



Effect of a minimal pharmacy intervention on improvement of adherence to asthma guidelines

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ABSTRACT

Objective To study the effectiveness of a minimal intervention strategy to improve adherence to paediatric asthma guidelines.

Design and setting A group of pharmacists was encouraged to discuss essential elements of asthma care with the general practitioners they normally worked with. Adherence to guidelines was evaluated by studying prescriptions for children with asthma. We compared the treatment of children registered at pharmacies which participated in the study (intervention group) with a control group of children registered at other, non-participating pharmacies (reference group) and with the results of an earlier study.

Main outcome measures The numbers of children who had no short-acting betamimetics, no inhaled corticosteroids while on long-acting betamimetics, and more than one type of inhaler.

Results The number of children who had no short-acting betamimetics was significantly lower in the intervention group (176/1447 vs 534/3527; $p<0.01$) and fewer children had no inhaled corticosteroid although on long-acting betamimetics (6/219 vs 41/477; $p=0.03$). The number of children who had more than one type of inhaler was equal in both groups (5.1%), but this was significantly lower compared with the earlier study (119/2311 vs 239/3217; $p<0.01$).

Conclusions The assistance of pharmacists with adherence to paediatric asthma guidelines is beneficial. Pharmacists should be involved actively in the care of children with asthma.

INTRODUCTION

Over the past few years, guidelines for the treatment of paediatric asthma have been developed.^{1–3} Recently, we studied adherence to the Dutch paediatric guidelines. Overall, 60% of the children were treated according to those elements of the guidelines that were studied, but important principles in asthma treatment were not followed.⁴ We speculated that a minimal intervention strategy with the help of pharmacists could improve adherence to paediatric asthma guidelines. Therefore, we developed a programme to actively involve pharmacists in the application of the guidelines.

MATERIALS AND METHODS

We used data from the InterActionDataBase (IADB.nl), which contains information on prescriptions for approximately 500 000 individuals of whom 120 000 are aged 0–19 years. Fifty three pharmacies supply dispensing data.⁴ Nine pharmacists participated in the study.

We investigated three recommendations: (1) every child with asthma medication should have short-acting betamimetics, (2) long-acting betamimetics should be prescribed only in combination with inhaled corticosteroid, and (3) children should have only one type of inhaler device. Then we suggested that the pharmacists held meetings with the general practitioners they worked with. In The Netherlands such meetings are a common and recognised method for improving prescribing habits. The pharmacists were encouraged to invite one of us to participate in these meetings.

Data acquisition

For this study, all children aged 0–14 years on 31 December 2006 were identified and selected from the database. For every child included in the study a medication history from 1 July 2006 to 30 June 2007 was constructed. When a child had been prescribed any anti-asthma medication during this year, the complete history of these medications for the 2 years prior to the first prescription date in this year was retrieved because all inhaled medication expires 2 years after dispensation. In children younger than 2 years of age, the medication prescribed since birth was retrieved. For evaluation of the number of inhalers prescribed, we excluded children with a dry powder inhalator (DPI) who also had a metered dose inhaler (pMDI) with a spacer device.

For the study of inhalation devices, children between the age of 6 and 8 years were excluded because in this age group children often change from a pMDI with spacer to a DPI.

Intervention and reference groups

The children who registered with a participating pharmacy ($n=9$) were grouped as the intervention group, while children who registered with a non-participating pharmacy (excluding neighbourhood pharmacies) ($n=36$) served as the reference group. We compared the outcome of the results of our earlier study with those of the reference group.

For statistical analysis χ^2 tests were used, and $p<0.05$ was considered statistically significant.

RESULTS

Nine pharmacies participated in this study. All meetings of pharmacists and general practitioners were held in 2006. There were no differences in the groups as regards gender or age distribution (data not shown).

The number of children who had a inhaler and who used inhaled corticosteroid–long-acting

Table 1 Numbers of children failing to adhere to the guidelines

| | Failure/total (%) | | |
|--|-------------------|-----------------|-------------------|
| | 2002 | Reference 2007 | Intervention 2007 |
| Having no short-acting betamimetics | 559/3612 (15.5) | 534/3527 (15.4) | 176/1447 (12.1)* |
| No ICS while on long-acting betamimetics | 35/396 (8.8) | 41/477 (8.6) | 6/219 (2.7)* |
| More than one type of inhaler | 239/3217 (7.4) | 119/2311 (5.1)† | 43/849 (5.1)† |

The results of the group of 2002 and the intervention group of 2007 are compared with the reference group of 2007. The numbers of children failing to adhere to guidelines are given as part of the total number of children for whom the guidelines were applicable as well as the percentages.

ICS, inhaled corticosteroid.

*A statistically significant difference between the intervention group and the reference group.

†A statistically significant difference between the group of 2002 and the reference and intervention groups of 2007.

betamimetic combination therapy was significantly lower in the intervention group (table 1). In both groups the number of children with more than one inhaler device was significantly lower than in 2002. The number of children with inhaled medication was equal in both groups but was higher in 2002. The number of young children with a DPI was significantly lower in the intervention group.

DISCUSSION

In this study we found a statistically significant and clinically relevant effect of the intervention on the availability of a short-acting betamimetic and the use of inhaled corticosteroid while on long-acting betamimetics. The use of only one type of inhaler improved in the intervention and reference groups.

The availability of short-acting betamimetics is essential for children with asthma. Because in the earlier study the number of children with short-acting betamimetics was low, we targeted this item and found a significant improvement in the intervention group.⁴

It has been shown that the combination of inhaled corticosteroid with a long-acting betamimetic is superior compared with the use of a long-acting betamimetic alone.⁵ In the intervention group almost 100% of the children were treated with this combination.

The use of one type of inhaler leads to less errors in inhalation technique and is therefore advocated,⁶ and in both groups the use of more than one inhaler diminished significantly. Possibly the acknowledged superiority of using one type of inhaler is recognised more widely by physicians, leading to this general improvement.

Several methods of improving adherence to paediatric asthma guidelines have been studied. Most research was directed at prescribing paediatricians and included handheld computers and peer group training.^{7–11} None of these interventions appeared exclusively effective and required time, money and effort. In our study the burden for the pharmacists and general practitioners was relatively small as the meetings they held were part of ongoing schemes.

Stergachis *et al* reported on the intensive training of pharmacists to deliver individualised asthma care to children and found no benefit.¹²

Several studies evaluated the efforts of pharmacists in the care of adults with asthma.^{13,14} These have been proven to be of benefit, but all required more or less intensive individualised

care delivered by the pharmacist. Compared with these studies, our intervention could be considered minimal.

Pharmacist care for patients with chronic conditions, such as diabetes and hypertension, is of proven benefit.^{15–17}

Although our intervention was beneficial, it is not necessarily the best. The most likely effective intervention is probably a combination of individualised care and care aimed at the group. Certainly active involvement of pharmacists in asthma care is helpful.

The limitations of this study are that we did not examine the individual success of the intervention. However, we are convinced that interventions are important for children with asthma because more children in the intervention group were treated according to evidence based guidelines. We recognise that we only investigated a few elements of asthma care. Finally, we evaluated the effect only in the first year after intervention and do not know long the effect lasted.

Strong points of this study are that we show that with limited time and effort a clinically relevant improvement in paediatric asthma care can be achieved. Relatively large groups of children could benefit from this input.

We conclude that the assistance of pharmacists in adhering to paediatric asthma guidelines is beneficial and pharmacists should be involved actively in the care of children with asthma.

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