increasing incidence between 1994 and 2011, likely due to advances in antenatal diagnosis. The retrospective nature of this study means that patients with CTM who were not followed up postnatally and not imaged postnatally would not be included. The incidence provided therefore represents the minimum incidence. The increasing incidence of CTMs has therapeutic implications as the complication rates may be lower than previously repoted.

TB: Diagnosis and Management

P24 DIAGNOSING TUBERCULOSIS USING EBUS–CYTOLOGY IS NOT ENOUGH

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Introduction Endobronchial ultrasound with transbronchial needle aspiration (EBUS-TBNA) provides a technique for safely sampling mediastinal and hilar lymph nodes. In the diagnosis of tuberculosis (TB) published data has shown excellent performance in identifying suggestive cytology but with disappointing culture-confirmation rates of <50%. We sought to investigate the proportion of TB cases referred to our tertiary referral service in whom culture and sensitivities were obtained.
Methods EBUS-TBNA was performed by 2 experienced consultants with on-site cytology review. Data was abstracted from our prospective database of all EBUS-TBNA cases between 01/2008 and 01/2013, our hospital electronic record and by contacting referring clinicians. A final diagnosis of active TB was made if treatment for active TB was commenced subsequent to EBUS-TBNA. Treated TB was defined as anyone who had received at least 2 months of anti-TB treatment prior to EBUS-TBNA.
Results A final diagnosis of active or treated TB was made in 142 of 2121 EBUS-TBNA cases (6.7%). Sampled nodes were: right para-tracheal 32%, left para-tracheal 9%, right hilar 16%, left hilar 8%, sub-carinal 35%. A median of 7 passes (range: 4–14) were performed per case. Granulomas with and without necrosis were identified in 91.5%, necrosis alone in 4.9% and lymphocytes alone in 3.5%. Of 118 (73%) diagnosed with active TB, culture-confirmation was obtained in 89 (75%) with a median time to positive liquid culture of 27 days (range: 4–42). Cytology from cases of treated TB and active TB with and without culture-confirmation are compared in the Table.
Discussion These data suggest that EBUS-TBNA can obtain higher proportions of culture-confirmed TB than has been previously reported. The similar cytology profile seen in active TB cases regardless of smear status, culture result or treatment history highlights the need for both adequate samples to be sent for culture and for improved TB diagnostics.

Abstract P24 Table 1. Comparison of AFB smear and cytology results in cases with treated TB and untreated active TB.

	AFB smear Ziehl-Neelsen	AFB smear auramine	Granulomas present	Necrosis present
Treated TB n = 24	19%	0%	92%	50%
Active TB (total) n = 118	37%	6%	92%	54%
Active TB (culture +ve) n = 89	43%	8%	90%	58%
Active TB (culture -ve) n = 29	19%	0%	97%	41%

P25 SENSITIVITY OF THE XPERT® MTB/RIF ASSAY IN BRONCHOALVEOLAR LAVAGE SAMPLES IN A NORTH WEST LONDON HOSPITAL: A USEFUL ADJUNCT TO CURRENT DIAGNOSTIC MODALITIES

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Introduction and Objectives The Gene Xpert® MTB/RIF test has been validated in sputum samples, facilitating rapid mycobacterium tuberculosis (MTB) diagnosis with improved sensitivity compared to smear alone. Its utility in bronchoalveolar lavage (BAL) samples, in a low prevalence setting, is unclear. Our objective was to examine the sensitivity of the Xpert® test in BAL samples and evaluate its use as a rapid diagnostic test in non-productive or smear negative patients undergoing bronchoscopy.
Methods We conducted a retrospective analysis of all culture-proven MTB samples acquired by BAL between 01.08.2009 and 01.06.2013, which were also sent for the Xpert® test, n = 38. We assessed the proportion of Xpert® MTB positive samples and compared these results with smear status and time to culture positivity.
Results 26/38 of the culture-proven cases sent for analysis were MTB Xpert® positive, giving a sensitivity (if culture is taken as the 'gold standard') of 68%. 17/38 samples were smear positive. Of the 21 smear negative/culture positive samples, 43% were MTB Xpert® positive. All smear positive cases were Xpert® positive. The Xpert® positive samples had a lower mean time to positivity: 11.2 days vs. 17.2 days for Xpert® negative samples. There was one case of rifampicin resistance correctly identified by Gene Xpert®, giving a lead time of 28 days vs. culture sensitivity. Incidentally 4 additional Xpert® positive samples were identified which were BAL culture negative, all in patients with clinically likely MTB, one of whom went on to culture MTB from sputum, and one of whom had necrotising granulomas on subsequent endobronchial ultrasound-guided transbronchial needle aspiration.
Conclusions To our knowledge this is the largest series reported of MTB culture positive BAL samples analysed using the Xpert® MTB/RIF assay. This data supports the use of Xpert® in the diagnosis of pulmonary MTB in BAL fluid, with a sensitivity of 68% when compared to MTB culture, adding additional value to simple smear and early detection of rifampicin resistance. In fact, the true sensitivity may well be higher given the cases detected exclusively by Xpert®.

P26 UTILITY OF THE CHEST X-RAY IN THE ERA OF IGRA TESTING FOR LATENT TB PRIOR TO ANTI-TNF THERAPY

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Introduction Anti-TNF therapies are associated with increased risk of reactivation of latent *Mycobacterium tuberculosis* infection (LTBI). Screening for LTBI is recommended prior to commencing anti-TNF therapy. BTS guidelines for screening incorporate epidemiologic risk, clinical examination, Mantoux testing and chest radiography (CXR). Other guidelines recommend use of interferon gamma release assays (IGRAs). We audited the use of IGRA and CXR as part of screening for LTBI in

Abstract P26 Table 1. Outcome of a negative T spot test.

Negative T spot test	n (199)	Chemoprophylaxis given	CXR changed management?	Patient outcome (immuno-suppressant)	LTBI reactivation
CXR normal	77.9%, (155)	0	No	**5.2% (8)** not commenced **7.1% (11)** patient declined **0.6% (1)** stopped (recurrent LRTIs) **0.6% (1)** stopped (new renal CA)	0
CXR abnormal (possible previous TB)	8%, (16)	0	No	**6.25% (1)** not commenced (disease activity too low) **6.25% (1)** stopped (leg ulcers) **6.25% (1)** stopped (wheeze) **6.25% (1)** stopped (leucopenia)	0
CXR abnormal (other)	6%, (12)	0	No	**8.3% (1)** patient declined	0
CXR previously normal	2.5%, (5)	0	No	**20% (1)** patient DNA f/u	0
CXR not done	5.5%, (11)	0	N/A	**9.1% (1)** patient declined **45.5% (5)** not commenced (disease activity too low)	0

patients who were being considered for immuno-suppresant therapy.

Methods All IGRAs requested from Glasgow Royal Infirmary (GRI) over a 21 month period were retrospectively assessed for the following: patient history, test indication and result, CXR report and patient outcome. GRI serves the most deprived population in the UK. A single laboratory provides TB bacteriology for the whole of Glasgow, and is the sole provider of IGRA testing for LTBI utilising the 'T-Spot.*TB*'.

Results Between August 2010-May 2012, 354 T-Spot.*TB* tests were performed. Planned immuno-suppressant therapy was the indication in 70% (n = 248); etanercept was the most commonly proposed drug (32%, n = 78), followed by adaluminab (29%, n = 72), anti-TNF not otherwise specified (11%, n = 28) and infliximab (6%, n = 15). Of those for whom immunosuppression was the indication, 80% (n = 199) of T-Spot.*TB* tests were negative, 17% (n = 41) indeterminate and 3% (n = 8) positive. A CXR was performed in all but 6% (n = 11). CXR findings and patient outcomes for patients with negative T-Spot.*TB* tests are summarised in table 1. All 16 abnormal CXRs were referred to a TB specialist for review and none had chemoprophylaxis commenced or any alterations in their management recommended.

Conclusions With increasing use of IGRAs, new guidance on screening for LTBI prior to anti-TNF therapy is required. In our cohort of 248 patients, the majority had a negative T-spot test reflecting that despite high levels of deprivation TB prevalence in Glasgow is low. CXR did not alter patient management, TB chemoprophylaxis was not given in any case and there were no cases of LTBI reactivation or *de novo* TB within the follow-up period (11–32 months). We propose that if IGRA is negative, CXR is not required as part of screening for LTBI prior to anti-TNF therapy.

P27 DOES A DIRECT RADIOLOGY REFERRAL SYSTEM TO A RAPID ACCESS TUBERCULOSIS CLINIC IMPROVE TB DIAGNOSIS?

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Abstract P27 Table 1. Number of days between radiology rapid access referral, clinic review and initiation of treatment in subgroups of active TB cases.

	Smear positive pulmonary TB (n= 47)	Culture positive pulmonary TB (n=33)	Extrapulmonary TB (n=31)
Number of days between radiology referral to rapid access TB clinic and clinic review			
Admitted	2	4	2
< 5 days	14	10	8
5-14 days	28	16	18
>14 days	3	3	3
Number of days between radiology referral to rapid access TB clinic and starting anti-TB treatment			
Admitted	2	4	2
< 5 days	13		5
5-14 days	23	8	5
14-28 days	5	9	4
>28 days	4	12	15

Introduction Delayed diagnosis of active pulmonary tuberculosis (TB) is common and significantly contributes to transmission especially in smear-positive pulmonary TB. Persons with symptoms suggestive of pulmonary TB often have chest radiographs prior to sputum examination and clinical assessment by a specialist. There is no NICE guidance on direct radiology referral pathways to a rapid access TB clinic. This question prompted us to examine all cases referred by the radiology department to our rapid access TB clinic at a centre of England tertiary referral centre.

Method We conducted a retrospective study of consecutive patients with features of active TB on chest radiograph referred by the radiologists to the rapid access TB clinic from 2008 to 2013. All chest radiographs were reviewed by TB consultants who arranged clinic appointments according to the degree of clinical suspicion of active disease.

Results 223 cases were referred during the period of November 2008 to May 2013. All patients were requested to attend the TB clinic, 4 patients did not attend clinic.

Of 223 cases, 111 patients (50%) were diagnosed with active TB. Mean age of all active cases was 38 years (range 16–83 years) with a male predominance (62, 56%). Of 111 cases, 61 (55%) were from Indian subcontinent, 22 (19%) from Africa, 25 (22%) were UK born and 3 cases were born in other countries.

80 cases had pulmonary TB (72%), of whom 47 (59%) were smear positive. 28 cases (25%) had extra pulmonary disease, two cases had disseminated miliary disease and one case was diagnosed clinically.

Table 1 indicates that 102 (92%) cases were seen in clinic within 14 days of rapid access radiology referral and 80 (72%) were started on anti-TB treatment within 28 days of radiology referral. 103 patients (93%) had fully sensitive TB with 8 resistant cases.

Conclusion Direct radiology referral of cases with chest radiographs suggestive of pulmonary TB to a rapid access TB clinic can hasten diagnosis of active TB and should be included in NICE guidance.

P28 NOVEL BAYESIAN NETWORK ANALYSIS ALLOWS SYSTEMATIC COMPARISON OF THE SAFETY AND EFFICACY OF DIFFERENT LATENT TB INFECTION TREATMENTS

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