Notification of tuberculosis: how many cases are never reported?

Tower Hamlets is not the only London borough to report significant recent undernotification of tuberculosis (27%) (December 1992;47:1015–8). Hickman *et al*[1] reported 26% undernotification of non-HIV associated tuberculosis and 60% undernotification of HIV related tuberculosis for the Riverside DHA for the period April 1990 to March 1991. Riverside have tightened procedures to reduce or prevent undernotification and hopefully Tower Hamlets have done so too. Correction of undernotification from these districts, and possibly others, may be contributing to the recent rise in tuberculosis notifications in England and Wales, particularly since 1989. The use of pathology and microbiology services to supplement notification has been reported.[2]

An integrated and centralised tuberculosis service for a district would overcome many of these problems, but it is easier to implement in a DHA or Trust without multiple units. In the Blackburn, Hyndburn and Ribble Valley DHA, served by two acute hospitals of 400 and 550 beds, there is no undernotification because of our integrated system which has three key components:

1. There is agreement that all cases of adult tuberculosis of whatever type are treated by the two thoracic physicians, and children by the paediatricians, with agreed regimens.
2. All notifications for tuberculosis are made from the Chest Clinic.
3. Copies of all histology reports of definite or possible tuberculosis are sent to the thoracic physicians, as are details of all isolates of mycobacteria, before they are sent to the reference laboratory. Any patients not already known to the thoracic physicians are then seen automatically by them, and treated and notified if appropriate.

This system prevents non-notification and gives optimum management to patients with tuberculosis. It may be appropriate in the new purchaser/provider split for the purchasers to stipulate that the guidelines of the Joint Tuberculosis Committee,[3] which include notification, be a condition of any contract. This would also require thoracic physicians to notify all cases. The elements required for effective tuberculosis control are well described; it is their uniform and full application which is now required.

L P ORMEROD
Chest Clinic, Blackburn Royal Infirmary, Blackburn BB2 3LR

1 Hickman M, Ellam T, Hargreaves S, Gazzard B, Porter J. Managing tuberculosis and HIV infection. *BMJ* 1992;**304**:1567–8.
2 Bradley BL, Kerr KM, Leitch AG, Lamb D. Notification of tuberculosis: can the pathologist help? *BMJ* 1988;**297**:595.
3 Ormerod LP. Chemotherapy and management of tuberculosis in the United Kingdom: recommendations of the Joint Tuberculosis Committee of the British Thoracic Society. *Thorax* 1990;**45**:405–8.

AUTHORS' REPLY We thank Dr Ormerod for his interest in our study. It is significant that the incidence of undernotification in our study and in the study by Hickman *et al*[1] showed remarkably similar levels in two different areas. This level of undernotification is thus likely to be representative of the situation throughout the country and not just an aberrant result. Although Dr Ormerod says there is no undernotification in his area (and he may well be correct), he does not report that he has audited this as we have, and therefore he cannot be sure. It is also true to say that the situation we are reporting is now some three years old.

The system Dr Omerod has instituted in Blackburn would pick up bacteriologically or histologically proven cases of tuberculosis, but not cases of tuberculosis is treated purely on clinical grounds, nor does it address the problem of those patients found to have tuberculosis at a hospital or Coroner's postmortem examination.

While correction of undernotification may account for some of the apparent increased local incidence of tuberculosis, we do not think this is the whole explanation as the rise in the number of cases of tuberculosis in Tower Hamlets is greater than that which would be explained by more efficient notification.

N C BARNES
C D SHELDON
The London Chest Hospital, London E2 9JX

1 Hickman M, Ellam T, Hargreaves S, Gazzard B, Porter J, Managing tuberculosis and HIV infection. *BMJ* 1992;**304**:1567–8.

Diagnosis of *Pneumocystis carinii* pneumonia in HIV antibody positive patients by simple outpatient assessments

We share the enthusiasm of Dr DE Smith and colleagues for methods that may allow non-invasive investigation of pulmonary disease in individuals with HIV infection (December 1992;47:1005–9). They have proposed an algorithm for the diagnosis of *Pneumocystis carinii* pneumonia (PCP), with oxygen desaturation during exercise oximetry as a central component. This pragmatic approach to diagnosis is similar to one proposed previously in which measurement of carbon monoxide diffusion capacity (TLCO) or alveolar to arterial oxygen tension gradient ($P[A-a]O_2$) after exercise was used in place of exercise oximetry.[1]

A reduction in TLCO, an extremely sensitive though not specific indicator of acute PCP,[1 2] is not included in Dr Smith's algorithm and is the preferred method of non-invasive screening for PCP in our unit. In one study, TLCO below 70% predicted had a sensitivity of 92% and a specificity of 72% for acute PCP[3] compared with 74% and 73% respectively for oxygen desaturation as reported by Dr Smith and colleagues. Measurement of TLCO is readily available in most hospitals, inexpensive, quick to perform, and provides immediate results. In addition, measurement of TLCO in individuals with HIV infection does not require an unwell patient to exercise, a factor that, in our experience, limits the usefulness of exercise oximetry, and it is of note that only 38% of patients with PCP were able to complete a 10 minute exercise test in Dr Smith's study.

It is our practice to measure TLCO on all HIV seropositive individuals at the time of the first positive HIV antibody test, and to repeat this measurement during the course of their HIV illness.[4] This allows a documented fall in TLCO, in the presence of new respiratory symptoms, to be investigated appropriately. Although we consider abnormal TLCO to be superior to exercise induced oxygen desaturation in the respiratory assessment of seropositive individuals, the pulmonary manifestations of HIV infection are many and varied, with specific and increasingly effective treatments. Current non-invasive tests are therefore unlikely to obviate the need for definitive investigation, and we have a low threshold for offering bronchoscopy and lavage to our seropositive patients with suspected respiratory disease.

R B NIEMAN
R J COKER
D M MITCHELL
Departments of Chest and Genitourinary Medicine, St Mary's Hospital, London W2 1NY

1 Stover DE, Meduri GU. Pulmonary function tests. In: White DA, Stover DE, eds. Pulmonary effects of AIDS. *Clin Chest Med* 1988;**9**:473–9.
2 Millar AB, Mitchell DM. Non-invasive investigation of pulmonary disease in patients positive for the human immunodeficiency virus. *Thorax* 1990;**45**:57–61.
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4 Mitchell DM, Fleming J, Pinching AJ, Harris JRW, Veale D, Shaw RJ. Pulmonary function in HIV infection: a prospective 18 month study of serial lung function in 474 patients. *Am Rev Respir Dis* 1992;**146**:745–51.

AUTHORS' REPLY We agree that measurement of the diffusion coefficient for carbon monoxide (TLCO) could replace exercise oximetry in the diagnostic algorithm we have proposed, but this test was not readily available in our hospital. Although TLCO is sensitive it is non-specific with reduced levels seen in asymptomatic intravenous drug users and in HIV infected patients with other respiratory diseases.[1 2] A previous study in this journal shows that a reduction in TLCO failed to differentiate 13 patients with *Pneumocystis carinii* pneumonia (PCP) from 22 patients with other respiratory problems. The authors concluded that "the combination of lung clearance of 99m-technetium labelled and oxygen desaturation on exercise seemed to be the most useful screening test in selecting patients for further investigation for possible pneumocystis pneumonia".[3]

Although it is true that a number of patients cannot tolerate exercise testing for a 10 minute period, 80% of patients in this study who desaturated did so within the first three minutes of the test.

We believe that the use of this non-invasive test does reduce the need for more definitive investigations. While there are many reasons for wishing to confirm a diagnosis of PCP in a patient defined as highly likely to have this condition, the rationale behind the proposed algorithm was twofold: firstly, to predict which patients had such a high probability of having PCP that treatment could be initiated immediately and, secondly, to define that group of patients with respiratory symptoms with such a low probability of having PCP that they could be treated for presumed bacterial chest infections and observed without having to subject them to further unnecessary investigations.

B G GAZZARD
D E SMITH
Westminster Hospital, London SW1 2AP

1 Stover DE, White DA, Romano PA, Gellene RA, Robeson WA. Spectrum of pulmonary diseases associated with the acquired immunodeficiency syndrome. *Am J Med* 1985;**78**:429–37.

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Pathological assessment of mediastinal lymph nodes in lung cancer: implications for non-invasive mediastinal staging.

Dr K M Kerr and colleagues claimed that malignant mediastinal lymph nodes are not larger than benign nodes in patients with lung cancer (May 1992;47:337–41). This surprised us as it differs from other results in the literature.[1–3]

We assessed 158 mediastinal lymph nodes resected from 37 cases of primary lung cancer and found the size of the lymph node to be significantly related to the presence of malignant disease. The largest lymph nodes were malignant in 34/37 cases (92%), including nodes in the lung parenchyma. The malignancy rate was 14% (1/7) for nodes less than 5 mm in diameter, and 89% (8/9) for those larger than 20 mm ($p < 0{\cdot}001$). Lymph node diameter less than 5 mm or larger than 20 mm therefore has a high predictive value. The malignant rates for nodes larger than 5, 10, and 15 mm in diameter were 24% (37/151), 37% (30/82), and 53% (15/28), respectively. A high rate of false positive or false negative results was present when both thresholds of 15 and 20 mm or more were used in the diagnosis of nodes between 10 and 19 mm in diameter.

We have reason to believe that metastatic disease is the most important factor influencing the size of lymph nodes, and the larger the lymph node the more probable is the presence of malignant disease. One cannot predict, however, the nature of a lymph node only by its size obtained by imaging. We agree with Dr Kerr that computed tomography can be used to guide lymph node sampling before operation, and mediastinoscopy should be recommended to every patient with lung cancer, whether the mediastinal lymph nodes are enlarged or not.

SHAO-HUA REN
SHAO-JIE XU
Departments of Respiratory Medicine and Pathology, Lishui Prefectural Hospital, Zhejiang, China

1 Daly BDT, Faling LJ, Bite G, Gale, Bankff MS, Jung-Legg Y. Mediastinal lymph node evaluation by computed tomography in lung cancer. *J Thorac Cardiovasc Surg* 1987;94: 664–72.
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3 Goldstraw P. The practice of cardiothoracic surgeons in the perioperative staging of non-small cell lung cancer. *Thorax* 1992;47:1-2

AUTHORS' REPLY It is difficult to assess the study by Drs Ren and Xu without knowledge of the operative techniques and lymph node sampling procedures employed. Their results are based on fewer patients and fewer nodes than in our study. Their statistical analysis is based only on 16 lymph nodes, with only nine nodes greater than 20 mm in diameter of which eight were malignant in comparison to 43 nodes greater than 20 mm in our study of which 10 were malignant.

Drs Ren and Xu express surprise with our results as they differ from others in the literature, and quote certain papers. We would caution the reader to consider whether comparison of some results is justified. We again emphasise that much of the literature, and that most often quoted, considers measurements made on computed tomographic scans; our data and only very few others (and presumably those of Drs Ren and Xu) are derived from measurement of lymph node specimens in the pathology laboratory.

Although we could not find any significant relationship between lymph node size and the presence of malignancy, the major message of the two studies is the same, namely that computed tomographic scanning can only be used to guide lymph node sampling and not to indicate the presence of metastases.

KM KERR
NJ DOUGLAS
Department of Pathology, University of Aberdeen, Foresterhill, Aberdeen AB9 2ZD

Guidelines for care during bronchoscopy

These guidelines have been prepared by the Standards of Care Committee, and agreed by the Executive Committee of the British Thoracic Society, at their meeting on 13 January 1993. The need for such guidelines was suggested by colleagues in Edinburgh and London.

Oxygen saturation monitoring and supplemental oxygen therapy
Most patients requiring bronchoscopy have lung disease or abnormal lung function and several of the procedures performed during bronchoscopy cause a lowering of arterial oxygenation. For these reasons it is recommended that patients undergoing bronchoscopy are monitored by pulse oximetry during the procedure. This not only allows arterial oxygen saturation to be monitored but also allows detection of dangerous tachycardias, bradycardias, or cardiac irregularities. Supplemental oxygen should be given to maintain the arterial oxygen saturation at or above 90%. Patients who become hypoxic and require oxygen during the procedure should continue to receive oxygen during the recovery period when the lowest oxygen saturation commonly occurs.

Resuscitation equipment
Standard cardiac and respiratory arrest resuscitation equipment should be available in the bronchoscopy suite including equipment for endotracheal intubation and defibrillation. Staff require training and regular updating in resuscitation skills.

Intravenous access
All patients given intravenous sedation should have continuous intravenous access through an indwelling line throughout the procedure.

Staff
In addition to the bronchoscopist and assisting nurse we recommend there should be at least one other nurse present during the procedure, or a second doctor either present or readily available. Bronchoscopy nurses should be specifically trained in the handling of fibreoptic instruments.

Infection control and sterilisation of the bronchoscope
All bronchoscopists are advised to wear gloves, gown, mask, and close fitting eye protection *for all patients*. Mucocutaneous transmission of HIV has occurred from splashing of blood and secretions. It is not possible to identify infectious patients, and the only sensible policy is a universal one (Recommendations of the BTS Working Party on Infection Control Policy, BTS Newsletter No.3, Winter 1988 and later published in the *Lancet* 1989;ii:270–1). We would recommend that copies of this policy are available in all areas where fibreoptic bronchoscopy is undertaken.

Drugs
If patients receive drugs with potential respiratory depressive effects antidotes should be immediately available.

ECG
ECG monitoring is not necessary in every patient but would be indicated in patients with known cardiac problems including dysrhythmias.

B D W HARRISON
Chairman, Standards of Care Committee, British Thoracic Society, 1 St Andrews Place, London, NW1 4LB

NOTICES

British Sleep Society

The annual scientific meeting of the British Sleep Society will be held at Trinity College, Dublin, Ireland on 12–14 September 1993. For registration and abstract forms contact Dr C Idzikowski, tel (+44) 0226 380287, fax (+44)0846 603181. For additional/local information contact Dr W McNicholas, tel. (+353)1 2695033, fax (+353)1 2697949.

World Association of Sarcoidosis and Other Granulomatous Disorders

The next international conference on sarcoidosis will be held on 8–11 September 1993 in Los Angeles. It will include state of the art lectures, breakfast seminars, six clinicopathological conferences, consensus conferences, and poster exhibits. The Conference headquarters will be the Ritz-Carlton Huntington Hotel, Pasadena. For further details, write to Om Sharma MD, Suite 177, 626N Garfield, Alhambra, California 91802, USA.