

# Prescribing Patterns for Childhood Asthma Treatment in General Practice

P W K Chan, MPaeds, M Z Norzila, MPaeds

\*Division of Respiratory Medicine, University Malaya Medical Center, 50603 Kuala Lumpur, \*\*Respiratory Unit, Insitutut Pediatrik, 53000 Kuala Lumpur

## Summary

The treatment preferences of 109 general practitioners (GPs) for childhood asthma were determined. Availability and adherence to clinical practice guidelines (CPG) for the treatment of childhood asthma was also assessed.

Ninety eight (90%), 60 (55%) and 33 (30%) GPs considered nocturnal symptoms >2 times/week, exercise induced wheeze and cough respectively as indications for preventer therapy. An oral preparation was preferred for relief medication [72 (66%) for 2-5 years, 60 (55%) for >5 years]. An inhaled preparation was however preferred for preventer medication [60 (55%) for 2-5 years, 85 (78%) for >5 years]. The oral form was more likely prescribed for asthmatic children 2-5 years ( $p < 0.001$ ). Corticosteroids and ketotifen were the commonest inhaled and oral preventer treatment prescribed respectively. Only 36(33%) GPs have a CPG copy for reference.

Children with asthma symptoms that require preventer therapy may not always be identified in general practice. The oral route remains important for asthma medication especially in young children. The accessibility to the CPG among GPs is disappointing.

**Key Words:** Treatment preference, Childhood asthma, General practice

## Introduction

Primary care health providers namely general practitioners (GPs) provide an integral component of health care services in Malaysia. The majority of health problems will be first seen and managed at this health care level before physician-referral or patient-self referral to a secondary or tertiary health care facility.

Bronchial asthma is the most common chronic respiratory problem among children in Malaysia with a physician diagnosis of asthma made in approximately 10.7% of children aged 13 – 14 years<sup>1</sup>. As it is a significant clinical burden in general practice, provision of standardized health care for childhood asthma is important and may be achieved with the introduction of clinical practice

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Corresponding Author: Patrick Chan, Department of Paediatrics, University Malaya Medical Center, 50603 Kuala Lumpur

guidelines (CPG) that outline treatment strategies based on evidence-based medicine<sup>2</sup>. Clinical practice guidelines for childhood asthma in Malaysia have been available in the published form since 1996<sup>3</sup>. A summary of this CPG was also published in Medical Journal of Malaysia and is available on the Academy of Medicine web page in an effort to increase its distribution and accessibility among practising doctors<sup>4,5</sup>. There is little information regarding the treatment preference and prescribing patterns for childhood asthma in general practice in Malaysia. More importantly, adherence of treatment strategies provided by GPs to both the local CPG and international standards of good clinical practice for childhood asthma is relatively unknown.

We therefore determined the treatment preference and prescribing patterns of GPs for childhood asthma. Accessibility to the CPG for childhood asthma and adherence to its recommendations as outlined were also determined.

## Materials and Methods

A self-administered standard questionnaire was distributed to GPs attending a pharmaceutical industry sponsored asthma management workshop. Only GPs who treat children in their clinical practice were included. The questionnaire was available only in the English language and distributed before the workshop began. The questionnaire was limited to determining the individual treatment preferences and prescribing patterns of the GP for childhood asthma. Accessibility and awareness of the individual GPs towards the CPG for childhood asthma were also determined.

One hundred and twenty five GPs received the questionnaire but only 115 (92.0%) returned a completed questionnaire. One hundred and nine (87.2%) completed questionnaires were suitable for analysis.

## Definition

Relief asthma medication refers to any medication used for relief of acute asthma symptoms namely

cough, breathlessness and wheeze. Preventer asthma medication refers to any medication considered by the GP for treating the underlying airway inflammation of childhood asthma. Inhaled preparation refers to any medication administered through the inhaled route by metered dose inhaler with or without a spacer device and dry powered inhaler devices.

## Statistical analysis

Data collected was managed with statistical package SPSS 10.0.1 using Windows 1998 operating systems (SPSS Inc., Chicago, IL, USA). Comparisons between groups were performed with the students' t-test and proportions were compared using chi-square or Fishers exact test, where appropriate. A p value of less than 0.05 was considered significant.

## Results

There were 94 (86.2%) primary GPs and 15 (13.8%) paediatric specialist GPs. The median number of children with a clinical diagnosis of asthma managed each week by each GP was 30.0 (Interquartile range 5.0 - 80.0). Only 36 (33.0%) of them had a personal copy of the Malaysian CPG for childhood asthma. Fifty-two (71.2%) of the 73 GPs who did not have a copy of the CPG have not seen it previously and of these, only 29 (55.8%) of them were aware that it was available for use.

Ninety-eight (89.9%) of the GPs considered cough or wheeze more than twice a week as an indication to initiate preventive asthma therapy. However, only 60 (55.0%) and 33 (30.3%) GPs considered exercise induced wheeze and cough as indications for using preventive asthma therapy respectively. The GP category or access to the CPG did not influence the clinical indication for prescribing preventive asthma therapy in their practice (Table I).

There was an overall preference for using an oral preparation for relief asthma medication in childhood asthma. However, the inhaled preparation was preferred for preventer asthma

medication [Figure 1]. GPs were more likely to use an inhaled preparation for both relief and preventer medication for children > 5 years compared to those between 2 – 5 years. Paediatric specialist GPs were more likely to prescribe medication by the inhaled route compared to their primary GP counterparts (Table II). Accessibility to the CPG for childhood asthma did not influence

the prescribing pattern in clinical practice (Table III). Oral ketotifen was the most common preventer medication prescribed for children aged 2-5 years while for children aged more than 5 years; inhaled corticosteroids were more commonly prescribed. The prescribing treatment choice of GPs for childhood asthma is shown in Figure 2.

**Table I: Relationship between general practitioner category and access to the childhood asthma CPG to indication for asthma preventive therapy (n = 109)**

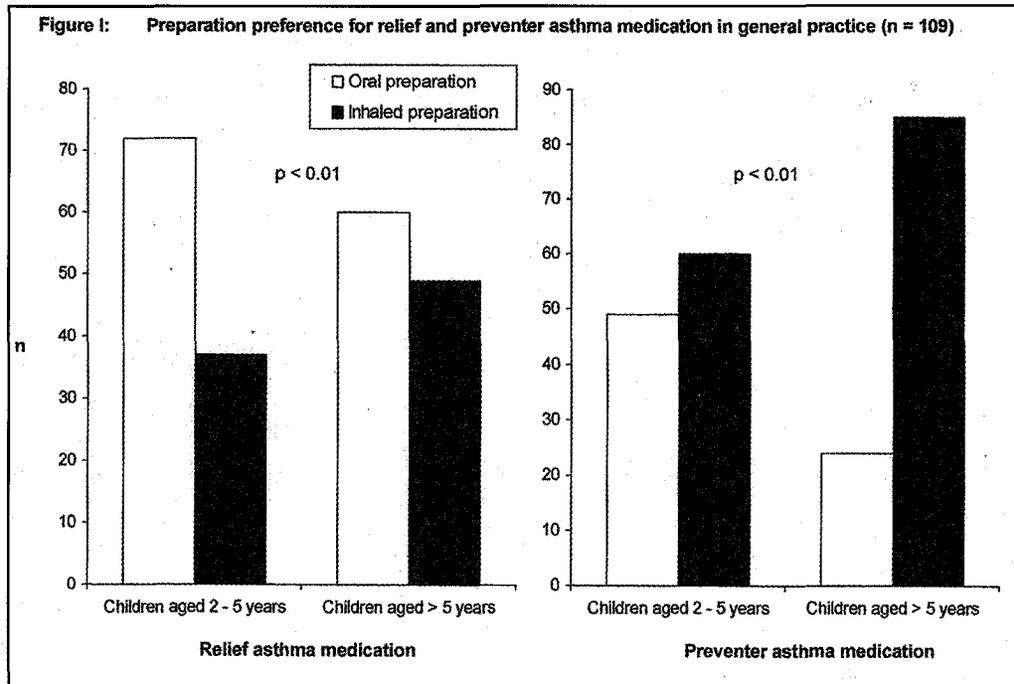
Clinical Indication	Primary general practitioner (n = 94)	Paediatrics specialist general practitioner (n = 15)	p value	Personal access to CPG (n = 36)	No personal access to CPG (n = 73)	p value
Cough or wheeze more than 2 times per week	83 (88.3%)	15 (100.0%)	0.063	33 (91.7%)	65 (89.0%)	0.848
Exercise induced wheeze	53 (56.4%)	7 (46.7%)	0.271	19 (52.8%)	41 (56.2%)	0.835
Exercise induced cough	30 (31.9%)	3 (20.0%)	0.355	8 (22.2%)	25 (34.2%)	0.265

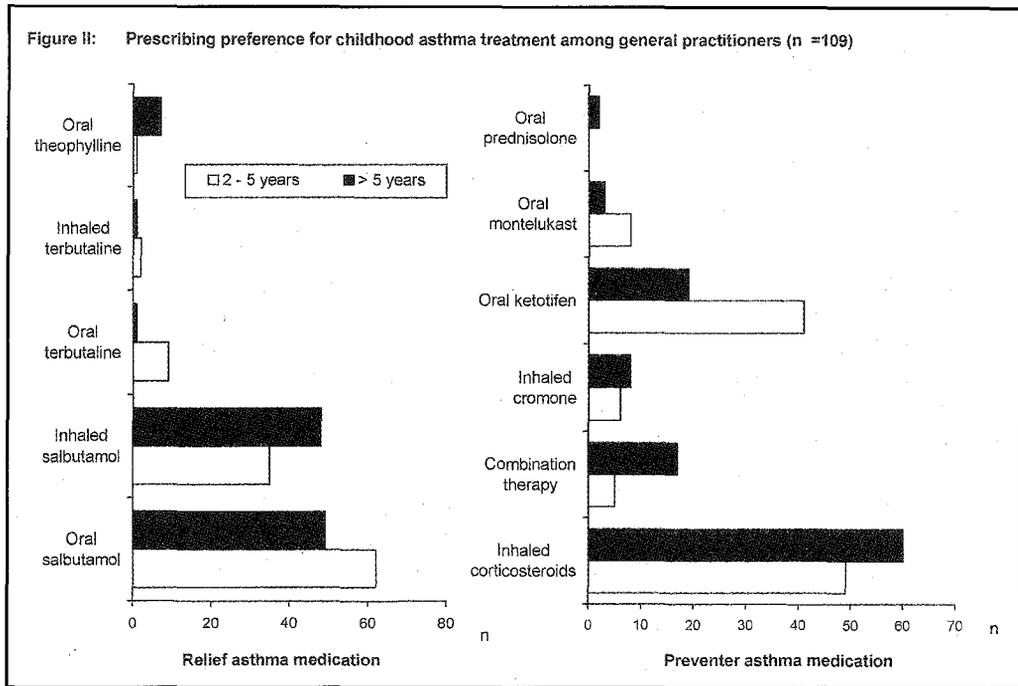
**Table II: Treatment preference for childhood asthma and general practitioner categories (n = 109)**

Preferred preparation	Primary general practitioner (n = 94)	Paediatric specialist general practitioner (n = 15)	p value
<b>Children aged 2 – 5 years</b>			
<b>Relief asthma medication</b>			
Oral	66 (70.2%)	6 (40.0%)	0.037
Inhaled	28 (29.8%)	9 (60.0%)	
<b>Preventer asthma medication</b>			
Oral	48 (51.1%)	1 (6.7%)	0.001
Inhaled	46 (48.9%)	14 (93.3%)	
<b>Children aged &gt; 5 years</b>			
<b>Relief asthma medication</b>			
Oral	57 (60.6%)	3 (20.0%)	0.004
Inhaled	37 (39.4%)	12 (80.0%)	
<b>Preventer asthma medication</b>			
Oral	24 (25.5%)	1 (6.7%)	0.018
Inhaled	70 (74.5%)	14 (93.3%)	

**Table III: Treatment preference for childhood asthma and personal access to the clinical practice guidelines for asthma (n = 109)**

Preferred preparation	Personal access to CPG (n = 36)	No personal access to CPG (n = 73)	p value
<b>Children aged 2 – 5 years</b>			
<b>Relief asthma medication</b>			
Oral	22 (61.1%)	50 (68.5%)	0.521
Inhaled	14 (38.9%)	23 (31.5%)	
<b>Preventer asthma medication</b>			
Oral	14 (38.9%)	35 (47.9%)	0.423
Inhaled	22 (61.1%)	38 (52.1%)	
<b>Children aged &gt; 5 years</b>			
<b>Relief asthma medication</b>			
Oral	20 (55.5%)	40 (54.8%)	0.552
Inhaled	16 (44.5%)	33 (45.2%)	
<b>Preventer asthma medication</b>			
Oral	8 (40.0%)	17 (23.3%)	0.577
Inhaled	28 (60.0%)	57 (76.7%)	





**Discussion**

Global asthma treatment guidelines<sup>6</sup> and more importantly, a local CPG for childhood asthma treatment have been developed to achieve a standardized treatment regime; specifically a consistent prescribing pattern of effective asthma treatment and preferably non- use of treatment of limited or no value.

The general principles of the treatment of childhood asthma are fairly straight forward namely the use of the inhaled route for medication and prescribing effective anti-inflammatory therapy for clinical situations clearly outlined. However, several interesting and pertinent observations that possibly reflect childhood asthma treatment in general practice were demonstrated in our study. Firstly, the oral form was favoured for relief and still prescribed for preventer medications. This preference for the oral route for asthma medication is not unique to our study population as it is a similar observation in neighbouring Singapore and Thailand<sup>7,8</sup>. It is

obvious that the oral route is the simpler and less costly method for drug administration. Furthermore, although untrue, the apparent difficulty for young children to use inhaled medication even with a spacer device may discourage GPs from routinely prescribing it for asthmatic children. Our GP study population indirectly demonstrated this observation, as children aged 2-5 years were less likely to be prescribed medication via the inhaled route compared to children more than 5 years old. Nonetheless, the GP is not entirely responsible for a preference of the oral route for childhood asthma treatment, as many Asian parents themselves appear to harbour a negative impression of inhaled therapy<sup>9</sup>. Misconceptions of a potential for addiction and increased adverse effects associated with inhaled therapy discourage its use<sup>10,11</sup>.

The treatment of chronic asthma includes the use of effective anti-inflammatory therapy. There was an overwhelming preference for choosing ketotifen as an oral preventer medication in

children aged 2-5 years although it is not recommended in the CPG for childhood asthma treatment. Ketotifen has not been shown to be effective in the treatment of childhood asthma even when compared to a placebo<sup>12</sup> and more importantly did not appear to have any therapeutic effect on the underlying airway hyper-reactivity<sup>13</sup>. Nonetheless, this observation is not confined to Malaysia as ketotifen is also very commonly used among general paediatricians in Thailand<sup>8</sup> and its popularity is mostly likely due to the ease of oral administration and its association with an increased appetite, an effect favoured by many Asian parents. Cromones were the least likely anti-inflammatory therapy to be prescribed. The relatively frequent need to administer cromones like sodium cromoglycate for symptom control is a major obstacle in ensuring satisfactory compliance. Moreover, a recent systemic review of the efficacy of inhaled sodium cromoglycate concluded that there was insufficient evidence that it had a beneficial effect for childhood asthma<sup>14</sup>. The combination of these factors clearly account for its lack of popularity as a treatment choice for childhood asthma.

It is obvious that the development and publishing of treatment guidelines and publishing them alone achieved little as only one-third of our study population had personal access to the childhood asthma CPG. Nonetheless, personal access to the CPG did not ensure adherence to the CPG recommendations. In addition to a persisting preference for oral therapy for asthma medication, important clinical symptoms like exercise induced wheeze and cough were not uniformly considered as indications for preventer asthma medication by our GP population. The 2 most important aspects that follow the development of a CPG for childhood asthma are its dissemination and implementation<sup>15</sup>. Dissemination must include educational activities like round table discussions

and lectures that promote familiarity and understanding of the CPG. Ongoing treatment or prescription audits and educational programmes that monitor the changes in prescribing patterns and treatment strategies that adhere to the CPG must be performed for CPG implementation.

An obvious shortcoming of our study was that the GP population surveyed might more likely use inhaled corticosteroids for asthma as they were invited to attend an asthma workshop that was sponsored by a pharmaceutical establishment that promoted heavily the inhaled form of treatment and regular use of corticosteroids for asthma. Nonetheless, despite this possible bias, the prescribing patterns of this GP population still showed that the oral route for asthma medication remains an important route in general practice and even preferred for young children. Ketotifen despite its questionable clinical efficacy and cost remains a popular choice for preventer medication and may reflect frequent under-treatment of airway inflammation in general practice.

The prescribing patterns for childhood asthma in general practice from our study suggests that Malaysian children with asthma categories that require preventer asthma treatment may not always be identified or prescribed effective preventer treatment. Although the CPG was developed for this objective, non-adherence and lack of awareness among GPs regarding the CPG suggest failure of its dissemination and implementation.

### **Acknowledgement**

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