

## **Asthma UK response to the BTS/SIGN British guideline on the management of asthma - Consultation Draft, March 2016**

The draft guideline can be found here:

[http://www.sign.ac.uk/pdf/Asthma\\_2016\\_consultation%20\\_draft.pdf](http://www.sign.ac.uk/pdf/Asthma_2016_consultation%20_draft.pdf)

### **3 Diagnosis**

#### **3.1.2. Tests influence the probability of asthma but do not prove a diagnosis**

We welcome the clear affirmation that there is ‘no single diagnostic test for asthma’. The guideline should note the aspiration for more accurate diagnostic tools and the urgent need for research in this field. The guideline could helpfully recommend research such as the development of appropriate diagnostic tools that can identify biomarkers for different asthma phenotypes.

#### **3.1.3. Asthma Status and the Outcome of Diagnostic Tests for Asthma Vary Over Time**

We welcome the emphasis that ‘diagnostic tests are typically performed at a single point in time whereas asthma status varies over time’ (para. 1). Asthma is highly variable and symptoms will change over non-specific timeframes thereby making a diagnosis from a single snapshot in time near impossible.

We welcome the emphasis on repeat investigations in the event of diagnostic uncertainty. Trial of treatment and repeat review of diagnosis and are an essential part of formal diagnosis. Tests such as measurement of peak expiratory flow (PEF), for instance, can be very helpful in diagnosing asthma when conducted sequentially by an engaged and appropriately trained patient.

#### **3.2.1. Symptoms and signs**

We suggest that the following statement could cause confusion:

‘Almost all children with asthma have a cough, wheeze and/or exercise induced symptoms, but only about a quarter of children with these symptoms have asthma.’  
(Paragraph 1)

The studies cited do not clarify this statement. We note that wheeze is often viewed by healthcare professionals as synonymous with asthma. Anecdotally, people with asthma have told us that their healthcare professional had initially discounted an asthma diagnosis on the basis of an absence of wheeze.

While wheezing is one of the most common symptoms of asthma and is indicative of obstruction of the airways, asthma can occur without wheezing when obstruction involves predominantly the small airways (Morris, 2016<sup>1</sup>). Gong (1990<sup>2</sup>) notes that ‘the absence of wheezing in an asthmatic may indicate either improvement of the bronchoconstriction or severe, widespread airflow obstruction’.

Clarification that an absence of wheeze is not sufficient to rule out a diagnosis of asthma would be helpful. Additionally, guidance could be given on how to undertake quality auscultation of chests.

### 3.2.2 Spirometry and bronchodilator reversibility

The following statement may cause confusion:

‘In adults with obstructive spirometry, an improvement in FEV<sub>1</sub> of 12% or more, together with an increase in volume of 200 ml or more, is regarded as a positive test, although some people with COPD can have significant reversibility. A >400 ml improvement in FEV<sub>1</sub> to either B2 agonists or corticosteroid treatment trials strongly suggests underlying asthma. In children, an improvement in FEV<sub>1</sub> of 12% or more is regarded as a positive test.’ (Paragraph 6)

We note that an increase in volume of 200 ml could be due to better performed spirometric technique rather than indicative of asthma. Starren et al (2012<sup>3</sup>) note that erroneous diagnosis of respiratory conditions may be common in primary care due poor spirometric technique (and underuse of spirometry). The above statement might benefit from clarity on the importance of each value to diagnosis, perhaps differentiating between adults and children.

If volume is used as a complementary value to aid diagnosis, we recommend specifying that forced vital capacity (FVC) is noted, as per Kim et al (2012<sup>4</sup>) cited in the NICE draft diagnosis guidance to which the above statement refers.

References to the importance of good spirometric technique and adherence to appropriate quality standards to allow accurate interpretation would also be helpful. We note that NHS Wales has recently decided to invest in ARTP training to accompany its rollout of spirometry machines for all of primary care - highlighting the importance of training to effective spirometry use.

The inclusion of evidence on the increase in volume of 200ml and retention of the second sentence re >400 ml improvement in FEV<sub>1</sub> may confuse healthcare professionals as to what each volumetric measure means for an asthma diagnosis. While the reference to >400 ml has been long-standing advice, its meaning - being more strongly associated with a diagnosis of asthma - could usefully be clarified given the preceding sentence.

### 3.2.4. Tests to detect eosinophilic inflammation or atopy

We welcome the statement that fractional exhaled nitric oxide (FeNO) ‘provides supportive, but not conclusive, evidence for an asthma diagnosis’ (para. 1).

In reference to the ‘overlap between the levels seen in normal non-asthmatic populations and in people with atopic asthma’, we note the study by Lu et al (2014<sup>5</sup>) which clarified that ‘FeNO is typically elevated in only patients with atopic asthma’. A large study by Scott et al (2010<sup>6</sup>) also found that ‘FeNO behaves as a biomarker of atopy and the “allergic asthma” phenotype rather than asthma itself’. Adding this clarification could be helpful, particularly with respect to the statement on the probability of asthma.

We also draw attention to the meta-analyses by Korevaar et al (2015<sup>7</sup>), which found that ‘FeNO, blood eosinophils, and IgE have moderate diagnostic accuracy. Their use as a single surrogate marker for airway eosinophilia in patients with asthma will lead to a substantial

number of false positives or false negatives.’ This could be used to strengthen the point made in paragraph 3.

We agree that there is an absence of studies on the use of FeNO in primary care populations. We note the study by Price et al (2013<sup>8</sup>), ‘Using fractional exhaled nitric oxide (FeNO) to diagnose steroid-responsive disease and guide asthma management in routine care’, which sought to identify patterns of use of FeNO assessment in routine primary care. This may be useful in informing algorithms for the use of FeNO in primary care practice.

We note the differences between the BTS/SIGN guideline and the NICE draft guideline on asthma diagnosis and monitoring (January 2015) on the recommended use of FeNO. In the short term, we would encourage discussion to ensure that development of two guidelines promotes consistent, high quality asthma care rather than creating confusion. Over the long term, the development of a single guideline would give clarity to healthcare professionals and people with asthma.

### **3.3 Practical approach to diagnosis**

We welcome the affirmation of the ‘urgent need for diagnostic accuracy studies and implementation research to confirm, prospectively, the diagnostic accuracy of retrospectively derived algorithms and to define the optimal approach to making a diagnosis in different clinical practice settings’ (Para. 2). We would encourage discussion with NICE on the algorithms presented as differences may cause confusion for healthcare professionals and impact upon people with asthma.

#### **3.3.2 High Probability of Asthma Based On Initial Structured Clinical Assessment**

We support the commencement of ‘a carefully monitored initiation of treatment’ in patients with a high probability of asthma (reflected in Figure 1) as a way to reduce the risk of asthma attacks, even when diagnosis remains unclear. Treatment itself is a valuable part of the diagnostic process in that it is possible to trial treatments and assess response.

In a survey we conducted on GPs and Practice Nurses in 2015, 67% said they currently use trial of medication to diagnose asthma. However, we are aware that the evidence in this area is limited and an evaluation would be very useful.

## **5 Supported self-management**

### **5.4.3. Interventions to Improve Medication Adherence**

We welcome the reference to innovative IT-based ways to support adherence.

We note the recent study of the Propeller Health sensor - a small device that attaches to the top of an existing inhaler and notifies patients (or family members) if they miss a scheduled dose. A randomised controlled trial of 495 patients assessing the Propeller Health Asthma Platform for reliever inhaler monitoring found that over a 12-month period reliever use was reduced, reliever-free days were increased, and asthma control was

improved (Merchant et al, 2016).<sup>9</sup> Additionally, a randomised controlled trial of 220 patients who used smart inhalers with an audio-visual reminder found significant improvements in adherence to preventer medication in school-aged children with asthma (Chan, 2015)<sup>10</sup>.

We also draw attention to the study by D’Arcy et al. (2014<sup>11</sup>), ‘A Method to Assess Adherence in Inhaler Use through Analysis of Acoustic Recordings of Inhaler Events’. Though a small study, the results demonstrate how the use of a smart inhaler to objectively assess how errors in both time and technique of inhaler use could impact clinical outcomes.

Such technologies could help people to better self-manage by dynamically responding to changing triggers to reduce their risk of an asthma attack, and enable healthcare professionals to identify those people at higher risk of an attack. Further trials to demonstrate proof of concept for new technologies improve asthma management should be encouraged.

### **Mobile apps**

We acknowledge the limited evidence in the field of self-management mobile apps, which is insufficient to advise clinicians (Belisario, 2013<sup>12</sup>). Huckvale et al. (2015<sup>13</sup>) note the need for ‘coordinated quality assurance processes that can adapt to changing clinical and information governance-related risks, ensure compliance with the evidence base and reflect local variations in clinical practice’.

Until the use of more advanced mobile apps is proven, we would advise that the guideline recommends digital delivery of clinically approved information. Under ‘Initiatives to promote adherence to regular treatment’, we recommend that consideration should be given, in the first instance, to whether information for patients can be delivered in a digital format, with an electronic copy of a personal asthma action plan offered to patients.

## **9 Management of acute asthma**

### **9.8.4 Steroid therapy**

We note the absence of prednisolone oral solutions in this section. Asthma UK regularly hears from people with asthma about the difficulty for children in swallowing prednisolone tablets due to the very bitter taste, with many reporting children vomiting. Though we note vomiting remains a possible side effect of prednisolone oral solution, studies have suggested it can be an effective, well-tolerated and cheap alternative to tablets (see Lucas-Bouwman et al, 2000<sup>14</sup>).

## **14 Organisation and delivery of care**

### **14.4 Telehealthcare**

Practical issues can stand in the way of delivering the high quality asthma care outlined in the BTS/SIGN guideline. The guideline should advise on how reviews could be delivered

more dynamically, in line with the desire and needs of both patients and health care professionals - for example, using informatics to transmit monitoring information remotely, communicating with patients via telephone and video conferencing.

Asthma UK asked healthcare professionals which tools they thought could be used to communicate with people about their asthma and found a positive response to the use of new technologies. The use of personalised action plans that are accessible on a smart phone was strongly supported, as was the use of SMS text messaging to broadcast asthma advice, and personalised SMS messages. Such technologies could help people with asthma and healthcare professionals to remain vigilant with respect to the symptoms of an asthma attack.

Healthcare professionals were divided on whether an asthma review could be achieved over the telephone. A key concern raised was the importance of making sure inhalers are being used correctly by their patients. People with asthma also gave a mixed response regarding preference for face-to-face versus telephone reviews. This appeared to be dependent upon individual experiences of the face-to-face reviews.

We note that people with asthma can have vastly different expressions of their symptoms and needs and the use of a range of options for the delivery of care - including telehealthcare - could enable more people to be reached.

Further research into the barriers that need to be overcome to deliver healthcare remotely should be explored.

## **15 Provision of information**

### **15.1.1 National Organisations for People Who Have Asthma**

Please amend the text on Asthma UK to read:

Asthma UK

18 Mansell Street, London E1 8AA

Tel: 0300 222 5800

Asthma UK's Helpline nurses: 0300 222 5800 (9am-5pm; Mon-Fri) - nurses provide advice for people with asthma and for healthcare professionals

[www.asthma.org.uk](http://www.asthma.org.uk)

General enquiries: [info@asthma.org.uk](mailto:info@asthma.org.uk)

Asthma UK is the charity dedicated to improving the health and well-being of people with who are affected by asthma. The charity provides a wide range of information and resources on their website, including downloadable asthma action plans. Printed information booklets and other resources are available on request, and bulk copies are available for purchase by healthcare professionals.

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- <sup>1</sup> Morris (2016), Asthma Clinical Presentation. Medscape: WebMD. Available at: <http://emedicine.medscape.com/article/296301-clinical>
- <sup>2</sup> Gong H JR.. Wheezing and Asthma. In: Walker HK, Hall WD, Hurst JW, editors. Clinical Methods: The History, Physical, and Laboratory Examinations. 3rd edition. Boston: Butterworths; 1990. Chapter 37. Available at: <http://www.ncbi.nlm.nih.gov/books/NBK358/>
- <sup>3</sup> Starren, E. et al (2012). A centralised respiratory diagnostic service for primary care: a 4-year audit. *Prim Care Respir J.* 2012 Jun;21(2):180-6. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22430040>
- <sup>4</sup> Kim, T. et al (2012). The Reality of an Intermediate Type Between Asthma and COPD in Practice. *Respir Care* 2012;57(8):1248 -1253. Available at: <http://rc.rcjournal.com/content/57/8/1248.full.pdf>;
- <sup>5</sup> Lu et al (2014). FeNO and Asthma Treatment in Children A Systematic Review and Meta-Analysis. *Medicine (Baltimore)*. 2015 Jan; 94(4): e347. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/25634163>;
- <sup>6</sup> Scott, M. et al (2010). Influence of atopy and asthma on exhaled nitric oxide in an unselected birth cohort study. *Thorax*. 2010 Mar; 65(3):258-62. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/20335297>
- <sup>7</sup> Korevaar, D. (2015). Diagnostic accuracy of minimally invasive markers for detection of airway eosinophilia in asthma: a systematic review and meta-analysis. *The Lancet* 2015; 3(4), 290-300. Available at: [http://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(15\)00050-8/abstract](http://www.thelancet.com/journals/lanres/article/PIIS2213-2600(15)00050-8/abstract)
- <sup>8</sup> Price et al (2013). Using fractional exhaled nitric oxide (FeNO) to diagnose steroid-responsive disease and guide asthma management in routine care. *Clin Transl Allergy* Vol. 3. p.37. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3826517/>
- <sup>9</sup> Merchant R. et al (2016). Effectiveness of Population Health Management Using the Propeller Health Asthma Platform: A Randomized Clinical Trial. *J Allergy Clin Immunol Pract.* 2016 Jan 8. pii: S2213-2198(15)00665-0. Available at: <http://www.sciencedirect.com/science/article/pii/S2213219815006650>
- <sup>10</sup> Chan A. et al (2015). The effect of an inhaler with ringtones on asthma control and school attendance in children. *Lancet Respir Med.* 2015 Mar;3(3):210-9. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/25617215>
- <sup>11</sup> D'Arcy et al. (2014). A Method to Assess Adherence in Inhaler Use through Analysis of Acoustic Recordings of Inhaler Events. *PLoS One.* 2014 Jun 6;9(6). Available at: <http://www.ncbi.nlm.nih.gov/pubmed/24905012>
- <sup>12</sup> Belisario, M. et al (2015). Smartphone and tablet self management apps for asthma (Review). *Cochrane Database Syst Rev.* 2013 Nov 27;11:CD010013. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/24282112>
- <sup>13</sup> Huckvale, K. et al (2015). The evolution of mobile apps for asthma: an updated systematic assessment of content and tools. *BMC Med.* 2015 Mar 23;13:58. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/25857569>
- <sup>14</sup> Lucas-Bouwman, M.E. (2000). Crushed prednisolone tablets or oral solution for acute asthma?. *Arch Dis Child* 2001;Vol. 84:p.347-348. Available at: <http://adc.bmj.com/content/84/4/347.abstract>