

pathway for people with lung cancer in the UK in order to maximise the number of people who can receive the currently available effective treatments, including potentially curative treatment with surgery or radical radiotherapy. This in turn should then mean that the survival of people with lung cancer in the UK increases to match the best in Europe. This would represent a significant step forward for people with lung cancer in the UK.

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REFERENCES

1. **Office for National Statistics.** *Mortality statistics: deaths registered in 2008*. DR 2009.
2. **Peto R**, Darby S, Deo H, *et al.* Smoking, smoking cessation, and lung cancer in the UK since 1950: combination of national statistics with two case-control studies. *BMJ* 2000;**321**:323–9.
3. **Raw M**, McNeill A, West R. Smoking cessation guidelines for health professionals. A guide to effective smoking cessation interventions for the health care system. *Thorax* 1998;**53**(Suppl 5, Pt 1): S1–19.
4. **West R**, McNeill A, Raw M. Smoking cessation guidelines for health professionals: an update. *Thorax* 2000;**55**:987–99.
5. **Tobacco Advisory Group of the Royal College of Physicians.** *Harm reduction in nicotine addiction: helping people who can't quit*. London: Royal College of Physicians, 2007.
6. **World Health Organization.** *WHO framework convention on tobacco control*. Geneva: World Health Organization, 2003.
7. **van Klaveren RJ**, Oudkerk M, Prokop M, *et al.* Management of lung nodules detected by volume CT scanning. *N Engl J Med* 2009;**361**:2221–9.
8. **Blanchon T**, Brechot JM, Grenier PA, *et al.* Baseline results of the Depiscan study: a French randomized pilot trial of lung cancer screening comparing low dose CT scan (LDCT) and chest X-ray (CXR). *Lung Cancer* 2007;**58**:50–8.
9. **Pedersen JH**, Ashraf H, Dirksen A, *et al.* The Danish randomized lung cancer CT screening trial: overall design and results of the prevalence round. *J Thorac Oncol* 2009;**4**:608–14.
10. **Infante M**, Cavuto S, Lutman FR, *et al.* A randomized study of lung cancer screening with spiral computed tomography: three-year results from the DANTE trial. *Am J Respir Crit Care Med* 2009;**180**:445–53.
11. **Gohagan JK**, Marcus PM, Fagerstrom RM, *et al.* Final results of the Lung Screening Study, a randomized feasibility study of spiral CT versus chest X-ray screening for lung cancer. *Lung Cancer* 2005;**47**:9–15.
12. **Lopes Pegna A**, Picozzi G, Mascalchi M, *et al.* Design, recruitment and baseline results of the ITALUNG trial for lung cancer screening with low-dose CT. *Lung Cancer* 2009;**64**:34–40.
13. **Infante MV**, Pedersen JH. Screening for lung cancer: are we there yet? *Curr Opin Pulm Med* 2010;**16**:301–6.
14. **Black C**, de Verteuil R, Walker S, *et al.* Population screening for lung cancer using computed tomography, is there evidence of clinical effectiveness? A systematic review of the literature. *Thorax* 2007;**62**:131–8.
15. **Detterbeck F.** The fruits of our efforts: time for a different view of lung cancer and CT screening. *Thorax* 2009;**64**:465–6.
16. **Chapman CJ**, Murray A, McElveen JE, *et al.* Autoantibodies in lung cancer: possibilities for early detection and subsequent cure. *Thorax* 2008;**63**:228–33.
17. **Mazzone PJ**, Hammel J, Dweik R, *et al.* Diagnosis of lung cancer by the analysis of exhaled breath with a colorimetric sensor array. *Thorax* 2007;**62**:565–8.
18. **Holmberg L**, Sandin F, Bray F, *et al.* National comparisons of lung cancer survival in England, Norway and Sweden 2001–2004: differences occur early in follow-up. *Thorax* 2010;**65**:436–41.
19. **Imperatori A**, Harrison RN, Leitch DN, *et al.* Lung cancer in Teesside (UK) and Varese (Italy): a comparison of management and survival. *Thorax* 2006;**61**:232–9.
20. **Corner J**, Hopkinson J, Fitzsimmons D, *et al.* Is late diagnosis of lung cancer inevitable? Interview study of patients' recollections of symptoms before diagnosis. *Thorax* 2005;**60**:314–19.
21. **Smith SM**, Campbell NC, MacLeod U, *et al.* Factors contributing to the time taken to consult with symptoms of lung cancer: a cross-sectional study. *Thorax* 2009;**64**:523–31.
22. **Hamilton W**, Peters TJ, Round A, *et al.* What are the clinical features of lung cancer before the diagnosis is made? A population-based case-control study. *Thorax* 2005;**60**:1059–65.
23. **Suckling R.** Early lung cancer intervention in Doncaster. Doncaster: Public Health Department, 2008.

Asthma: improved understanding and insights into the challenges of achieving asthma control

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Asthma articles were among the most frequently cited and downloaded items from the *Thorax* website. The BTS-Sign Asthma Guidelines topped the list, indicating the important role *Thorax* has played in supporting the respiratory community and the British Thoracic Society in particular.

One of the more important articles covering asthma epidemiology summar-

ised the findings of Phase III of the International Study of Asthma and Allergies in Children (ISAAC).¹ This study, undertaken in some 106 centres in 56 countries, compared the prevalence of asthma symptoms 5–10 years after the original surveys. In 6- to 7-year olds, asthma prevalence (wheeze in the last 12 months) was 11.6% and in the 13- to 14-year-old children 13.7%. Comparing trends over time, prevalence had fallen in many western countries but had increased in some other countries including Eastern Europe and parts of Asia. These important ecological data triggered much discussion about the likely causes of the observed trends but failed to generate a unifying

hypothesis that could be tested. *Thorax* also carried a number of other papers generated by the ISAAC study, among the more interesting of which examined the effect of diet on asthma and allergic sensitisation.² This report, based on ISAAC Phase II data, examining >50 000 children demonstrated that fruit intake was associated with a lower prevalence of current wheeze and conferred a lifetime protective effect, as did consumption of vegetables and fish. We have high expectations that the enormous epidemiological database held by the ISAAC researchers will continue to shed light on risk factors and inform protective strategies.

Asthma genetics was a very hot topic, and interest peaked over the ADAM33 story. A frenzy of interest ensued and this was touted as a major breakthrough in our understanding. With the benefit of hindsight, the real impact was modest. Breaking initially in *Nature* in 2002,³ the gene encoding ADisintegrin and Metalloprotease 33, on chromosome 20p13, was identified by positional cloning. *Thorax* carried an editorial on the topic the following year,⁴ which noted that this

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gene confers susceptibility to asthma and bronchial hyper-responsiveness possibly through a role in airway remodelling. A meta-analysis published in 2005 by Blakey *et al*⁵ reviewed studies undertaken in Icelandic and UK populations and demonstrated that the F+1 and ST+7 variants were significantly associated with asthma and might potentially account for 50 000 excess asthma cases in the UK. Commenting further, an editorial by Holgate and Holloway⁶ noted that the mode of influence was probably 'complex involving gene-gene or gene-environment interactions' and speculated that one mechanism might be via impairment of lung function in early life, thereby increasing the risk of asthma developing later. They boldly asserted that the new era of translational science will further elucidate the mystery! We are left with the fact that asthma seems to run in families.

Throughout the 1990s there was a very strong emphasis on the role of the eosinophil in the pathogenesis of asthma. Informed by many lavage, biopsy and, later, induced sputum studies, the eosinophil loomed large in *Thorax* papers. Relationships between exhaled nitric oxide and eosinophil count were also explored. However, in thinking about what has come to be termed 'difficult asthma', questions about the model emerged and thoughts turned to the role of the neutrophil as an effector cell in more serious steroid-resistant cases. In an editorial in 2005, Kamath and colleagues put the case that in non-atopic and severe asthma phenotypes the neutrophil is the more important cell.⁷ Evidence cited included the role of the neutrophil in nocturnal asthma, smokers, occupational asthma and some asthma exacerbations. Related to this topic came a study published by Berry *et al* reporting sputum and biopsy data from patients with what they termed non-eosinophilic asthma.⁸ In a group of 11 subjects they found an absence of eosinophils and normal subepithelial layer thickness. There was little improvement in PC₂₀ methacholine or asthma quality of life following 8 weeks of inhaled corticosteroids (ICS). To add weight to the story, Nadif *et al* reported significant heterogeneity of asthma according to blood inflammatory patterns.⁹ They reported data on 381 subjects with asthma from France and noted that just over half had a 'low eosinophil' pattern (<250 eosinophils/mm³) and among those were a group termed 'neutrophil high' which was asso-

ciated with a reduced frequency of atopy as judged by skin prick test. More recently Cowan *et al* reported the effects of steroid treatment in inflammatory cell subtypes in asthma.¹⁰ They examined subjects during steroid withdrawal over 28 days and found that loss of control was associated with an eosinophilic pattern in two-thirds of subjects. When ICS were re-introduced, a small number of subjects (n=5) developed the neutrophilic pattern, raising the question (not for the first time) that steroids may lead to neutrophil attraction through, for example, increases in interleukin 8 (IL-8). In drawing conclusions from this work and similar, Boulet opines that previous assumptions about the role of the neutrophil in subjects taking ICS need to be re-examined.¹¹

In parallel with these papers focusing on the epidemiology and pathogenesis of asthma, a number of studies were published which showed significant care gaps in the management of asthma. This was particularly striking in the study by Blais and Beauchesne which showed that even in patients discharged from the Emergency Department, after an acute asthma attack, there was poor adherence to the use of ICS in the subsequent 6 months.¹² Among adult asthma patients with chronic asthma similar poor adherence to treatment was shown. On a more positive note, Gibson and Howell showed that a structured written action plan consistently improved health outcomes.¹³ Traditionally we have assumed that health workers need to take the lead in providing asthma education, but in an interesting study Partridge *et al* showed that lay people could deliver an asthma education programme as effectively as healthcare providers.¹⁴ Given the imbalance between the need to deliver asthma education and the available human resources, this model for the delivery of asthma education is an exciting new opportunity. In conclusion, when these elements are combined in a national asthma campaign it is possible to have a significant effect on healthcare utilisation with such an approach. More specifically, Haahtela *et al* showed that in Finland, a dramatic reduction in hospitalisations for acute asthma could be achieved.¹⁵ Empowered by these exciting results, the Global Initiative in Asthma (GINA) have put forward a 5-year challenge to reduce hospitalisations for acute asthma by 50%.¹⁶

In conclusion, research published in *Thorax* over the last 6 years has improved

our understanding of the epidemiology and pathogenesis of asthma. Although there are still many gaps in our knowledge, many of the published papers have had a direct impact on patient care through innovative strategies to improve asthma outcomes.

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REFERENCES

1. Pearce N, Ait-Khaled N, Beasley R, *et al*. Worldwide trends in the prevalence of asthma symptoms: phase III of the International Study of Asthma and Allergies in Childhood (ISAAC). *Thorax* 2007;62:758–66.
2. Nagel G, Weinmayr G, Kleiner A, *et al*. Effect of diet on asthma and allergic sensation in the International Study on Allergies and Asthma in Childhood (ISAAC) Phase Two. *Thorax* 2010;65:516–22.
3. Van Eerdewegh P, Little R-D, Dupuis J, *et al*. Association of the ADAM-33 gene with asthma and bronchial hyper-responsiveness. *Nature* 2002;418:426–30.
4. Holgate S-T, Davies D-E, Murphy G, *et al*. ADAM33: just another asthma gene or a breakthrough in understanding the origins of bronchial hyperresponsiveness? *Thorax* 2003;58:466–9.
5. Blakey J, Halapi E, Bjornsdottir U-S, *et al*. Contribution of ADAM33 polymorphisms to the population risk of asthma. *Thorax* 2005;60:274–6.
6. Holgate S-T, Holloway J-W. Is big beautiful? The continuing story of ADAM33 and asthma. *Thorax* 2005;60:263–4.
7. Kamath A-V, Pavord I-D, Ruparel P-R, *et al*. Is the neutrophil the key effector cell in severe asthma? *Thorax* 2005;60:529–30.
8. Berry M, Morgan A, Shaw D-E, *et al*. Pathological features and inhaled corticosteroid response of eosinophilic and non-eosinophilic asthma. *Thorax* 2007;62:1043–9.
9. Nadif R, Siroux V, Oryszczyn M-P, *et al*. Heterogeneity of asthma according to blood inflammatory patterns. *Thorax* 2009;64:374–80.
10. Cowan D-C, Cowan J-O, Palmay R, *et al*. Effects of steroid therapy on inflammatory cell subtypes in asthma. *Thorax* 2010;65:384–90.
11. Boulet L-P. Effects of steroid therapy on inflammatory cell subtypes in asthma. *Thorax* 2010;65:374–6.
12. Blais L, Beauchesne M-F. Use of inhaled corticosteroids following discharge from an emergency department with acute asthma. *Thorax* 2004;59:943–7.
13. Gibson PG, Powell H. Written action plans for asthma: an evidence based review of the key components. *Thorax* 2004;59:94–9.
14. Partridge MR, Caress A-L, Brown C, *et al*. Can lay people deliver asthma self-management education as effectively as primary care based practice nurses? *Thorax* 2008;63:778–83.
15. Haahtela T, Tuomisto LE, Pietinalho A, *et al*. A 10 year asthma programme in Finland: a major change for the better. *Thorax* 2006;61:663–70.
16. <http://www.GINA.com>.