Extra deaths expected from stopping BCG in given five year periods

Year stopped	1995–9	2000–4	2005–9	2010–4	2015–9
1991	1	2	3	2	2
1996	0	1	2	2	1

of Population Censuses and Surveys, we calculate that in the last 10 years the ratio of the number of deaths from tuberculosis per 100 notifications in the 15–29 age group is 0·75. In other words, one death apparently results from 140 notified cases.

On the basis of the figures of Drs Springett and Sutherland for the increased numbers of notifications which are likely to result from discontinuing BCG, the table above shows an estimate of the number of "preventable" deaths in the 15–29 age group which may result in the next 30 years.

The possible increase in mortality is obviously another important factor which should be borne in mind when we are considering discontinuation of routine BCG vaccination.

MOHAMED NISAR
P D O DAVIES
Tuberculosis Research Unit, South Liverpool Chest Clinic, Sefton General Hospital, Liverpool L15 2HE

1 Office of Population Censuses and Surveys. *Mortality statistics (cause)*. London: HMSO, 1975–88.
2 Office of Population Censuses and Surveys. *Communicable diseases*. London: HMSO, 1975–88.

Posture and nocturnal asthma

The mechanisms that underlie nocturnal bronchoconstriction in asthma remain elusive. Among possible pathogenetic factors posture per se has been considered potentially important because some studies have found the supine body position to be a stimulus to bronchoconstriction in patients with asthma.[1 2] Drs K F Whyte and N J Douglas have recently challenged these observations (July 1989;44:579–81). They found that FEV_1 recorded in the upright posture declined to the same extent in nine asthmatic patients after they had been supine for four hours as it did after the patients had been upright for the same time interval. They then draw the conclusion that the horizontal body position is not an important cause of overnight bronchoconstriction. In our opinion this conclusion is premature with respect to the design and results of their study.

Firstly, Drs Whyte and Douglas limited their measurements to the upright posture and therefore missed important information. We found the peak flow (PEF) response to posture in asthmatics to be dual: an immediate decrease on lying down (also present in healthy persons) and a progressive decrease in the lying position, which is specific for asthmatic patients.[1 2] Peak flow rate measured supine tends to decrease in direct proportion to the time spent supine. When the upright position is assumed once more there may be an immediate or a more gradual recovery, with a sustained decrease of lung function in the latter case.

Secondly, if there is a decline in FEV_1 on the upright day also, as in the experiment of Drs Whyte and Douglas (due to a tapering effect of medication?), it might be difficult to detect a modest effect of posture if recordings are performed upright only. Lung function remained unchanged during the control day in our study, thus enabling us to link the decline in PEF on the other days to the change in posture.[1]

Thirdly, it is evident from figure 1 of the study by Drs Whyte and Douglas that the fall of FEV_1 after four hours supine was rather abruptly converted into a rising trend after the patient assumed the upright position — thus indicating that posture was important also in these patients.

Recent studies have shown that nocturnal increases in airway resistance in asthmatic patients are modified by sleep stage—that is, the deepest sleep is associated with the largest increases in resistance.[3] This has been interpreted as a decreased responsiveness to resistive loads during deep sleep.[3] What is then the cause of this increased resistive loading during the night? To our minds, it seems probable that resting body position, possibly through increased vagal tone, causes bronchoconstriction in hyperreactive airways. If so, there is no need to incriminate endogenous circadian rythms to explain nocturnal asthma.

BJÖRN MOSSBERG
Department of Pulmonary Diseases, Södersjukhuset (South Hospital), S-100 64 Stockholm
KJELL LARSSON
National Institute of Occupational Health, S-171 84 Stockholm, Sweden

1 Jönsson E, Mossberg B. Impairment of ventilatory function by supine posture in asthma. *Eur J Respir Dis* 1984;65:496–503.
2 Larsson K, Bevegård S, Mossberg B. Posture-induced airflow limitation in asthma: relationship to plasma catecholamines and an inhaled anticholinergic agent. *Eur Respir J* 1988;1: 458–63.
3 Bellia V, Cuttitta G, Insalco G, Visconti A, Bonsignore G. Relationship of nocturnal bronchoconstriction to sleep stages. *Am Rev Respir Dis* 1989;140:363–7.

AUTHOR'S REPLY We do not wish to extend our criticisms of the studies of Jonsson and Mossberg, which are already well documented,[1 2] and are essentially that their studies are inadequately controlled and analysed and that many of the reported changes are mechanical effects on the efficiency of forced expiration when supine. Our reply to their points is:

1 Our study clearly showed no difference in peak flow (PEF) after four hours erect compared with supine. Our study addressed the possibility of nocturnal airway narrowing—which persists on assuming the erect posture—resulting from prolonged airway narrowing after lying down. Our data strongly suggest that it does not.

2 There are other explanations. We would suggest that the lack of decline in lung function in the seated posture reported by Jonsson and Mossberg reflects their patients' less severe asthma, producing both less circadian variation and less bronchodilator use before the study, with less airway narrowing as this wears off.

3 No. There was no significant rise in PEF after they had resumed the upright posture, nor was there any difference in the change in PEF after the period in the trial posture between the erect and supine day.

N J DOUGLAS
K F WHYTE
Respiratory Medicine Unit, Department of Medicine (Royal Infirmary of Edinburgh), City Hospital, Edinburgh EH10 5SB

1 Catterall JR, Douglas NJ. Effect of sleep deprivation on overnight bronchoconstriction in nocturnal asthma. *Thorax* 1987;42:319–20.
2 Whyte KF, Douglas NJ. Posture and nocturnal asthma. *Thorax* 1989;44:579–81.

BOOK NOTICES

High Altitude Medicine and Pathology. 3rd ed. D Heath, DR Williams. (Pp 352; £65.) Guildford: Butterworth, 1989. ISBN 0-407-00499-8.

The third version of this popular book has been rewritten to emphasise the state of clinical knowledge of man at high altitude. The coverage is impressively wide, covering climatology, geography, social and physical anthropology, and even comparative zoology, and examines every aspect of life at high (3000 m), and extreme (5800 m) altitude. The bulk of the book covers the clinical effects of hypobaric hypoxia and other features of altitude, such as ultraviolet radiation and exposure to cold. It describes the scientific advances that have occurred through the study of highland populations, natural experiments like the Mexico Olympiad, the anecdotes of climbers, and genuine scientific expeditions. There are also full descriptions of the clinicopathological features of benign and malignant acute mountain sickness, along with the theoretical discussion of the basis for chronic mountain sickness through failure of acclimatisation or loss of adaptation. The importance of sleep and ventilatory control is clearly defined as a productive area for further research. Other chapters, including those on fertility, exercise, and psychology, cover all conceivable aspects of life at altitude. The authors themselves have clearly made a major contribution to knowledge on the subject, particularly in pathology, where the writing is most confident. In other areas the presentation is more cautious and, for example, the physiology topics are described without a single formula. This is no disadvantage, however, as it makes the book more accessible and could be recommended to others. The style is clear, thorough, and slightly repetitive, but in an avuncular fashion that does not give offence. The book is well illustrated with standardised diagrams and interesting photographs and there is an extensive bibliography. The book will appeal to most libraries, respiratory specialists, and climbers as an obligatory reference book. It also makes an excellent read for those with even a passing interest.—MDLM