made in exercise performance between COPD and Healthy controls (HC), during aerobic training and more importantly limited data exists on the rates of detraining between the groups.

Methods This study measures sub-maximal and maximal performance in response to an aerobic training programme and to a period of detraining.

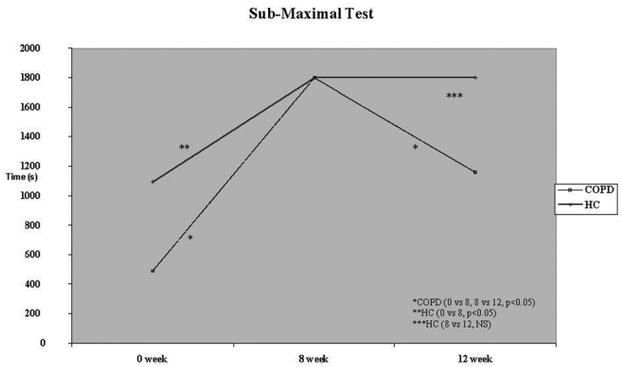
COPD and HC undertook 8 weeks of supervised cycling exercise training three times a week. There consequently followed a 4 week period of detraining, and resumption of pre cycling habitual activity (not engaging in regular exercise). A symptom limited incremental cycle (ramp protocol) and constant work rate (sub-maximal/endurance) cardiopulmonary exercise tests (CPET) were performed at baseline, after 4 and 8 weeks of training and after detraining. Cycling training intensity and CPET endurance work were equivalent to 65% of the Work (in Watts (W)) at VO2 Peak during the baseline CPET ramp test. Training intensity was re-set if there was any improvement during the 4-week CPET ramp test.

Results 10 COPD patients (MRC 3, 2 males, age 74 years, FEV_1 63.5% predicted) and 7 HC (MRC 1, 4 males, age 71 years, FEV_1 111% predicted) completed the study. COPD group had lower starting training workloads (59.5 vs 121 Watts, $p<0.05$) compared to HC.

HC showed a significant increase in Peak VO2 uptake in the ramp but COPD patients only showed an increasing trend. There were however increases in the time achieved during sub-maximal testing in both groups during the 8 week training period. However during detraining, there was relative preservation in the HC but a significant reduction in endurance time in the COPD group.

(All values median, unless stated)

Conclusion/discussion Exercising training at moderate intensities showed no changes in maximal performance in COPD groups, compared to HC. However gains in sub-maximal performance were seen in both groups. Training induced gains in sub-maximal performance may be better preserved in HC during detraining, when compared to the COPD groups.



Abstract S57 Figure 1 Sub-Maximal Test

Latent TB and biomarkers

S58 PROSPECTIVE HEALTH ECONOMIC EVALUATION OF DIFFERENT RECOMMENDED STRATEGIES FOR TB TESTING IN A CONTEMPORARY HIV POSITIVE COHORT

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10.1136/thoraxjnl-2014-206260.64

Introduction The risk of active tuberculosis (TB) disease is estimated to be increased 40-fold in people with HIV (PHIV). Effective antiretroviral treatment (ART) may reduce this significantly. UK national guidance recommends using blood interferon gamma release assay (IGRA) +/- tuberculin skin testing (TST) for latent TB (LTBI) diagnosis but there are little supporting health economic data. We sought to evaluate the cost-effectiveness of different testing strategies using data from a prospective contemporary cohort.

Methods Subjects receiving ambulatory HIV care were recruited by stratified selection within our HIV centre. TST, IGRA (TSpot.TB), frontal chest radiograph (CXR) and single induced sputum for mycobacterial culture were performed. The yield was used to model a screening programme that utilised current UK HIV demographics (Public Health England). Costs were based on the BNF, local costs or published literature (TST £16, IGRA £60, CXR £50, induced sputum £42, treatment for latent and active TB £786 and £7619 respectively). Uptake and LTBI treatment efficacy were both estimated at 65%. We assumed a lifetime reactivation rate with TST+/IGRA+ of 10% and TST+/IGRA- of 2%; and that all those with evidence of LTBI would be given treatment.

Results Over 13 months, 211 people were recruited. 26% were female and 26% black African. LTBI rates amongst subjects from sub-Saharan Africa, medium and low TB incidence countries were 8/55 (15%), 2/31 (6%) and 4/125 (3%) respectively. One patient had a persistently indeterminate IGRA. Subclinical TB disease was diagnosed in two (1%) subjects.

Using these data to model TB testing nationally, the British HIV Association (BHIVA) testing algorithm was the most cost-effective with an incremental cost effectiveness ratio (ICER) of £21,475. The NICE algorithm both cost more and prevented fewer cases of active TB (Table 1). More comprehensive strategies were associated with increasing cost.

Conclusion Testing only those at highest risk of progression to active TB disease in an HIV population with high ART use was cost-effective, whilst most strategies testing all comers and for active TB cost considerably more than the £20–30,000/QALY gained threshold used in the UK.

S59 EVALUATING THE CLINICAL UTILITY OF XPERT® MTB/RIF FOR THE DIAGNOSIS AND MANAGEMENT OF TUBERCULOSIS IN A HIGH BURDEN REGION OF THE UK

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10.1136/thoraxjnl-2014-206260.65

Introduction The importance of Xpert® MTB/RIF (GeneXpert) for the rapid confirmation of tuberculosis (TB) and indicator for drug resistance is now well established for high burden, resource poor countries, with a high prevalence of smear positive pulmonary disease. The phenotype of disease differs significantly in high income countries like the UK with fewer smear positive cases and more extra-pulmonary disease. The role of GX in this setting is unclear.

Objectives To evaluate how GeneXpert was being used in local practice and determine factors that influenced test performance.

Methods We performed a retrospective analysis of all GeneXpert tested patient samples between October 2011 and April 2014. Out of area sample requests and unprocessed specimens were excluded. Positive GeneXpert results were categorised as very low, low, medium and high. Sensitivity and specificity analyses excluded clinically diagnosed TB without supporting evidence and stratified samples by type and smear status. Statistical analyses were computed on SPSS (v.16).

Abstract S58 Table 1 Cost-effectiveness comparisons between different testing strategies and no testing for TB in people living with HIV assuming a 10% progression rate to active TB in people with a positive IGRA

Strategy	Total cost (per 10,000 PHIV in care)	Cases active TB prevented (per 10,000 PHIV in care)	Incremental cost/case averted (£) compared to no testing	Incremental cost/QALY gained (£) compared to no testing	Incremental cost/QALY gained compared to previous non-dominated algorithm
No testing	£473,137	-	-	-	-
BHIVA	£538,354	5.3	£12,205	£21,475	£21,475
NICE	£616,246	3.7	£38,720	£74,790	Dominated (simple)
TST in all	£725,781	16.3	£15,511	£29,690	Dominated (extended)
IGRA in all	£892,330	14.2	£29,571	£52,033	Dominated (simple)
TST and IGRA in all	£1,100,608	16.7	£37,525	£72,943	Dominated (extended)
TST, IGRA and CXR in all	£1,486,154	27.5	£36,902	£73,558	Dominated (extended)
TST, IGRA, CXR and induced sputum in all	£1,920,744	36.6	£39,587	£79,929	Dominated (extended)

Results 217 assays from 193 patients were included for analysis. 101 patients (52%) were treated for TB (74 pulmonary). A clinical diagnosis of TB was made in In 14 patients. 145 samples (68%) were from the respiratory tract. The remainder were categorised as: fluid (44); tissue (15) and pus (9). Overall 68 (32%) samples were AFB smear positive and 111 (52%) samples were mycobacteria culture positive (80 *M.tuberculosis*). There were 78 (36%) GeneXpert positive results. The assay had superior performance for diagnosis of TB and predicting *M.tuberculosis* culture positive outcomes in AFB smear positive compared with smear negative samples (table). For smear negative, culture positive samples, false negative GeneXpert results were associated with a significantly longer time to culture (mean difference 10.4 days, p = 0.006). For smear negative GeneXpert positive samples, the mean time to positive diagnosis was reduced by 13.3 days but this did not alter the time to starting treatment.

Conclusion In our practice, GeneXpert has high specificity to reliably inform a positive TB diagnosis but lacks sensitivity in smear negative disease to reliably exclude the diagnosis. The decision to start treatment continues to be governed by clinical suspicion in this group.

Abstract S59 Table 1

	Sensitivity% (95% CI)	Specificity% (95% CI)	PPV% (95% CI)	NPV% (95% CI)
GeneXpert performance for TB diagnosis				
Overall	81.61 (71.86–89.10)	98.90 (94.01–99.82)	98.61 (92.47–99.77)	84.91 (76.65–91.11)
Smear Positive	100.00 (93.33–100.00)	100.00 (75.12–100.00)	100.00 (93.33–100.00)	100.00 (75.12–100.00)
Smear Negative	53.12 (34.75–70.89)	98.70 (92.95–99.78)	94.44 (72.63–99.07)	83.52 (74.27–90.46)
GeneXpert performance for culture confirmation				
Overall	90.00 (81.24–95.57)	96.97 (92.42–99.15)	94.74 (87.06–98.52)	94.12 (88.73–97.42)
AFB Positive	100.00 (93.33–100.00)	100.00 (78.03–100.00)	100.00 (93.33–100.00)	100.00 (78.03–100.00)
AFB Negative	69.23 (48.21–85.63)	96.49 (91.25–99.01)	81.82 (59.70–94.70)	93.22 (87.07–97.02)

S60 C – REACTIVE PROTEIN REFLECTS MYCOBACTERIAL LOAD IN ACTIVE TUBERCULOSIS BUT CANNOT BE USED AS A RULE-OUT DIAGNOSTIC TEST

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10.1136/thoraxjnl-2014-206260.66

Background Measurement of the C-reactive protein (CRP) is widely available and is often part of the diagnostic evaluation of patients with suspected Tuberculosis (TB) yet there are little published data regarding its use in this context. We sought to determine CRP's relationship with TB disease and whether normal CRP levels were seen in those without active TB.

Method We undertook a retrospective review of electronic records from the London TB service between 2004–2013, obtained blood results from hospital computer systems and reviewed case-notes where there was uncertainty regarding sites of disease or availability of culture results.

Results Using data from 533 subjects with active TB, 23% of all cases and 16.5% of culture-confirmed cases had a CRP of ≤5 mg/L. Individuals with HIV co-infection had significantly higher median CRP (see Table).

There was a significantly higher CRP in smear-positive pulmonary disease and those with a positive culture. Sites of disease that could be expected to have a high mycobacterial load (e.g. pulmonary disease and disseminated disease) had a significantly higher CRP than those such as skin, lymph node or CNS disease, where the mycobacterial load is typically low in HIV negative subjects. HIV status, site of disease and culture status remained significantly associated with CRP in a multivariable linear regression analysis.

Conclusions These data suggest that CRP cannot be used as a rule-out test for active TB but does reflect mycobacterial load. This has clinical implications given that individuals with a high mycobacterial load may be more infectious (and hence require enhanced contact tracing), be at greater risk of developing drug resistance if non-adherent, and may require prolonged duration of treatment.