certain design limitations. The data were obtained during the run-in for another study (Cowan *et al*, *Thorax* Published Online First: 23 September 2010. doi:10.1136/thx.2010.144592). However, the principal finding remains: while we agree that the presence of airway eosinophilia is a reliable predictor of steroid responsiveness, the absence of eosinophilia does not accurately predict steroid unresponsiveness. Whether intentionally or not, these authors imply that only patients with demonstrable sputum eosinophilia are steroid responsive. This is not the case.

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Potential risk factors for recurrence of pulmonary tuberculosis

Among UK residents of South Asian descent potential risk factors for pulmonary tuberculosis (PTB) and, possibly, also for its recurrence, include vitamin D deficiency (as proposed by Crofts *et al*),[1] the population-attributable fraction (PAF) for PTB attributable to diabetes mellitus,[2] and end-stage chronic kidney disease(CKD).[3]. The PAF for PTB attributable to diabetes mellitus can be as high as 19.6% (95% CI 10.9% to 33.1%) and 14.2% (95% CI 7.1% to 26.5%) for UK Asian men and women, respectively, versus 6.9% (95% CI 3.1% to 12.4%) and 8.2% (95% CI 3.0% to 15.6%) for their white male and female counterparts, respectively.[2] Furthermore, in the presence of diabetes mellitus, recognition and treatment of PTB can be complicated by the fact that its radiographic stigmata can simulate those of lower lobe community-acquired pneumonia, and by the fact that median time to culture conversion may be significantly (p=0.03) longer in subjects with diabetes than in their counterparts without diabetes.[4] Relative to their white counterparts, UK Asians also have a 13.66-fold higher risk of end-stage diabetic nephropathy,[5] end-stage CKD itself being associated with an acquired immunodeficiency state characterised by a 10- to 25-fold increase in risk of PTB.[3] When vitamin D deficiency complicates CKD[6] this might, arguably, further compound the risk of PTB and its recurrence.

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Authors' reply

In response to Dr Jolobe, our understanding of the epidemiology of tuberculosis in South Asians in the UK is that extrapulmonary disease is more common in this group.[1] South Asians are therefore not necessarily predisposed only to pulmonary tuberculosis and its recurrence but to tuberculosis in general. What is likely is that being immunocompromised in this population, arising potentially from vitamin D deficiency[2] and type 2 diabetes,[3] is the important risk factor for tuberculosis and its recurrence. We therefore agree that diabetes could be another reason why South Asians appear to be at greater risk than other groups for recurrence of tuberculosis, but not necessarily just pulmonary forms of the disease. Although we have discussed potential factors associated with recurrence,[4] national surveillance does not collect information on diabetes precluding us from assessing its role.

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Mains-powered hypoxic gas generation: a cost-effective and safe method to evaluate patients at risk from hypoxia during air travel

For the evaluation of patients at risk of hypobaric hypoxia during air travel, the British Thoracic Society Recommendations describe the normobaric hypoxic challenge as a substitute for the use of hypobaric chambers, which are not widely available.[1]

In the normobaric hypoxic challenge, breathing 15% oxygen at sea level replicates the reduced P_{O_2} in ambient air at 8000 ft (2438 m), the maximum permissible cabin altitude during commercial flight. This method has been shown to produce results comparable with those obtained using hypobaric chambers and oxygen desaturation similar to that found in patients with chronic obstructive pulmonary disease (COPD) during flight.[2 3] The methods described in the British Thoracic Society Recommendations include using a cylinder of 15% oxygen in nitrogen, delivered by either a breathing circuit or a body box. Alternatively, a cylinder of nitrogen may be used to drive a 40% Venturi mask resulting in a fractional inspired oxygen (F_{IO_2}) of 15%. As pure nitrogen is an asphyxiant gas, F_{IO_2} can fall dangerously low if Venturi mask ports become blocked or the nitrogen concentration becomes too high in an enclosed space. Furthermore, these

methods require the use of gas cylinders which are costly, unwieldy, carry potential Health and Safety hazards, and incur significant expense for shipping and daily hire.

We use a mains-powered hypoxic gas generator (Hypoxico Everest Summit II, Sequal Technologies, San Diego, CA, USA), a CE-certified molecular filtration unit delivering hypoxic gas mixtures via a full-face continuous positive airway pressure (CPAP) mask, or into a sealed tent for paediatric or mask-intolerant patients. Supplementary oxygen is easily administered by nasal cannula in conjunction with the mask or tent. This equipment is commonly used by mountaineers to acclimatise to high altitude and by athletes in altitude training for performance enhancement.[4 5] We have found it to have several advantages for hypoxic challenge testing. As a result of no longer purchasing nitrogen cylinders we have recouped the cost of the equipment after ~60 tests; centres using other methods, such as a 15% oxygen mixture with a breathing circuit or in a body box, which require additional equipment and higher gas consumption, may find the cost savings to be greater. The generator delivers a stable mixture of hypoxic gas, confirmed in validation tests using a calibrated oxygen analyser (Maxtec OM25-RME, Maxtec, Salt Lake City, Utah, USA), This showed a constant output of $15 \pm 0.1\%$ O_2 for >1 h, so avoiding the risk of excessive hypoxia.

The generator can be easily adjusted to deliver mixtures equivalent to any altitude up to 29 000 ft (8839 m). This ease of adjustment of Fio_2 provides improved versatility in research and clinical testing. For instance, a hypoxaemic patient planned a month-long holiday at high altitude but did not wish to use supplementary oxygen. By using the generator to vary Fio_2 to levels equivalent to altitudes up to 10 000 ft (3048 m) and measuring the resultant Pao_2, we found that by staying at an altitude no higher than 6000 ft she could be expected to maintain a Pao_2 of at least 7.3 kPa. She was able to take this holiday within the prescribed altitude limit without ill effect.

We believe mains-powered hypoxic gas generation to be a safe and potentially cost-effective alternative to using cylinders of nitrogen or gas mixtures for centres offering a pre-flight assessment service or undertaking research.

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