



Pneumothorax (arrows)

patients, had reported by 1997, so these operations were done in the first 5 years of this procedure being adopted. We noted a few years ago that the variation in use of this procedure ranged between 0% and 100% in UK practice.⁷ Since then, video-assisted thoracic surgery for pneumothorax has increased in absolute and proportional terms.⁴ Guy's Hospital, UK, does the highest number of pneumothorax operations in the UK, and the practice has come a long way from when we first began in the early 1990s. Outcomes from 10 years ago may not reflect present results.

Then consider what we are trying to achieve with surgery. We aim to make most people better while keeping harm to a minimum. In this instance the goal is to reduce the likely recurrence rate from about 60% to as few as possible. Rather than state that there is a four-fold increase in recurrence from 1% to 4%, it may be more appropriate to consider 100 patients at

risk of whom 56 benefited from video-assisted thoracic surgery whereas 59 (say an additional one in 30) are spared recurrence at the price of a thoracotomy.

Some outcomes are easier to measure and count than others, but that does not mean they are the only ones that matter. Early and late pain is less common with video-assisted thoracic surgery^{5,8} and the return to full health and mobility better than with open surgery.⁸ These are important outcomes in a usually benign self-limiting disease that afflicts young people. Thoracotomy is an unnecessarily severe intervention to prevent the last few recurrences. Patients who have a recurrence, or go on to have a pneumothorax on the other lung, show little reluctance to have a repeat video-assisted thoracic surgery, and there is a consensus that this procedure is preferable to a policy of thoracotomy for all.⁴

Tom Treasure

Guy's Hospital, St Thomas Street, London SE1 9RT, UK
tom.treasure@gmail.com

I declare that I have no conflict of interest

- 1 Horton R. Surgical research or comic opera: questions, but few answers. *Lancet* 1996; **347**: 984-85.
- 2 Barker A, Maratos EC, Edmonds L, Lim E. Recurrence rates of video-assisted thoracoscopic versus open surgery in the prevention of recurrent pneumothoraces: a systematic review of randomised and non-randomised trials. *Lancet* 2007; **370**: 329-35.
- 3 Henry M, Arnold T, Harvey J. BTS guidelines for the management of spontaneous pneumothorax. *Thorax* 2003; **58** (suppl 2): ii39-52.
- 4 Treasure T. Minimally invasive surgery for pneumothorax: the evidence, changing practice and current opinion. *JR Soc Med* (in press).
- 5 Sedrakyan A, van der Meulen J, Lewsey J, Treasure T. Video assisted thoracic surgery for treatment of pneumothorax and lung resections: systematic review of randomised clinical trials. *BMJ* 2004; **329**: 1008.
- 6 Lewis RJ, Caccavale RJ, Sisler GE, Mackenzie JW. One hundred consecutive patients undergoing video-assisted thoracic operations. *Ann Thorac Surg* 1992; **54**: 421-26.
- 7 Sedrakyan A, Van Der Meulen J, Lewsey J, Treasure T. Variation in use of video assisted thoracic surgery in the United Kingdom. *BMJ* 2004; **329**: 1011-12.
- 8 Ben-Nun A, Soudack M, Best LA. Video-assisted thoracoscopic surgery for recurrent spontaneous pneumothorax: the long-term benefit. *World J Surg* 2006; **30**: 285-90.

From asthma in the workplace to occupational asthma

In today's *Lancet*, Manolis Kogevinas and colleagues¹ estimate the incidence of adult-onset asthma due to occupational exposure. The data come from the population-based European Community Respiratory Health Survey (ECRHS) of more than 6000 individuals from 13 countries. Their article is a welcome contribution that provides a better estimate of the frequency of asthma attributable to occupational agents.

Many patients with adult-onset asthma report that their symptoms are worse at work, so-called asthma in the workplace. If an asthmatic patient reports that their asthma is better at the weekend or on vacation, the condition is termed occupational asthma, but that does not necessarily mean that the workplace is the cause of the asthma.² There are two types of occupational asthma: the most common has a latency

See [Articles](#) page 336

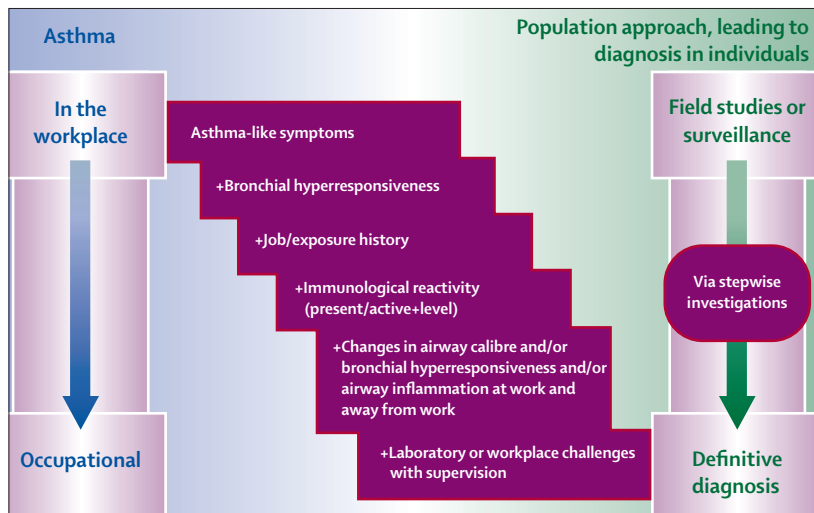


Figure: Steps in assessment of workplace asthma

Increasing number of tests progressively leads to identification of cases of occupational asthma and transforms population approach into diagnostic process.

period and is related to sensitisation to an agent in the workplace; the other is caused by inhalational accidents (irritant-induced asthma).² Ascertaining that the workplace is the cause of latent occupational asthma is a stepwise process towards diagnosis (figure).

The first step is to confirm asthma by a combination of symptoms and bronchial hyperresponsiveness. The extremely informative ECRHS relied on questionnaires and methacholine responsiveness. The next step is to get information on both the job and exposure at work. Some workers have jobs that increase the risk of asthma, such as health-care professionals, bakers, spray-painters, construction workers, and cleaners.³ Many occupational agents can cause asthma. A job-exposure matrix can be derived from information obtained about jobs and agents, the two factors that alone or in combination contribute to the risk.⁴ Having symptoms and bronchial hyperresponsiveness and being at high job-exposure risk, as assessed by Kogevinas and colleagues, improve the specificity of the approach.

About a third of agents causing latent occupational asthma are proteinaceous; they induce disease through an IgE-mediated mechanism. Skin-prick tests with these agents, or, even better, assessment of the concentration of circulating specific IgE,⁵ can further strengthen the evidence. Combining information from the levels of bronchial responsiveness and

specific IgE makes occupational asthma likely.⁶ In Kogevinas and colleagues' study, specific IgE measurements would have been possible but were not done. Immunological tests are unfortunately less reliable for low-molecular-weight (chemical) than for high-molecular weight (proteinaceous) agents.

Monitoring of airway calibre and responsiveness has been used not only for clinical purposes but also in workplace surveys. Peak expiratory flows can be monitored serially with cheap instruments.⁷ Examination of airway inflammation is becoming relevant in the assessment of asthma and asthma in the workplace. Whereas assessment of induced sputum is tedious, exhaled nitric oxide is easy to monitor (although validation is needed).

Laboratory⁸ and workplace challenges are tests in which workers are exposed to potential causal agents and monitored after exposure. They are reserved for clinical diagnosis and confirmation of latent occupational asthma. After screening, patients with specific characteristics can be offered this ultimate testing.^{9,10} Population-based studies have rarely estimated the incidence of irritant-induced asthma,¹¹ as was done by Kogevinas and colleagues. Asthma risk was increased 3.5-fold in patients who reported inhalational accidents.

Estimates of asthma in the workplace and occupational asthma come from two approaches: namely population-based studies and surveillance systems, or medicolegal statistics. These approaches produce different figures because medicolegal statistics are more likely to rely on objective confirmation of cases, whereas the first two identify workers with probable occupational asthma. Kogevinas and colleagues report that an attributable risk of 10–25% for adult asthma related to occupation exceeds that previously reported in an often quoted meta-analysis (5–15% for the interquartile range),¹² and that 250–300 annual new cases of occupational asthma per million workers in European countries, Australia, and USA is higher than that in Quebec (Canada) and Finland, where the diagnosis of occupational asthma is confirmed objectively (about 15 and about 200 new cases per million workers yearly, respectively). Kogevinas and colleagues' estimate therefore lies somewhere between the frequency of asthma in the workplace and of occupational asthma,

probably because the authors went further than is usually done for asthma in the workplace but not far enough to get a closer estimate of occupational asthma. Identification of a sample of probable cases in the ECRHS-II and attempts to confirm occupational asthma by objective testing in these cases (ie, by specific inhalation challenges)¹⁰ would have estimated this gap precisely. For now, estimates of frequency of asthma in the workplace and of occupational asthma should be compared by considering studies that rely on the same level of objective evidence.

*Jean-Luc Malo, Denyse Gautrin

Axe de recherche en santé respiratoire and Center for Asthma in the Workplace, Department of Chest Medicine, Sacré-Coeur Hospital, Montreal, Canada H4J 1C5
malojl@meddir.umontreal.ca

We thank Mrs Katherine Lieber for revising the manuscript. We declare that we have no conflict of interest.

- 1 Kogevinas M, Zock J-P, Jarvis D, et al. Exposure to substances in the workplace and new-onset asthma: an international prospective population-based study (ECRHS-II). *Lancet* 2007; **370**: 336–41.
- 2 Bernstein IL, Bernstein DI, Chan-Yeung M, Malo JL. Definition and classification of asthma in the workplace. In: Bernstein IL, Chan-Yeung M, Malo JL, Bernstein DI, eds. *Asthma in the workplace*, 3rd edn. New York: Taylor & Francis, 2006: 1–8.
- 3 Karjalainen A, Kurppa K, Virtanen S, Keskinen H, Nordman H. Incidence of occupational asthma by occupation and industry in Finland. *Am J Ind Med* 2000; **37**: 451–58.
- 4 Kennedy SM, Le Moual N, Choudat D, Kauffmann F. Development of an asthma specific job exposure matrix and its application in the epidemiological study of genetics and environment in asthma (EGEA). *Occup Environ Med* 2000; **57**: 635–41.
- 5 Koskela H, Taivainen A, Tukiainen H, Chan HK. Inhalation challenge with bovine dander allergens: who needs it? *Chest* 2003; **124**: 383–91.
- 6 Malo JL. A tribute to Tiffeneau's original contribution in the current issue of the journal. *Allergy* 2006; **61**: 1200–01.
- 7 Burge PS, O'Brien IM, Harries MG. Peak flow rate records in the diagnosis of occupational asthma due to isocyanates. *Thorax* 1979; **34**: 317–23.
- 8 Pepys J, Hutchcroft BJ. Bronchial provocation tests in etiologic diagnosis and analysis of asthma. *Am Rev Respir Dis* 1975; **112**: 829–59.
- 9 Malo JL, Cartier A, L'Archevêque J, et al. Prevalence of occupational asthma and immunologic sensitization to psyllium among health personnel in chronic care hospitals. *Am Rev Respir Dis* 1990; **142**: 1359–66.
- 10 Walusiak J, Hanke W, Gorski P, Palczynski C. Respiratory allergy in apprentice bakers: do occupational allergies follow the allergic march? *Allergy* 2004; **59**: 442–50.
- 11 Gautrin D, Bernstein IL, Brooks SM, Henneberger PK. Reactive airways dysfunction syndrome and irritant-induced asthma. In: Bernstein IL, Chan-Yeung M, Malo JL, Bernstein DI eds. *Asthma in the workplace*, 3rd edn. New York: Taylor & Francis, 2006: 579–627.
- 12 Blanc PD, Toren K. How much asthma can be attributed to occupational factors? *Am J Med* 1999; **107**: 580–87.

Is G8 putting profits before the world's poorest children?

Several affluent countries have announced donations totalling US\$1.5 billion to buy new vaccines that will help eradicate pneumococcal diseases in the world's poorest children.¹ Donations from the UK, Italy, Canada, Russia, and Norway launch what many hope will be a new era to ease the burdens of disease and foster economic growth. Yet only a quarter of the money will be spent on covering the costs of vaccines—three-quarters will go towards extra profits for vaccines that are already profitable.

The Advanced Market Commitment (AMC), to which the G8 leaders and the Bill & Melinda Gates Foundation have committed, is the difficulty. An AMC is a heavily promoted but untried idea for inducing major drug companies to invest in research to discover vaccines for neglected diseases by promising to match the revenues that companies earn from developing a product for affluent markets.² By committing to buy a large volume of vaccine at a high price, an AMC creates a whole market in one stroke. However, no money is spent until a good product is fully developed.

In reality, revenue from an AMC depends on whether a new vaccine can be successfully developed, whether

there is a second or third competitor, and whether recipient poor countries sign up.^{3,4} These factors undermine not only the revenue-matching basis of the AMC but also a company's ability to predict how much it will earn. There are also several legal and contractual difficulties, none of which are discussed in either the Tremonti report⁵ or the briefing document prepared for G8 leaders.⁶ If we exclude these design flaws, however, the idea of an AMC has apparent appeal—the ingenuity of commercial research teams is mobilised by the creation of a market for a neglected disease.

For pneumococcal vaccines, the AMC rationale does not apply: vaccines have already been discovered by Wyeth and GlaxoSmithKline and their clinical trials are already funded because they will generate large revenues and profits in affluent markets. Thus the so-called G8 AMC pilot is really a large long-term procurement and not an AMC or a pilot of one. Yet leaders of the AMC project talk as if it is both.

If G8 leaders and the GAVI Alliance use an AMC approach, there will be three unfortunate consequences. First, I estimate that the new pneumococcal vaccines can be manufactured for a sustainable average cost