CONTROVERSY

Asthma—time for a change of name?

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A term with no agreed meaning is as valueless as an experiment with no prior hypothesis. The former is non-communication, the latter is non-science, and the results of both are confusion. The two often coincide in the field of paediatric respiratory medicine, where it is now becoming accepted that the term 'asthma', without any qualification or definition, has begun to hinder rather than facilitate progress both in research into the management of wheezy children and in the epidemiological search for the causes of the increasing amount of lower respiratory illness in childhood.[1–3]

What's wrong with 'asthma'?

Firstly, the term is used in several different ways; either *generally* (or generically) to describe any reversible airway obstruction or *specifically* to imply symptomatic atopic airway inflammation. Surreptitiously, the two have become confused. Also, it can be used to describe a particular episode of airway obstruction ('an attack of asthma') or to mean a tendency to develop recurrent episodes, with the associated prognostic implications. In longstanding asthma, there is often an irreversible component, although strictly, this may fall outside any current definition of the disease.

Secondly, variable airway obstruction in children results from a number of different pathophysiological processes, each of which may have several different causes, and may operate over a variety of timescales. All of these can be labelled 'asthma'. Two clinical examples illustrate the extremes.

(A) A teenage girl, keen on horses, with multiple atopic features, has troublesome exercise induced asthma, variable airway obstruction which never completely resolves, and daily symptoms. She is relatively resistant to high doses of inhaled corticosteroids, has eosinophilia in sputum samples, and is probably destined for a lifetime of disability.

(B) A 14 month old boy, the third child of a non-atopic smoking mother with no history of wheezing, has had three admissions to the local paediatric intensive care unit with virus induced episodes of airway obstruction which respond poorly to nebulised β_2 agonists and intravenous corticosteroids, punctuated by long symptom-free intervals. He is likely to outgrow his disability by mid-childhood.

When symptomatic, both may be in distress, have expiratory wheeze, use accessory muscles to aid breathing and develop hypoxaemia. Neither can talk or feed because of shortness of breath. Both obtain some relief from nebulised β_2 agonists. We would have no difficulty in attaching the label 'asthma' to these two children. Yet, there is evidence to suggest that

Table 1 Some postulated factors associated with two common types of wheezing syndrome, at different ages

Risk or causal factor	*Typical period in childhood*		*Typical example**	*Comment*
	Early (0-3 years)	*Later (> 5 years)*		
Disturbance in lung growth	+	−	B	Maternal smoking implicated[6 7]
Increased susceptibility to respiratory virus infections	++	+	B>A	Breastfeeding protective[8] Possibly related to environmental pollution[9 10] Associated with low birth weight[11]
Excessive airway secretions	++	±	B>A	
Acute airway inflammation				
(A) Virus	++	+	A and B	[12]
(B) Allergen	±	++	A	
Chronic airway inflammation	?	++	A	[13 14]
Smooth muscle constriction (β_2 responsiveness)	+	++	A>B	Possibly different pathways at different ages
Atopy	−	+	A	
Bronchial responsiveness	Unrelated to symptoms or atopy (B)[7 15-17]	Related to symptoms and atopy (A)[4 18-20]	A and B	Familial element present in both types[20 22]

Environmental and host factors will determine actual age and period over which these factors operate. The 'asthma' phenotype is dependent on the precise combination of factors present in an individual.
Key: * syndromes A and B are described in the text and are meant only to represent possible varieties of wheezing disease, and not to suggest that these are the only varieties or that they are necessarily mutually exclusive.

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Table 2 Possible ways of defining asthma

Method	*Objection*
Severity of symptoms	*Both* phenotypes A and B can occur in the severe form as illustrated in the text, or in such mild forms that differentiation from normal is difficult
A specific number of attacks	The number of attacks experienced after 2 years of age predicts persistence of symptoms in populations but cannot safely be used in individuals (discussed in Wilson[3])
Wheeze persisting to a certain age (for example 6-10 years)	Some children start to wheeze in later childhood. Many children wheezing in mid-childhood cease by puberty[4 23]
Wheeze occurring at a certain age	A particular pathological basis is not necessarily limited to a particular age
Wheeze in atopic children	By late childhood about 40% of all children are atopic by skin testing, so that this feature is not specific; skin testing is unreliable in young childen, and is therefore insensitive for atopic asthma in this age group[21 24]
Wheeze associated with bronchial hyper-responsiveness	The relationship between bronchial responsiveness and symptoms changes with age through early childhood[17 19]
Any child with a doctor's diagnosis	Often used in epidemiological studies to distinguish 'asthma' from 'wheeze'[25] but has no scientific value, as doctors use different criteria; for example some incorrectly label chronic cough (without wheeze) as asthma[26 27]

they are as distinct from each other as are type I and type II diabetics or those with arthritis due to rheumatic fever and juvenile chronic arthritis.[4 5] In fact, virtually the only feature common to our two cases is that at some time or another, they both wheeze. These examples represent the extremes of two different patterns of wheezing disorder both of which can occur over a wide range of severity, alone or in combination. Moreover, a child with type A could, earlier in life, have exhibited a clinical picture identical to type B, and the converse is possible (but unlikely). In practice, disorders which we would be happy to label 'asthma' represent the visible effects of dynamic processes both within individuals and in populations, in which various age and time related factors wax and wane (table 1). These processes in varying combinations and in conjunction with environmental factors determine the phenotype (at the moment), age of onset, prognosis and, perhaps too, the response to treatment. This leads to clinical features which are typical of a particular age group, but which may occur at any age. For instance, adult type atopic asthma with chronic airway obstruction (type A) can occur early in childhood and episodic viral wheeze (type B) is seen in non-atopic school age children and young adults (albeit, generally in mild degree).

Table 3 Features which could be used to qualify the label 'asthma' in individual children

Major category	*Suggested qualifying features*
Possible causal factors	Atopy (personal or familial) Viral infection Prematurity or perinatal factors Cigarette exposure Other (for example possible air polution)
Disease pattern and severity	Episodes (+ severity and response to treatment) Intercurrent symptoms (+ treatment and level of control)
Physiological features (by symptoms or appropriate measurements)	Bronchodilator responsiveness Bronchoconstrictor responsiveness (specify stimulus) Persistent functional impairment (that is 'irreversible' element)
Putative mechanisms (if known)	Airway inflammation

Despite this range of clinical expression, the term 'asthma' could be valuable if its use had predictable therapeutic implications. The evidence is sparse, largely because there has been little attempt to direct clinical trials at specific target groups within the spectrum of asthma. Our two 'typical' patients might well have been recruited into the same clinical trial, both diagnosed as 'severe asthma'. Indeed, the nationally agreed guidelines on the management of asthma would lump them together as severe asthma and recommend an identical approach to treatment. In this way, the blanket diagnosis 'asthma' has hindered scientific research into the management of obstructive airway disease in children.

The use of the term 'asthma' for children with *measurable* reversible airway obstruction raises difficulties for preschool children, in whom even the measurement of peak flow is not possible. In that age group, is it satisfactory to equate reversible wheeze with reversible airway obstruction and to use the clinical feature as a surrogate? To do so limits the diagnosis to those in whom the parent or a health professional has identified wheeze. The term is subjective and to many, imprecise. For instance, even in a hospital environment, stridor and wheeze are often confused.

Finally, all this ignores the criteria for differentiating the mildest cases of asthma from normality. Until we know more about the prognosis of mild disease, it seems reasonable that the label should be applied to children whose disability warrants treatment at some time. But this would mean that a child with a single troublesome episode might be referred to as having had an attack of asthma...!

None of the many ways that have been used to define asthma in childhood (table 2) has any scientific basis. Each will include different children. The term 'asthma' is therefore imprecise. It refers to a spectrum of disorders which usually exhibit the common clinical features of wheeze and/or reversible airway obstruction. Like other disorders of multiple aetiology,

(diabetes, renal failure, arthritis, epilepsy, hypertension) the term is a diagnostic starting point.

Is there anything better?

The plethora of names for the species of asthma which were rejected 10 years ago in favour of the generic term would be worth reconsideration if they were better defined.[28 29] Wheezy bronchitis, bronchiolitis, cough variant asthma (if it exists), or plain 'asthma' are equally vague and probably also include a spectrum of pathology and range of outcomes.[1–3] We advocate retaining the term 'asthma' for all wheezing disorders with the proviso that when so used it is understood that there are no implications for long term prognosis or underlying pathology. Furthermore, the syndrome should be approached in a more analytical manner. To take another familiar example of the approach we propose, paediatricians do not tackle respiratory distress in the preterm neonate simply by administering surfactant, although surfactant deficiency may be an important cause, but by identifying other risk factors (infection, lung hypoplasia, etc) and alternative mechanisms of illness (airway obstruction, pneumothorax, circulatory failure) in order to develop a management plan and advise parents on the likely outcome.

Similarly, with asthma, we propose that when the term is used, it is qualified by a description of the associated features, whether for the purposes of clinical management or for clinical or epidemiological research (table 3). For example, in a therapeutic trial, patients might be selected (or the results analysed) by a combination of qualifying features. For epidemiological studies this may seem cumbersome but is likely to make better sense of such studies and cause health professionals to think more carefully about all aspects of the disorder in every case and not simply to use the term 'asthma' as a convenient pigeon-hole before reaching for the prescription pad. We have no better alternative at the moment.

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Commentary

The article by Silverman and Wilson was commissioned as part of the 'Controversy' series, and I was asked to represent the counter arguments to the suggestion that it was time to change the name 'asthma'. However, it is difficult to generate much controversy when the other side surrenders before a shot is fired!

Firstly, the authors leave a question mark at the end of the paper, hinting at the retreat that is about to take place. Secondly, most of the article is not actually addressed to the question in the title. Instead, the authors make some perfectly reasonable observations on the different varieties of childhood asthma, make a justifiable plea for the use of more qualifying adjectives when the word 'asthma' is used, and then make some suggestions for future research on different asthma subtypes. Finally, when they do address the question in the title, they reluctantly conclude that the time is not yet ripe for a change. They wisely refrain from even beginning to suggest alternative words, as they clearly find this prospect daunting. Were they to have done so, a vision springs to mind of medieval theologians debating how many angels can dance on the head of a pin.

However, the authors clearly demonstrate a lack of enthusiasm for the word 'asthma', and sound as if they would love to abolish it as some stage in the future. Their distaste appears to spring from the academic view that regards words as somehow unclean unless there is total unanimity about definition. At no stage do the authors acknowledge that there might be positive virtues in the use of the word 'asthma' as a pragmatic umbrella concept facilitating diagnosis and treatment in the population of asthmatic children.

There can be no quarrel with the authors' point that the word 'asthma' can cover a multitude of sins. The two clinical examples 'A' and 'B' are clearly described, yet even here the authors acknowledge that both types A and B should be labelled and treated as asthma. Even more cogently they point out that earlier in life a child with type A could have been indistinguishable from a child with type B. This is surely a strong argument for the virtues of the label in every day clinical practice.

Despite this example, the authors still query (with others[1]) the usefulness of the word 'asthma' in the preschool group because they can't prove that the airway obstruction is reversible. They presumably would not accept the value of auscultation and clinical evidence of the abolition of rhonchi by a bronchodilator as enough to justify a clinical diagnosis on the balance of strong probability. They are in danger of resuscitating the old professional prohibition to the effect that 'No one is allowed to diagnose asthma on this unit under the age of 5 years'. One is tempted to prescribe a blast of common sense in the form of George Russell's reversal of Osler's motto to the effect that 'All that wheezes recurrently in childhood is asthma until proved otherwise'.[2]

The uninhibited use of the word 'asthma' by practising clinicians deserves positive endorsement for strong pragmatic reasons. Prohibition of the use of the word was the major instrument in the nationwide cover-up of childhood asthma that occurred in this country before 1980.[3] Academic confusion about terminology was a contributing factor to this unfortunate episode in medical history. Wholehearted reversal of the prohibition facilitated the diagnosis and treatment of the majority of children with asthma over the last 15 years. In particular general practitioners have been empowered to perform the lion's share of this task. To date there was been no significant evidence of overdiagnosis or overtreatment.

No one who witnessed the era of prohibition can seriously wish to turn back the clock. However, those too young to appreciate history are in danger of repeating it. For instance, although the term 'wheezy bronchitis' was effectively abolished after prohibition (even between consenting doctors in private!), there are current attempts to reinvent it under the guise of 'virus associated wheeze' (type B).

A further example is the paediatrician who argued that the word 'asthma' should be abolished 'because of the difficulties doctors have with the word'.[4] He proposed the alternative label 'allergic airways disease' in the optimistic assumption that doctors would have no difficulty with this. However, my main objection to this term is that it lacked power and urgency if one had to dial 999.

Anyone wishing to abolish the word asthma would have to suggest acceptable alternatives, and as the above examples (and Professor Silverman's reluctance) show, this would be a daunting task. The word 'asthma' has been the basis of major educational campaigns for doctors, nurses, parents, and teachers. Asthma clinics, asthma protocols, asthma nurses, and British Thoracic Society guidelines on asthma would all be difficult to envisage if the word had remained taboo. Last but not least, one must pay tribute to the work of the National Asthma Campaign, in which Professor Silverman plays such a prominent part.

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