17 to 21 in Table I all have affirmative responses of below 50%. These centre round the use of PEFr for monitoring asthma control. The value of routine use is not clear, hence the low agreement rate amongst the doctors surveyed, although 78.4% of respondents will check PEFr at some point in time. The results show that PEFr is not widely utilised as a tool in asthma monitoring amongst doctors in the study.

The peak flow meter has its merits and limitations in assessing the asthma status. From the pragmatic point of view, it may be reserved for the moderate to severe asthmatics in view of time constraints and the lack of strong evidence to support its universal usage. In fact, a local study by Lim TK⁽⁹⁾ et al showed that PEFr guided protocol did not improve outcome in emergency room asthma.

Review of the literature shows that there is no conclusive evidence on the usefulness of PEFr for routine monitoring. The Cochrane meta-analysis showed that measurement of lung function had no impact in the outcome of asthma care⁽⁶⁾. In theory, PEF monitoring can provide both an indication of the degree of airway obstruction and an indication of variability of obstruction. There is however increasing evidence to the contrary. One paediatric study⁽¹²⁾ compared PEF measured with a portable peak flow meter with that measured with an electronic spirometer showed frequent discrepancies between PEF and "true lung function".

Another potential problem is compliance with the PEF monitoring. Cote et al⁽¹³⁾ showed that in adult asthmatics, short-term compliance with twice daily measurements was quite good but reduced to 33% by 12 months. PEF measurement takes more time, needs motivation to comply with the monitoring and technical expertise in performing the manoeuvre. A Canadian study by Turner MO et al⁽¹⁰⁾ showed that PEF charting carried no additional advantage to symptom self management plan for asthmatic patients attending a primary care clinic. Juniper et al⁽¹¹⁾ in the latest data demonstrated that clinic questionnaire review fared better than diary with PEF chart. Most patients can be adequately managed instead by titration of treatment against symptoms.

The use of reversibility of PEF after nebulisation with beta agonist will help in the diagnosis of asthma in cases where the history and clinical examination are not sufficiently helpful. While it is not needed in most cases, which may explain its low rate of application, it remains an important tool that the clinician should remember.

Spirometry is not available in the primary health clinics and it is not surprising that its usage is low.

The results of Group C show that practicality is again an important consideration in any guideline. Up to half the respondents feel that the questionnaire will not influence their future asthma management, even as it serves as a reminder of the main recommendations in many asthma guidelines. It is likely that knowledge is not the limiting issue.

In asthma management, the crux involves clinical assessment, monitoring and the use of appropriate medications. It may be impractical to compress the multiple facets of asthma management into a single consultation. However, the study may give the primary care doctors an insight into their practice so as to prioritise the different aspects of asthma care. He should take advantage of this perspective to educate the patients in stages, perhaps through a series of consultation. Management will be individualised in relation to the patient's intellectual capacity and asthma status.

Time constraint may not be the only limiting factor. Further studies may explore the doctors' motivational factors and barriers towards the execution of appropriate asthma care.

LIMITATIONS

The study determines the primary care doctors' perception on the various aspects of asthma management. This perception does not necessarily translate into actual execution in his practice in concordance to the respondent's answers.

The answers to the questionnaire are either affirmative or negative. The investigators acknowledged that doctors carried out certain aspects of asthma care "occasionally" or "sometimes" or otherwise, on a case-to-case basis, depending on time and other constraints. There is no provision for collateral answers in the questionnaire. It can be argued on the other hand, that the affirmative or negative structure "forces" the respondent to give his habitual mode of action.

Whether the phrasing of the question has any influence on the respondent's decision and answer needs further validation. There is currently no validated questionnaire or instrument to assess the doctor's management of asthma. This may account for a possible disparity between the doctor's actual state of understanding and practice and his answers to the questionnaire. A parallel study to determine the patients' current state of asthma treatment of this group of participating doctors may paint a clearer picture but it is not within the realm of this study.

The study population is a selected group of doctors undertaking family medicine training. A larger study to include all the family physicians and specialists will allow a wider perspective on the practice of asthma management amongst doctors in Singapore. This study nevertheless has face validity from our empirical knowledge of the respondents.

CONCLUSION

This study of primary care practice in the management of adult asthma patients shows doctors' understanding of basic concepts of asthma management. This is reflected in the high percentage of affirmative answers to statements in the questionnaire in Group A. There is room for improvement for attention to trigger factors, device technique, PEF, ER visits, classification of severity and formulation of asthma plans; these are shown in the ranking of the responses in Group B. Low ranking of responses centres around PEF and its use in asthma care.

RECOMMENDATIONS

- 1 There is a place for educational messages in areas where there is room for improvement, namely, the attention to trigger factors, device technique, PEF, ER visits, classification of severity and formulation of asthma plans.
- 2 Practitioners need to be congratulated that their practices reflect basic understanding on assessment of severity and appropriate action to take.
- 3 The place of PEF in the management of asthma deserves more clarification.

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