

Thorax at 70

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This year marks the 70th birthday of *Thorax* and as two septuagenarian ex-editors whose involvement with the journal dates back to 1973, we have been asked by the present editors to select some notable papers published over its lifetime. The choice was ours and our successors', reflecting our judgement of what has stood the test of time. Originally the journal of the Thoracic Society, *Thorax* was founded by British cardiothoracic surgeons and physicians, had joint medical and surgical editors and similar numbers of medical and surgical papers, many dealing with cardiac and oesophageal disease. The original publisher was the British Medical Association, but from 1979 this was shared with the Thoracic Society, and subsequently the British Thoracic Society, making a useful contribution to the Society's funds. Chest medicine was largely concerned with TB in the mid-20th century with other lung conditions being dealt with by general physicians. However, as asthma and chronic lung diseases attracted increasing research interest during the 1960s, the scope of respiratory medicine widened and new medical topics contributed increasingly to *Thorax* as cardiac and surgical papers declined. We have confined our selection to those of interest to today's respiratory physicians, so many excellent non-respiratory papers have been excluded. We have selected papers by going through the indices and rereading those that seem especially important. The task has not been simple, but was greatly aided by access to <http://www.thorax.bmj.com>.

THE EARLY YEARS: 1946–1969

In the 1940s and 1950s, TB made little impact in *Thorax* save through surgical papers. Lung cancer was on the rise, and the first issue contained a major article by one of the journal's founders, Tudor Edwards, on his unparalleled experience of surgery of this disease.¹ Also in that issue was the first article by Doll who was shortly to confirm the cancer–smoking association; he reported the use of helium in acute asthma but in passing described the presence of pulsus paradoxus in the

condition.² The 1950s were the era of air pollution, smoking and chronic bronchitis and this was reflected by a rising interest in clinicopathological and physiological studies of lung disease. Brock and Macleod described the syndromes that bear their names,^{3 4} and Hinson *et al*⁵ described bronchopulmonary aspergillosis. This period saw many original papers on lung pathology, including Leopold and Gough's description of centrilobular emphysema.⁶ The rising interest in physiology was represented by Bernstein's description of his spirometer,⁷ and by Ogilvie's application of his single breath diffusing capacity test to investigate emphysema.⁸

The 1960s saw major advances in lung physiology, illustrated in *Thorax* by studies by Dollery and Gillam of regional lung function,⁹ and Jordanoglou and Pride of the flow-volume curve.¹⁰ Clinical advances included the description of lung infarction in sickle-cell trait,¹¹ and the varied features of farmer's lung.¹² Several new diseases were described: the yellow nails syndrome, allergic alveolitis from pituitary snuff and malt working, asthma from aluminium soldering flux and lung fibrosis from busulfan. Investigative advances in pathology included the description of epithelial shedding in asthma (do you know why Creola bodies are so called?),¹³ and Dunnill's description of quantitative methods in lung pathology.¹⁴ Epidemiology made its appearance with an article by Springett identifying an effect of reductions in male smoking on lung-cancer mortality¹⁵ and an early report from Fletcher's group on chronic airway obstruction.¹⁶ Ross *et al*¹⁷ identified the importance of viruses in exacerbations of this condition.

THE MIDDLE YEARS: 1970–1980

The 1970s saw wider recognition of the value of pulmonary physiology testing and the introduction of fibre-optic bronchoscopy. Rifampicin, with isoniazid and ethambutol, allowed us to treat more patients with TB outside hospital and reduce the length of treatment. The management of asthma (which appeared to be increasing in prevalence and associated with greater mortality) was greatly improved by inhaled corticosteroids and selective β -agonists, although *Thorax* drew attention to the generally poor quality of

asthma care.¹⁸ Physicians were increasingly interested in chronic airflow obstruction, with Lane and Howell, and Leaver *et al* contributing to our understanding of the underlying pathophysiology.^{19 20} The 1970s were also an era of significant advances in investigative techniques. Forgas and his colleagues explained the genesis of lung sounds,^{21 22} and brush biopsy, sputum cytology, fibre-optic bronchoscopy, the Heimlich flutter valve, thoracoscopy, and serial peak flow measurements were introduced to our readers, the last-named technique facilitated by the introduction of the mini-Wright peak flow metre.²³ Wald introduced carboxyhaemoglobin monitoring in smokers.²⁴ *Thorax* also reported the value of inhaled steroids in childhood asthma (surely one of the most liberating changes in treatment ever for paediatricians), and exercise training was shown to be of benefit in chronic airflow obstruction, using a new 10 min walk test.²⁵ New diseases described included sulfasalazine lung and allergic alveolitis from isocyanates, while Baris described mesothelioma in relation to environmental exposure to a non-asbestos mineral, fibrous erionite.²⁶

THE LATE 20TH CENTURY: 1981–2000

In the 1980s, several papers documented the burden of respiratory disease and asthma admissions in the UK and elsewhere, the current management and mismanagement of TB and the presentation and prognosis of lung cancer. The prevalence of allergic markers and bronchial hyper-responsiveness were documented in different populations in several countries. Relatively new investigational techniques such as CT scans, fibre-optic bronchoscopy and bronchoalveolar lavage were studied in a range of conditions including fibrotic lung diseases and HIV-related *Pneumocystis carinii*. The rising problem of asbestos-related disease was documented and tremolite, used as a whitewash or stucco, was recognised as a further cause of environmental mesothelioma.²⁷ Other occupational diseases described included hard-metal disease in relation to cobalt in coolants, PVC lung, and cancer in chromium workers. Sleep apnoea and the immotile cilia syndrome were relatively new topics and surgical treatment of bullous emphysema made its appearance.

Alistair Brewis was the first single-handed editor (1982–1987) and an amusing author; his elegant contribution to the 60th anniversary of *Thorax* is well worth rereading.²⁸ Two companion papers from this period by Pandey showed that the high prevalence (18%) of chronic

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bronchitis in rural Nepal was similar for men and women, and was related to smoking and exposure to domestic smoke from wood and straw burning fires in poorly ventilated houses.^{29–30}

Before the internet, we relied on occasional reviews and searches of *Index Medicus* to keep up to date. *Thorax* introduced expert series, a series being up to eight articles in successive issues, on a field that was moving rapidly. The first, in 1989, on AIDS and the lung, was clearly pertinent; subsequent series covered assisted ventilation, cystic fibrosis and molecular biology in respiratory disease. Coordinated by experts, these provided authoritative and definitive state-of-the-art reviews. Notable single issue reviews included those on muscarinic receptors, decline in FEV₁, and tobacco in low- and middle income countries.^{31–34}

Guidelines were in their infancy at this time and some early submissions had little supporting evidence and the hallmarks of having been written by committee. In contrast, the first one, for management of TB, was based on data from numerous large trials, set a standard for subsequent guidelines and made a large difference to practice in the UK.³⁵ Two further articles that made an impact concerned asthma deaths and the use of fenoterol in New Zealand.^{36–37} The issue was whether the high use of fenoterol, which was less β 2-selective than salbutamol and marketed at a higher dose equivalent, bore some responsibility for the high death rate seen at that time in New Zealand. An initial case-control study in *The Lancet* had suggested that it did, but it caused controversy and had shortcomings that were largely answered by the two studies in *Thorax*. Debate continued, but after fenoterol was removed from the market, the excess mortality disappeared.

The first Asthma Guidelines published in 1993 are one of the papers chosen by Stephen Spiro (editor 1991–1996).³⁸ Two papers on staging in lung cancer from 1994 are a reminder of how ineffective staging tests were at that time. Hilliers *et al*³⁹ showed only a 3%–6% additional yield for inoperability in a review of 100 studies using CT, ultrasound and radionuclide scans, while White *et al*⁴⁰, also using CT, could not distinguish stage I and II from stage III disease in individuals presumed to have operable disease. These studies provided a basis for subsequent improvements in management and outcomes for patients with lung cancer.

Over the decades, the editorial work required for *Thorax* had expanded and John Britton and Alan Knox were

appointed co-editors (1996–2002). The first two papers chosen by them reflect the increasingly active approach to smoking cessation. Raw *et al*,⁴¹ having produced the first UK guidelines on smoking cessation, were encouraged to submit them to *Thorax*, as smoking is so relevant to respiratory disease. These have since been superseded but played a key role in helping the UK take the lead in providing evidence-based smoking-cessation services and getting such services funded following the 1998 white paper, 'Smoking Kills'. The second paper demonstrated that stopping people with COPD from smoking almost halved the risk of re-admission in the next year, putting the effects of other interventions into perspective.⁴² This is still the most important intervention the patient can carry out and that clinicians can initiate. One further paper from 1998 had an important message for clinical practice; it showed that patients with a low D-dimer and normal arterial pO₂ are very unlikely to have had a pulmonary embolus, and do not require expensive imaging.⁴³

THE 21ST CENTURY

Despite the increasing number of papers on molecular biology and genetics over the last 30 years, recent editors have all chosen papers with a more immediate clinical message. The first paper chosen by Wisia Wedzicha (editor 2003–2010) and the first paper she accepted using *Thorax*'s new online system, looked at data from the National Health and Nutrition Examination Survey (NHANES1) which showed the importance of obstructive and restrictive lung disease in predicting mortality.⁴⁴ She also chose two related papers from the ISOLDE study which showed that measuring bronchodilator reversibility or prednisolone response in patients with COPD did not have useful prognostic significance.^{45–46}

The most recent editors, Andrew Bush and Ian Pavord (2010–2015), reminded us that episodes of acute respiratory deterioration (they prefer the term 'attack' to 'exacerbation') have adverse long-term consequences and need a focused response. Suissa *et al*⁴⁷ showed a rapid decline in health status in COPD after a second severe exacerbation, and a high death rate in the weeks after any severe exacerbation. They also chose two linked papers describing an outbreak of a new aggressive form of interstitial lung disease in Korea.^{48–49} A detailed epidemiological investigation attributed this to humidifier disinfectant, later confirmed by showing that the disease disappeared when the

disinfectant was removed—a reminder of John Snow and the 1854 cholera epidemic.

CONCLUSIONS

Looking back over 70 years of *Thorax* has been an interesting experience and brought back many memories of our times as editors (AS 1977–1982, AT 1987–1991). We have been impressed by how many high-quality articles have been published, some early ones by individuals who subsequently became leaders in medicine, physiology and pathology. Topics have come in and out of fashion and the findings from many have now been incorporated into clinical practice or have provided the building bricks for further research. All editors have been helped greatly by assistant editors, editorial boards and referees. We and our readers owe them an enormous debt. Producing even one edition of *Thorax* involves a lot of hard work but reviewing the articles published over the years makes it clear that it has all been worthwhile. The effect on clinical practice and hence benefit to patients is impossible to estimate but must have been enormous.

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