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Obesity and the respiratory physician

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Respiratory medicine has developed as a specialty in the wake of a number of public health milestones. The origins of many of the learned societies associated with respiratory medicine can be traced back to the epidemic of tuberculosis (TB) in the early 19th century.¹ Effective public health and effective treatment regimes reduced the prevalence and mortality of TB. The seminal work linking the role of tobacco smoking and its detrimental effects on the lung² was the second key finding which challenged our specialty. Public health measures and the development of new treatments are reducing the prevalence of smoking-related lung disease, although there is still much work to be done. Obesity has emerged in the opening years of this century as a major challenge to public health. The impact of obesity on the prevalence and mortality of many diseases is well documented, although there has been little attention paid to its impact on respiratory disease.

Obesity rates are rising at an alarming rate in developed and developing countries, in both sexes, in children and adults. The obesity epidemic in children is particularly concerning as today's overweight children and adolescents will become tomorrow's obese adults.³ It has been estimated that childhood obesity observed now will lead to a reduction in life expectancy in the USA of between 2 and 5 years by the middle of this century—an effect equivalent to that of all cancers combined.⁴

Physicians recognise obesity or overweight poorly. A North American study examined the records of 424 overweight

or obese patients.⁵ Only 20% of patients were correctly identified by the treating physician as overweight or obese, in only 2% of cases was body mass index documented and only 16.5% of the patients received any obesity management advice (ranging from simple advice to referral for surgical management).

Obese patients provide particular diagnostic and management dilemmas to the respiratory physician, and these are explored in a series of five articles to be published over the coming months in *Thorax*. The first of these examines the epidemiology and possible aetiological links between obesity and lung disease (*see page 649*)⁶. Much work remains to move beyond epidemiological links to an understanding of the mechanisms underlying the associations demonstrated in asthma and obstructive sleep apnoea (OSA).

OSA has a similar prevalence to diabetes in the general population and, while not all patients with sleep apnoea are overweight, excess body weight is the major modifiable risk factor for the condition. Obesity hypoventilation syndrome is a common condition, resulting in impaired quality of life and high healthcare utilisation. If recognised, it can be effectively treated.

Patients in the intensive care unit who are obese have specific and practical management issues such as specific beds required to accommodate them safely, and challenges in transport and imaging. The specific issues which affect this group of patients—including the difficulties in airway management and the recognition of abdominal compartment syndrome—are discussed, along with practical suggestions for management.

Epidemiological studies have suggested that there are links between obesity and the development of asthma. The fourth article discusses potential mechanisms for this association, including the contribution of adipokines to the asthma phenotype and the reductions in peripheral airway

diameter in obesity. Obese patients with asthma use more health resources than their lean counterparts, possibly reflecting that obesity may make the asthma phenotype more resistant to treatment. Some of the commonly used drugs in respiratory medicine (eg, oral glucocorticoids) have important effects on body composition and ultimately on pulmonary mechanics, and this merits consideration in the risk/benefit ratio in their prescription.

It is known that loss of fat-free mass is a poor prognostic marker in severe chronic obstructive pulmonary disease (COPD). The effects of obesity in this condition are less well known, and this is discussed in the final article. While epidemiological studies have suggested that obesity may be protective in a number of chronic diseases including COPD, the pathophysiology of this observation is yet to be elucidated. COPD is associated with systemic inflammation and there is accumulating evidence that hypoxia may exacerbate this cascade. The final article discusses the intriguing possibility that obesity exerts different effects on various subgroups of patients with COPD and highlights areas requiring further research.

The interactions of nutrition with lung disease should be considered in everyone presenting with respiratory problems. All people with respiratory disease should have serial measures of weight on accurate well-calibrated scales, professionals should be educated in the management and recognition of obesity, patients should receive management and advice including access to well organised, readily available obesity services when required. The potential impact of obesity on pulmonary physiology should also be considered in people with other complications of obesity.

However, more important will be the urgent implementation of far-reaching public health measures designed to reduce the impact of obesity on future generations. These will include such measures as provision of routes to allow commuters to walk or cycle, regulation of advertising of junk food, access for increased physical activity, re-education of consumers regarding food choices and incentives for farmers to produce nutritious food.⁷

The combined advertising spending for Pepsi and Coca-Cola for 2004 was more

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than the entire budget of the World Health Organization for 2002–3.⁸ While discrepancies such as this remain, it seems that obesity will continue to be an important issue for years to come. As respiratory physicians we need to recognise and treat obesity in our current patients and to campaign vigorously for measures to improve and preserve the respiratory health of future generations.

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Lung alert

Nasal CPAP or intubation at birth for preterm infants

Bronchopulmonary dysplasia, resulting from damage to the lungs caused by ventilation, remains a major cause of mortality in preterm infants. In this international multicentre study the investigators compared continuous positive airway pressure (CPAP) with intubation in preterm infants (infants born at 25–28 weeks' gestation) to assess whether avoidance of ventilation reduced the incidence of bronchopulmonary dysplasia.

A total of 610 infants were randomised to receive nasal CPAP or intubation and ventilation if, 5 min after birth, the clinician leading the resuscitation decided continuing respiratory support was necessary. The demographic characteristics of the two groups were similar. Nasal CPAP was started at 8 cm H₂O and adjusted as needed. The primary outcome of the study was death or bronchopulmonary dysplasia (defined as the need for oxygen treatment at 36 weeks' gestational age). Secondary outcomes included the use of oxygen treatment at 28 days and the incidence of intubation.

The results were reviewed at 28 days, 36 weeks and before discharge, and showed a minimal difference in overall mortality between the two groups. Although the CPAP group had fewer days of ventilation, required a lower rate of oxygen treatment at 28 days and the use of surfactant was reduced, they had a higher risk of pneumothorax.

This study did not identify CPAP as a significant agent to reduce death or rates of bronchopulmonary dysplasia compared with intubation. The authors point out that it also does not help to identify infants at birth who, if treated with CPAP, will subsequently require intubation and ventilation. However, CPAP does not appear to affect infants adversely, even if they are subsequently ventilated.

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