

# Nebulizers in general practice — impending redundancy?

The British Thoracic Society (BTS), which recently published a review of its guidelines on asthma management,<sup>1</sup> has now published guidelines on the current best practice for nebulizer treatment.<sup>2</sup> The nebulizer guidelines, published with the approval of the Royal College of General Practitioners and the General Practitioner in Asthma Group, give a comprehensive account of the science of nebulized drug delivery, its use in clinical practice, and practical aspects of the use of nebulizers. This, coupled with the forthcoming BTS guidelines on management of chronic obstructive pulmonary disease (COPD), brings nebulizer usage into sharp focus.

The BTS nebulizer guidelines continue to recommend the use of nebulizers in the primary care setting. This includes clinical situations such as the treatment of acute severe asthma in both children and adults along the revised guidelines on asthma management,<sup>1</sup> care of the elderly who cannot manage other inhalation devices, and care of patients with COPD. Other recommendations include situations not commonly presenting to general practitioners (GPs); for example, in patients with cystic fibrosis, bronchiectasis, and HIV and Aids infection. Useful and very practical tips are provided for example, on the selection and use of nebulizer equipment (including simple instructions on how to clean them and how to set up local domiciliary nebulizer services). Other useful points include keeping nebulizer times to less than 10 minutes, keeping nebulization going for approximately one minute after 'spluttering' occurs, and tapping the nebulizer chamber to increase uptake when 'spluttering' begins.

The nebulizer guidelines give us a comprehensive review of laboratory and clinical data that underpin their use and lead to a research agenda. The latter, however, is grounded in the basic sciences and advocates control studies of delivery systems, drugs, and dosages. This is important because we as GPs need the evidence to be able to guide our patients on which medication to use, which delivery system, and what dosages, whether for bronchodilators or inhaled steroids. The imminent introduction of a whole range of CFC-free inhaler devices means that we need to have confidence in new asthma medication derived from such control studies, because the issue of bioavailability on the whole range of inhaled bronchodilator and steroid medications available will be crucial to our clinical care.

One of the potential advantages of nebulizers is their use in the delivery of inhaled steroids. The use of nebulized budesonide has been shown to reduce the need for oral steroids in children<sup>3</sup> and adults.<sup>4</sup> This is a welcome alternative to all of us concerned with the potential long-term effects of corticosteroids, which include growth retardation in children,<sup>5</sup> and osteoporosis<sup>6</sup> and bone fractures in adults.<sup>7</sup> Using oral steroids in acute exacerbation of severe asthma is good practice along BTS guidelines, but there is a worrying trend of an increasing use of oral steroids. Evidence of an increase from 56–71% over a two-year period at all ages was reported by Neville,<sup>8</sup> while the use of oral steroids in a large sample of 18 000 children reported by Warner in 1990 was just over 9%.<sup>9</sup> An alternative here could be nebulized budesonide or inhaled budesonide by spacer devices. Other steroids, such as beclomethasone, are ineffective when nebulized and are no longer available; no data are yet available on nebulized fluticasone.

Nebulized steroids, such as budesonide, can also be used effectively in conditions such as croup in children,<sup>10</sup> although

this is not yet common clinical practice. The role of nebulized steroids in other conditions, such as bronchiolitis, is uncertain but there may be advantages in their use in post bronchiolitis asthma symptoms.<sup>11</sup> Practice-based studies would be well placed to help evaluate their effect.

Bronchodilator nebulization in acute asthma, which occurs in over 30% of patients,<sup>8</sup> may be taken to represent the failure of preventive medication, either from its instigation or more commonly from a lack of patient compliance. Nebulization therefore represents an opportunity to instigate preventive therapy and to understand the patients' reasons for non-compliance.

The extent of non-compliance with regular preventive, usually inhaled, steroid medication, is considerable. Warner, in reviewing the prescribing of nearly 18 000 children,<sup>9</sup> showed nearly half to have been prescribed preventive treatment but only around 15% were compliant. Other studies have reported compliance rates with prophylactic medication to be as low as 50%.<sup>12</sup> Measuring compliance is relatively simple; understanding the complex patient factors is more difficult. The issue of compliance with prescribed medication has traditionally been dominated by the perspective of the health professional, although, increasingly, social scientists using qualitative methods have begun to represent the patients' point of view. A recent study of patients' perspectives of asthma reported by Adams *et al*<sup>13</sup> explores attitudes of patients with asthma to their medication in the context of their everyday lives, using inductive qualitative research methods. It is clear from this research that an improved understanding of observed variation in the way people diagnosed as asthmatic conceptualize and use their medication is important. Such improved understanding could underpin development work in perceiving patients' reasons for non-adherence with regular inhaled prophylactic medication. Focusing on patients who have required acute nebulization where non-adherence with prophylactic therapy is apparent should therefore be a rich source of valuable information. Such information could help to further our understanding of the patients' perspective and could lead to a more patient-centred approach to improved adherence with asthma medication.

At the same time as the publication of the BTS nebulizer guidelines, an editorial published in the *British Medical Journal* by O'Callaghan and Barry<sup>14</sup> examined the use of spacer devices in the treatment of acute asthma, and showed that they are just as effective as nebulizers. Further evidence for this is borne out by a systematic review by Cates,<sup>15</sup> which showed that metered-dose inhalers (MDIs) with holding chambers were at least as effective as nebulizers in the delivery of beta-agonists in acute asthma, and had fewer side-effects. It is important to realize when using MDIs with spacer devices that only a single actuation is used. Further work by O'Callaghan *et al* has shown that multiple actuations from a MDI into a spacer — common practice by well-meaning GPs and nurses — may reduce the proportion of the drug inhaled. One study showed that the single actuation of an inhaled steroid from a spacer device can have the same effect as five actuations from the same spacer.<sup>16</sup>

It already appears that nebulizers are not being used as frequently as previously thought. The large postal survey of 299 UK GPs by Neville *et al*<sup>8</sup> showed no change in nebulizer usage in 2333 asthma patients of all ages, of whom 32% had been prescribed nebulized bronchodilators in 1992–93 compared with 31%

in 1991–92. Similarly, Jones *et al* showed that only 25% of 332 children admitted to hospital with asthma over a 12-month period had been nebulized with a beta-agonist before admission.<sup>17</sup> As spacer devices have also been shown to be much less expensive, is this then the death knell of the nebulizer?

On the evidence we have there is little to show that nebulizers are any better than spacer devices. Nebulizers are more cumbersome and certainly more costly but their use is still advocated in acute asthma in children, in the elderly, and in patients with COPD. This is largely on the grounds that spacer devices present patients with practical difficulties in their use. If these difficulties are the only perceived barriers in the spacer versus nebulizer debate, then there is a need to develop and evaluate different delivery systems that can effectively deliver inhaled medication in a way that is acceptable to both patients and doctors. If this can be achieved then it is possible that, at least in asthma care, we are likely to see the redundancy of the nebulizer.

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### References

1. The British Guidelines on Asthma Management. 1995 review and position statement. *Thorax* 1997; **52**: S1-S20.
2. The Nebulizer Project Group of the British Thoracic Society Standards of Care Committee. Current best practice for nebulizer treatment. *Thorax* 1997; **52**: S1-S104.
3. Llangovan P, Pedersen S, Godfrey S, *et al*. Treatment of severe steroid dependent preschool asthma with nebulized budesonide suspension. *Arch Dis Child* 1993; **68**: 356-359.
4. Otulans BA, Varma N, Bullock A, Higenbottam T. High dose nebulized steroid in the treatment of chronic steroid dependent asthma. *Respiratory Medicine* 1992; **86**: 105-108.
5. Geddes DM. Inhaled corticosteroids: benefits and risks. *Thorax* 1992; **47**: 404-407.
6. Luengo M. Vertebral fractures in steroid dependent asthma and involutional osteoporosis a comparative study. *Thorax* 1991; **46**: 803-806.
7. Toogood JH, Baskerville JC, Markov AE, *et al*. Bone mineral density and the risk of fracture in patients receiving long-term inhaled steroid treatment for asthma. *Journal of Allergy and Clinical Immunology* 1995; **96**: 157-166.
8. Neville RG, Hoskins G, Smith B, Clark RA. How general practitioners manage acute asthma attacks. *Thorax* 1997; **52**: 153-156.
9. Warner JO. Review of prescribed treatment for children with asthma in 1990. *BMJ* 1995; **311**: 663-666.
10. Doull I. Corticosteroids in the management of croup. *BMJ* 1995; **311**: 1244.
11. Milner AD. The role of corticosteroids on bronchitis and croup. *Thorax* 1997; **52**: 595-597.
12. Hunt LM, Jordan B, Irwin S, Browner CH. Compliance and the patient's perspective: controlling symptoms in everyday life. *Culture, Medicine and Psychiatry* 1989; **13**: 315-334.
13. Adams S, Pill R, Jones A. Medication, chronic illness and identity: the perspective of people with asthma. *Soc Sci Med* 1997; **45**: 189-201.
14. O'Callaghan C, Barry P. Spacer devices in the treatment of asthma. *BMJ* 1997; **314**: 1061-1062.
15. Cates CJ. Comparison of holding chambers and nebulizers for beta-agonists in acute asthma. In: Cates C, Ducharme F, Gibson P, *et al*. *Airways module of The Cochrane Database of Systematic Reviews*. Oxford: Update Software, 1997.
16. O'Callaghan C, Cain M, Robertson C. Delivery of beclomethasone disproportionate from a spacer device: what dose is available for inhalation? *Thorax* 1994; **49**: 961-964.
17. Jones A, Thomas R, Llewellyn S, Evans D. Changing patterns in hospital admissions for childhood asthma. [Abstract.] *Thorax* 1995; **50**: A41.

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## Caring for others: consider the emotional issues

THE past 30 years in general practice have seen remarkable changes in the diagnostic and management capabilities of general practitioners, many of them due to the rapid technical and scientific developments that have taken place. This has led to changes in the content of their work and their ability to take on functions that were formerly the prerogative of hospital practitioners. Patients' expectations have been fuelled by the high profile given to medical items in the media, by the *Patient's charter*, and by relatively easy access to information sources such as self-help groups and the Internet.

General practice 'training' can no longer be seen as a completed episode in the life of a registrar, but more as part of a continuum that takes place alongside the evolution of general practice and changes in the community throughout one's whole career. Continuing professional development is a priority for all doctors. One of the main aims of the registrar year should be to develop the skills and responsibilities necessary to identify the registrars' own needs and to deal with their personal as well as their professional development throughout their working life. While, up to now, much attention has been focused on hard science, evidence-based medicine, protocols, and assessment procedures, little attention appears to be devoted to the emotional support and development of the doctors themselves.

Assessment has been aimed primarily at outcome in areas that can be easily measured and is not effective at identifying how secure the doctor feels when dealing with difficult emotional issues in patients, or how prepared the doctor is to enquire into areas that are socially taboo. Education is giving way to learning by rote, protocol, and evidence-based medicine. Little time is set

aside during the training year for contemplation, philosophy, ethics, and the development of personal values.

Thirty years ago, terminal care was perceived as a failure of a system focused on diagnosis and cure. In a hospital-setting, the terminally-ill patients were relegated to a side ward, out of the limelight, while the efforts of the team were directed to more hopeful or rewarding cases. The medical support was often inadequate and frequently restricted to large doses of opiates and anti-emetics. There was little knowledge available about the basis or mechanisms that produced the symptoms in terminal illness, or the specific effects of drugs in dealing with them. The few doctors who provided patient-sensitive terminal care did so often without professional recognition and in relative isolation. The concepts and methods they developed were generally not taught in medical school.

It took the insight and evangelistic zeal of doctors like Dame Cicily Saunders and Derek Doyle, and the emergence of the Hospice movement (beginning with the establishment of St Christopher's Hospice in 1967), to awaken us to the possibilities of a more constructive and humanitarian approach. Today, terminal care has lost its negative connotations and has become a recognized discipline. It has acquired an aura of optimism, hope, and fulfilment for both patients and doctors.

In an original paper also published in this issue, 450 general practitioner principals report on their training in palliative care.<sup>1</sup> Their answers reflect some of the changes in terminal care that have taken place over the past 20 years or so, and uncover current needs that are still not being addressed. It reports that, while much of the management of the terminally ill takes place