Remote or in-person breathing retraining for uncontrolled asthma symptoms

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Asthma is a broad clinical syndrome and, in most settings, diagnosis is based on a compatible history of paroxysmal dyspnoea. The management of asthma is also predominantly influenced by reported episodes of breathlessness rather than specific objective measurements. Given this lack of precision, it is unsurprising that many people treated for asthma have persisting symptoms. To begin to address this issue, there has been welcome progress toward more personalised and targeted treatment for asthma subtypes.[1,2] However, in the rush toward the use of biomarkers and precision medicines we should take care not to neglect the fundamentals of care, such as ensuring good inhaler technique and the provision of asthma action plans. Health-care professionals should also keep in mind their patients' initial primary reason for seeking medical attention: to address their sensation of breathlessness.

It is well recognised that individuals treated for asthma often have breathlessness that exceeds what would be expected from their degree of lung disease. Approximately a third of people with asthma have features of hyperventilation syndrome as assessed though clinical history such as use of Nijmegen questionnaire.[3] We also have an increasing understanding of the importance of other types of dysfunctional breathing,[4] such as periodic deep sighing, thoracic dominant (apical) breathing, forced abdominal expiration, and thoraco-abdominal asynchrony. All of these dysfunctional breathing patterns appear to be more common in asthma than in the general population, and the degree of abnormality seems to be correlated with symptom scores when data are available.

With the development of specialist severe asthma multi-disciplinary teams,[5] it is likely that there will be greater recognition of dysfunctional breathing in patients who are referred with difficult-to-treat symptoms. However, assessment and effective intervention[6] from specialist physiotherapists is not available to most people with asthma. This situation of insufficient access to specialist health-care professionals risks costly progress up the therapeutic ladder driven by persistent symptoms and additional distress for patients. The study presented by Anne Bruton and colleagues[7] in *The Lancet Respiratory Medicine* is therefore a welcome addition to the literature. This pragmatic randomised controlled trial evaluated whether breathing retraining improves asthma control in a broad population of patients with uncontrolled disease, and was not restricted to individuals suspected of having dysfunctional breathing. Crucially, the researchers also assessed whether the breathing retraining intervention could be acceptably and successfully delivered using a self-administered DVD with a supporting booklet. The scale and design of the study are laudable and attempt to provide a definitive answer to these questions.

The study found that both breathing retraining interventions—delivered either in face-to-face sessions or via the DVD and booklet—were associated with a better Asthma Quality of Life Questionnaire (AQLQ) score after 12 months than usual care (adjusted mean difference in AQLQ between DVD intervention and usual care was 0·28, 95% CI 0·11–0·44). The DVD-based intervention was not inferior to face-to-face delivery of instructions in terms of total AQLQ score, and was experienced favourably by patients, despite greater user doubts as to its effectiveness. The number-needed-to-treat to see one individual achieving the minimum clinically important difference for AQLQ over usual care was eight, which was superior to that seen with medications commonly added to inhaled corticosteroids (eg, an NNT of nine for formoterol).[8] Unlike add-on therapies, however, breathing retraining was not associated with any change in other symptom measures, such as airflow obstruction or inflammation. As the authors point out, breathing retraining is an adjunct to appropriate pharmacotherapy and not a replacement.

The study by Bruton and colleagues[7] provides strong evidence that breathing retraining delivered remotely via a DVD and booklet can be an effective intervention, but further work will be required to fully explore the generalisability of the findings. In common with similar recruitment approaches, the authors had a low response rate (10%) to the initial mailshot; those that did respond might not be representative of the wider asthma population. Indeed, the study population had a median age of 57 years and a mean Nijmegen score over

the threshold for hyperventilation.[9] It therefore seems possible that this study population would be unusually likely to initiate and remain concordant with the intervention, which is consistent with the low drop-out rate observed. Older people with asthma also have higher anxiety scores than those aged under 40 years,[10] and are more likely to be high consumers of short-acting β agonists,[11] suggesting a greater scope for the intervention to be effective.

Further interesting research questions surround the future implementation of similar breathing retraining programmes. A move to online resources avoids the prohibitive costs associated with producing booklets and DVDs for the millions of people with asthma. The proposed delivery of an instructional video via the Asthma UK website is welcome and increases overall access to content. However, it is unclear whether engagement with web-based video is equivalent to that with a physical DVD and booklet, and how factors such as age and economic status might influence this. It could also be the case that individuals are more likely to access content if it is delivered by other routes, such as their usual streaming service.

Asthma outcomes have remained poor over recent years, with low expectations around control from patients and health-care providers. Remotely delivered breathing retraining is a key component toward incremental improvement, and a necessary adjunct to improved use of more tailored medical treatments.

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FeNO and suspected asthma: better to identify responsiveness to treatment than to label with a diagnosis

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In patients with non-specific respiratory symptoms, treatment with inhaled corticosteroids is often started on vague grounds. This situation is especially unfortunate because treatment tends to be continued for years. In *The Lancet Respiratory Medicine*, an important study by David Price and colleagues[1] explores the use of the fraction of exhaled nitric oxide (FeNO) as a predictor of a clinical response to inhaled corticosteroids in adult patients with respiratory symptoms, but no asthma diagnosis as yet, and with insignificant bronchodilator reversibility. In this randomised trial, 4 weeks' treatment with inhaled corticosteroids (QVAR Inhalation Aerosol 80 µg [Teva Respiratory, Amsterdam, Netherlands] two puffs twice per day, equivalent to 800 µg beclomethasone diproprionate per day) was compared with placebo, with patients stratified according to baseline FeNO, defined as normal (≤25 parts per billion [ppb]), intermediate (>25 to <40 ppb), and high (≥40 ppb). A significant treatment effect on asthma control, as measured by change from baseline in the Asthma Control Questionnaire mean score, was seen only in patients with high FeNO (mean score change 0·49, 95% CI 0·14–0·84). Furthermore, logistic regression revealed that FeNO greater than