Sensitivity, specificity, and predictive values are clinically relevant because they inform us how well a test will perform in certain clinical contexts. The preferred approach for ascertaining these parameters is therefore a per subject analysis in which each subject is labelled as either test positive or test negative and the test status is matched against the representative histological result of the subject’s biopsy. Study subjects should also be representative of those encountered in a typical clinical scenario.

To illustrate the potential flaw in a per lesion analysis, let us vary the number of biopsy samples taken arbitrarily from non-suspicious sites in both arms (WLB plus AFB arm versus WLB alone) of the quoted study without changing negative predictive values and the number of biopsy samples from suspicious sites (table 1). When the number of non-suspicious biopsy samples is doubled or tripled, the sensitivity, specificity and prevalence in each arm change accordingly. The sensitivity of WLB plus AFB relative to that of WLB alone also changes from 1.42 (95% CI 0.94 to 2.15) to 1.72 (95% CI 1.04 to 2.83) and 1.94 (95% CI 1.13 to 3.33), respectively. Likewise, the prevalence of preinvasive lesions detected by WLB plus AFB relative to that detected by WLB alone changes from 1.61 (95% CI 0.93 to 2.79) to 1.37 (95% CI 0.84 to 2.22) and 1.23 (95% CI 0.79 to 1.90), respectively. Thus, a per lesion approach could generate different sets of arbitrary values according to an arbitrary change in the number of biopsy samples taken from non-suspicious areas.

K-C Chang, C-C Leung, C-M Tam
TB and Chest Service, Centre for Health Protection, Department of Health, Hong Kong

Correspondence to: Dr K-C Chang, Yaumatei Chest Clinic, Yaumatei Jockey Club Polyclinic, 145 Battery Street, Kowloon, Hong Kong; ymtcchhk.gov.hk

Dr Häußinger was asked to comment but no reply had been received by the time this issue of Thorax went to press.

Funding: none.

Competing interests: none.

References
Another hospital. The reason for this high rate our A
&
health care. This suggestion is supported by
of this patient group to access appropriate
A
&
mate as patients may have attended other
(24.3%). This may represent an underesti-
&TB was missed in 10/41 A
&
6 months prior to diagnosis. The diagnosis of
A
&
following the remaining 16 attendances but
patients, table 1). Patients were not admitted
to the intensive care unit. TB was not
diagnosed on five of the 35 occasions (three
sensitive TB, two had isoniazid monoresistant
disease, and two had multidrug resistant TB.

Patients were admitted to hospital on 35 of the
51 attendances at the A&E, three directly
to the intensive care unit. TB was not
diagnosed on five of the 35 occasions (three
patients, table 1). Patients were not admitted
following the remaining 16 attendances but
in three patients a diagnosis of TB was made
at the time of A&E attendance. Five patients
were referred to (and one already had) an
appointment for the TB clinic. In seven
patients TB was not diagnosed (table 1).

At this centre almost one third of patients
with TB attended the A&E department in the
6 months prior to diagnosis. The diagnosis of
TB was missed in 10/41 A&E attendances
(24.3%). This may represent an underesti-
mate as patients may have attended other
A&E departments, or may have been seen in
our A&E department but treated for TB at
another hospital. The reason for this high rate
of A&E attendance may reflect the inability
of this patient group to access appropriate
health care. This suggestion is supported by
the finding that 69% of patients in whom TB
was subsequently found required admission
to hospital compared with an overall figure of
6.7% of all A&E attendances during this
period.

The diagnosis of TB was made as a direct
result of the A&E attendance in three
quarters of patients. Possible reasons for
missed diagnosis in the remainder include
failure to suspect TB, presenting symptoms
not typical of TB, other diagnoses being more
clinically apparent, and some patients may
not have had TB at the time of their A&E
presentation.

A&E departments serving vulnerable popu-
lations represent an opportunity for the early
diagnosis of TB. Staff working in this
environment should have a high index of
suspicion for this diagnosis, particularly in
patients at risk of infection, regardless of
their reason for A&E attendance.

Table 1  Patients in whom TB was not diagnosed as a result of their A&E attendance (12 attendances in 10 patients)

<table>
<thead>
<tr>
<th>Patient</th>
<th>Ethnic group</th>
<th>Age (years)</th>
<th>Risk factor for TB</th>
<th>Admitted to hospital</th>
<th>Site of TB</th>
<th>Microbiologically confirmed diagnosis</th>
<th>Time from A&amp;E attendance to diagnosis of TB (days)</th>
<th>Reason for presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>White</td>
<td>65</td>
<td>HIV+</td>
<td>Yes</td>
<td>Pleural</td>
<td>No</td>
<td>178</td>
<td>Dyspnoea, ankle oedema</td>
</tr>
<tr>
<td>1b</td>
<td>Black African</td>
<td>53</td>
<td>Dialysis</td>
<td>No</td>
<td>Pulmonary</td>
<td>No</td>
<td>126</td>
<td>Dyspnoea, bronchiectasis</td>
</tr>
<tr>
<td>2</td>
<td>Asian</td>
<td>3</td>
<td>No</td>
<td>No</td>
<td>Pulmonary</td>
<td>Smear positive, sensitive</td>
<td>134</td>
<td>Power failure at home</td>
</tr>
<tr>
<td>3</td>
<td>Asian</td>
<td>24</td>
<td>HIV+</td>
<td>No</td>
<td>Pulmonary</td>
<td>Smear positive, sensitive</td>
<td>166</td>
<td>Mouth ulcers</td>
</tr>
<tr>
<td>4a</td>
<td>Asian</td>
<td>59</td>
<td>No</td>
<td>No</td>
<td>Pulmonary</td>
<td>Smear positive, sensitive</td>
<td>100</td>
<td>Malaise, weight loss</td>
</tr>
<tr>
<td>4b</td>
<td>Asian</td>
<td>3</td>
<td>No</td>
<td>No</td>
<td>Pulmonary</td>
<td>Smear positive, sensitive</td>
<td>2</td>
<td>Haemoptysis</td>
</tr>
<tr>
<td>5</td>
<td>Asian</td>
<td>24</td>
<td>HIV+</td>
<td>No</td>
<td>Pulmonary</td>
<td>Smear positive, sensitive</td>
<td>100</td>
<td>Cough, diagnosed as LRTI</td>
</tr>
<tr>
<td>6</td>
<td>Black African</td>
<td>16</td>
<td>No</td>
<td>No</td>
<td>Pulmonary</td>
<td>Smear positive, MDR</td>
<td>184</td>
<td>Cough</td>
</tr>
<tr>
<td>7</td>
<td>Black African</td>
<td>30</td>
<td>No</td>
<td>No</td>
<td>Pulmonary</td>
<td>Smear negative, sensitive</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Black African</td>
<td>22</td>
<td>No</td>
<td>No</td>
<td>Pulmonary</td>
<td>Smear positive, sensitive</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Black African</td>
<td>40</td>
<td>No</td>
<td>No</td>
<td>Pulmonary and psoas abscess</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Asian</td>
<td>40</td>
<td>No</td>
<td>No</td>
<td>Pleural</td>
<td>Smear positive, sensitive</td>
<td>82</td>
<td></td>
</tr>
</tbody>
</table>

*HIV infection only diagnosed after admission to hospital. MRSA, methicillin resistant Staphylococcus aureus; HIV+, infected with human immunodeficiency virus; LRTI, lower respiratory tract infection; MDR, multidrug resistant.

H L Booth
Department of Thoracic Medicine, University College Hospital, London, UK

Correspondence to: Dr R F Miller, Department of Population Sciences and Primary Care, Royal Free and University College Medical School, University College London, London WC1E 6AU, UK; rmiller@gum.ucl.ac.uk

This study was carried out within the guidelines of the University College Hospitals research ethics committee.

Funding: none.

Competing interests: R F Miller is Editor of Sexually Transmitted Infections, part of the BMJ Publishing Group. The other authors declare no competing interests.

References

www.thoraxjnl.com
A&E department: a missed opportunity for diagnosis of TB?

A Smith, R F Miller, A Story and H L Booth

Thorax 2006 61: 364-365
doi: 10.1136/thx.2005.053637

Updated information and services can be found at:
http://thorax.bmj.com/content/61/4/364.2

These include:

References

This article cites 2 articles, 1 of which you can access for free at:
http://thorax.bmj.com/content/61/4/364.2#BIBL

Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/