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COMMENTARY

Re: Schokker *et al*. *Prim Care Resp J* 2010;19(1):28-34 Prescribing of asthma medication in primary care for children aged under 10

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Childhood respiratory illnesses are common. For example, it has been estimated that at least 50% of children wheeze for some reason at some point in their childhood.[1] In addition, it is often quite difficult for the clinician treating a child to establish the pathology generating a child's illness and then to decide on treatment and to predict response. Furthermore, there is often inconsistent (or indeed insufficient) evidence to support the use of commonly prescribed treatments, leaving primary care clinicians to make decisions based on a combination of experience, peer opinion, and anecdote.[2] However, in this issue of the *PCRJ*, Schokker *et al*.[3] have analysed the way in which primary care doctors in Holland prescribe asthma medicines such as short-acting β_2-agonists (SABA), long-acting β_2-agonists, (LABA), and inhaled corticosteroids (ICS), and in so doing have shed some light on this complex issue.

Guidelines tend to oversimplify prescribing advice for health professionals when treating patients with a diagnosis of asthma, or (if there is no confirmed diagnosis) when trying a trial of therapy as a diagnostic tool.[4,5] However, the patterns of prescribing behaviour described in this paper are very different, and there are lessons to be learnt regarding the implementation of asthma guidelines. The researchers describe a number of important aspects related to the pharmacotherapeutic management of children with

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respiratory symptoms:[3]

- Many children (29%) are treated with inhaled medication in their first year of life without there being a diagnosis when the treatment is started, even in those children prescribed more than one drug.
- Many of these children (40%) will be symptom- (and treatment-) free within a year of initiating treatment – suggesting that inhaled therapy was given for short, self limiting respiratory illnesses.
- The older a child is when first receiving inhaled therapy, the more likely they are to receive further prescriptions (60% in year 1 of life, 70% in year 2 etc.), thus implying increased clinician diagnostic confidence and the emergence of asthma as the cause of symptoms as the child gets older.
- Children prescribed both ICS and bronchodilators at initial prescription are more likely to have persisting symptoms (and treatment) later in childhood.
- There is a small group of children (percentage not documented) receiving anomalous treatment with ICS mono-therapy.

Critical review

Study design

Although the prescribing database used in this study was robust and comprehensive,[3] the population included is relatively small (30,000 people), with a total childhood population of 3,600 in a limited number of clinical settings (three practices). Therefore, there is a concern regarding the external validity of the clinical patterns observed.

Patient selection did not include a robust confirmatory asthma diagnosis in accordance with clinical guidelines, again calling into question the external validity and predictive value of early prescribing. Whether initial and ongoing prescribing of asthma medication confirms accurate diagnosis of asthma is an unanswered question that limits the otherwise excellent work described. Given the methodology, it would be inadvisable to draw any conclusions about the incidence and prevalence of asthma in this population.

How often were asthma medications prescribed, and for what reason?

Across the age range studied (from age 0-9yrs), the frequency of prescribing of asthma medication was 80 scripts per 1000 person years.[3] This may seem low when compared with some of the contemporary and long running prevalence studies in a number of European populations[6-8] where asthma prevalence in children has been reported as being as high as 35%. However, in this study, a different indicator was used – the 1000 person year – as opposed to data being gained from population symptom surveys that are likely to give a higher yield of symptomatic children. In addition, children receiving prescriptions more than once, but with an interval of 12 months or more between prescriptions, were treated as new 'incident cases'.

The pattern of prescribing in this study is familiar to primary care health professionals. If a child receives asthma medication, it is quite likely (29% probability) to be in the first year of life. However, if the child receives its first prescription in the first year of life, it is also quite likely (40% probability) only ever to receive one prescription. It is also very likely (60% probability) that no diagnostic label of asthma will be applied at first prescription, regardless of age. This seems to fit with a pragmatic approach to utilising treatment as a basis for testing the accuracy of the diagnosis (i.e. a trial of therapy as a diagnostic tool). Any primary care clinician, unsure whether they are dealing with asthma or peri-viral wheeze, will resort to using short-acting bronchodilators, but will be reluctant to add any kind of diagnostic label, confident that those children with peri-viral wheeze will become asymptomatic in time.[9]

How robust was the diagnosis of asthma at first prescription?

As a result of the available data and methodology, we can only speculate that those children with ongoing long-term prescriptions truly have asthma. However, if we accept this inference (which may not be altogether wise), then two specific actions seem to carry some predictive weight. These are;

- If a diagnosis of asthma is added at time of first prescription, there is an Odds Ratio of 1.84 (0.96-3.50) that ongoing treatment is assured.
- If the first prescription is for ICS and β_2-agonist, this is even more predictive of a diagnosis of asthma being recorded during childhood, with an Odds Ratio of 12.29 (5.54-27.28). This is the case regardless of the addition of a diagnostic label.

This raises an important clinical question. Do clinicians who make a decision to use aggressive treatment from the beginning do so in a more symptomatic group (as the authors suggest), and as a consequence correctly anticipate future asthma? Or, alternatively, do more aggressive clinicians begin with more drug treatment, and persist with it throughout childhood, regardless of the clinical picture?

To add to this puzzle, the expectations of parents, their tolerance of symptoms and cultural background, may also influence prescribing activity. At a time when primary care is challenged with identifying the population of 'at risk children' for immunisation and treatment against pandemic influenza, the suggestion that dual drug treatment is more likely to predict accurate diagnosis than an early diagnostic label is intriguing and warrants further research.

If there is a delay in adding a diagnosis, what are the consequences for both child and clinician?

70% of this study group were given an asthma diagnosis only

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Key messages

Asthma is a difficult diagnosis to make in small children, and this paper by Schokker *et al*.[3] confirms that uncertainty, delay in confirming the diagnosis, and a pragmatic trial of treatment, are all common practice in this study population.

This 'watch and wait' policy is supported by guidelines, and this paper supports its value and safety in younger children.

Where the diagnosis is clearer, as reflected by repeated prescription of inhaled therapy, there would seem to be no reason to delay the diagnosis of asthma.

after their 6th prescription, compared to 40% at first prescription.[3] There were therefore a significant number of patients receiving frequent prescriptions without a diagnostic label of asthma. Two conclusions may be drawn from this pattern of behaviour: firstly, either clinicians are reluctant to make the diagnosis (even in the presence of persisting presentations for treatment); or secondly, they are using asthma medicines to treat a range of other conditions. Either explanation would fit in with clinical practice, but this is not consistent with, and confirms poor implementation of, current evidence-based guidelines for the management of asthma[4,5] and bronchiolitis.[10] In the latter case, the evidence fails to support the use of either β_2-agonists[11] or ICS.[12]

Conclusion

This excellent paper by Schokker *et al*.[3] provides healthcare practitioners with a range of insights into the behaviour of clinicians, patients, and indeed respiratory illnesses in a well studied group of children in Northern Europe. Although limited by the available data, the research suggests a link between the early need for poly-pharmaceutical interventions and ongoing significant levels of inhaled treatment – a link that may add to our ability to predict with some confidence those children who go on to have persisting asthma in later life, thus helping us to identify them within the larger group of symptomatic infants treated in primary care.

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