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P8 EPIDEMIOLOGY OF TUBERCULOSIS IN NORFOLK

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The incidence of tuberculosis in England has shown a year-on-year decline over the past four years. The main burden of disease has been concentrated in larger urban areas. The East of England is an area of low prevalence and in 2015, had the lowest rate of TB cases notified per 1 00 000 people (6.2). London, the West Midlands and the North-West had the highest rates in the country. The population demographic of Norfolk shows a variation when compared to the rest of England. In 2011, 21.4% of Norfolk's population was aged 65 or over compared with 16.5% in England. Similarly, 94.3% of people in Norfolk were identified as white compared to 87.5% in England.¹ We hypothesised that these differences would be reflected in the demographics of patients treated for Tuberculosis at the Norfolk and Norwich University Hospital (NNUH). We analysed data over a 3 year period between 2014 and 2016. While most patients were diagnosed and treated locally, patients had been diagnosed elsewhere and moved to the local area after commencing treatment. One patient moved abroad following diagnosis. Our incidence of Tuberculosis was significantly lower than the national rate. Forty-six patients were diagnosed with TB in the 3 year period. This equates to 2.47 new cases per 1 00 000 people compared to 10.5 per 1 00 000 nationally in 2015. Four cases were Isoniazid resistant (8.7% compared to 6.9% nationally). There was one case of multi drug-resistant TB. Fourteen cases did not have microbiological cultures. In our patient group, 67.3% were born outside the UK compared to 72.5% nationally. Twenty-one of the twenty-three patients aged less than 40 were born abroad. However, all of the seven patients 65 and above were UK-born. Additionally, of the twenty patients with extra-pulmonary disease (with or without pulmonary involvement), only two were born within the UK. These trends are similar to those seen nationally. Furthermore, the incidence of TB locally peaked in the 25–29 age group reflecting national figures.² Our analysis shows that contrary to our hypothesis, there is no significant difference in the TB population in a low-incidence area compared to high-incidence areas.

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P9 IMPACT OF THE 2016 TUBERCULOSIS GUIDELINE ON A SINGLE PAEDIATRIC TB CENTRE IN THE UK

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Background NICE released an updated Tuberculosis (TB) guideline in January 2016. Compared with the 2011 guideline

this reduced the Mantoux threshold from 15 mm to 5 mm irrespective of BCG status, thus increasing the number of patients requiring assessment for latent TB infection (LTBI) and TB disease. In 2015 we predicted a paediatric workload increase of 37%.¹

Objectives To determine the impact of the 2016 guideline on the number of children diagnosed with LTBI and TB disease.

Methods A retrospective analysis of children aged <16 years attending our TB service January-December 2016. All children were assessed by a TB nurse followed by a consultant if there were concerns about LTBI or TB disease. Management followed 2016 NICE guidelines. Treatment given was then compared with that recommended in the 2011 guidelines.

Results 411 children were seen by the TB nurse. Of these, 294/411 fulfilled the 2016 criteria for screening (new entrants and pulmonary contacts). 50/294 (17%) had a positive Mantoux. Based on Mantoux Results 40/294 (14%) were diagnosed with LTBI. 9/294 (3%) had TB disease. Following the 2011 guideline 22/294 (7%) had a positive Mantoux with 16/294 (5%) treated for LTBI and 6/294 (2%) for TB disease. Of those with positive Mantoux tests, IGRA tests were positive in 20/40 (50%) and 14/22 (64%) of the 2011 and 2016 guideline groups respectively (Table 1). 43 additional children (household contacts of non-pulmonary disease) would have been screened by the 2011 but not the 2016 guideline. These children were seen in our clinic. None had TB disease but 8 had Mantoux ≥5 mm (1 IGRA positive).

Conclusion Compared with the 2011 version, the NICE 2016 TB guideline more than doubles the number of children receiving chemoprophylaxis for LTBI but identifies 33% more children with TB disease. Not screening household contacts of non-pulmonary cases Results in a 14.6% reduction in referrals but also misses a significant number of children with a positive mantoux.

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Abstract P9 Table 1 Number of patients referred for contact tracing or new entrant screening by mantoux test results and TB disease status

Guideline	Mantoux	LTBI	TB disease	No LTBI or TB disease	Total
2011	Positive	16	6	0	22
	Negative	33	4	235	272
2016	Positive	40	9	1	50
	Negative	9	1	234	244

P10 THE ROLE OF FDG-PET CT IMAGING IN OCULAR TUBERCULOSIS

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Ocular tuberculosis (OTB) remains a presumptive clinical diagnosis, based on indicative ophthalmic features and prior exposure to TB. Ocular sampling is unhelpful, so the diagnosis is supported by evidence of subclinical TB remote to the eye

and response to anti-tuberculous therapy (ATT). We test the hypothesis that FDG-PET CT imaging might be useful in OTB patients, most of whom describe visual symptoms as the presenting feature of TB, without respiratory or constitutional symptoms. Patients were identified by analysing referrals between a tertiary referral centre for ophthalmology and its regional TB service, over a five year period, with data collection continuing prospectively. Additional cases were identified from our region's TB Register, where the eye(s) had been recorded as an extra-pulmonary site of TB. As part of TB screening, all patients had a chest X-ray (CXR) and interferon gamma release assay (with or without Tuberculin Skin Test). The TB medical team then assessed whether thoracic CT was indicated, to identify lymphadenopathy for endobronchial sampling, or an FDG-PET scan to look for avid thoracic or extra-thoracic lymph nodes. In 40 patients, CXRs were essentially normal in two thirds and reported as abnormal, but not indicative of pulmonary TB, in one third. Thoracic CT in 15 patients demonstrated abnormal features in 8, half of whom went on to have endobronchial sampling. FDG-PET scans in 18 patients demonstrated avid nodes in 12: thoracic in 8 and extra-thoracic in 7 (cervical, axillary, pancreatic and inguinal). Overall, FDG-PET directed additional endobronchial sampling in 4 patients without enlarged thoracic nodes on conventional CT and ultrasound-guided biopsy of extra-thoracic sites in 7 patients, 2 of which subsequently demonstrated TB in culture. We describe a highly phenotyped cohort of OTB patients. There are currently no published series utilising FDG-PET CT scanning as a routine part of the investigation strategy in this condition. Whilst OTB treatment remains empirical in many cases, our preliminary Results indicate that FDG-PET is a useful imaging modality for some patients and has a potential additional yield in subclinical TB over thoracic CT imaging, allowing activity to be detected in normal-sized thoracic nodes and also extra-thoracic sites.

P11 HOW EXPERT IS THE XPRT MTB/RIF FOR DRUG SUSCEPTIBLE TUBERCULOSIS?

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Background The Xpert MTB/RIF is a point of care, fully-automated diagnostic molecular test that simultaneously detects tuberculosis and rifampicin drug resistance which is used as a surrogate for multidrug resistant tuberculosis (MDR-TB). However, not much is known about susceptibility to other anti-TB drugs in patients having Rifampicin susceptibility on the Xpert. The Indian National Tuberculosis Programme recommends isoniazid and rifampicin in the continuation phase as part of category I first line therapy. However, in cases with isoniazid monoresistance, which may be missed by the Xpert MTB/Rif, this would lead to rifampicin monotherapy and possible amplification of resistance. Hence it is essential to know the background rates for isoniazid resistance, before deciding on the drugs to be used in the continuation phase.

Aim To analyse drug susceptibility patterns (DST) in patients with rifampicin susceptibility.

Methods This study was carried out at the microbiology laboratory of PD Hinduja National Hospital, Mumbai, India. All Mycobacterium tuberculosis (MTB) isolates who underwent 14

drug susceptibility testing (DST) between December 2015–November 2016 were analysed retrospectively. All drugs were tested at WHO defined critical concentrations (CC).

Results Of a total of 2750 samples undergoing 14 drug DST, 1383 (50.29%) were rifampicin susceptible. Among the rifampicin susceptible isolates, the most common resistance was observed to Isoniazid (INH) in 182 (13.1%) samples of which 127 (9.18%) were isoniazid monoresistant. Ofloxacin resistance was seen in 55 (3.97%) samples; of these 33 (2.38%) were also moxifloxacin resistant at CC of 0.5 mcg/ml. Poly-drug resistance was seen in 71 (5.1%) isolates; of these the most common cross resistance involved INH and Ethionamide seen in 55 (3.97%) isolates. Concomitant INH and fluoroquinolone resistance was seen in 11 (0.8%) isolates. Concomitant resistance to INH, Pyrazinamide and Ethambutol was seen in 2 isolates.

Conclusion Complete DST, when available, can identify poly-drug resistance and help design a more effective regimen. Increased access to Line probe assays would identify isoniazid resistance even in patients showing rifampicin susceptibility on the Xpert MTB/Rif. With high rates of INH resistance observed (13.1%) in our setting, it may be prudent to include Ethambutol in the continuation phase to avoid rifampicin monotherapy.

Asthma: airways and antibodies

P12 SUPPRESSION OF FRACTIONAL EXHALED NITRIC OXIDE WITH DIRECTLY OBSERVED INHALED CORTICOSTEROID THERAPY: IS IT A USEFUL TEST IN ROUTINE CLINICAL PRACTICE?

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Introduction Measurement of fractional exhaled nitric oxide (FeNO) is an easy to perform non-invasive test and surrogate marker of eosinophilic airway inflammation. It has been suggested that suppression of FeNO following a week of directly observed inhaled corticosteroid (ICS) therapy provides objective evidence of non-adherence. Though guidelines for the prescription of novel steroid sparing agents recommend this strategy as part of evaluation, it has not been rigorously evaluated in routine clinical practice. We report the outcomes of using this strategy as part of standard clinical care in our centre.

Methods Consecutive consenting patients with FeNO levels greater than 45 ppb on two occasions who were adherent to prescribed therapy on the basis of clinical history, and meeting criteria for initiation of biological therapy undertook directly observed ICS therapy – supervised (DOTS) over 8 days. In this, patients existing ICS/LABA combination inhalers were changed to once daily fluticasone/vilanterol (Relvar 184/22). Inhaler technique was taught by a specialist nurse and inhaled therapy taken under direct supervision (in person or remotely via Skype). FeNO, spirometry, eosinophil count and the Asthma Control Questionnaire –7 (ACQ-7) were recorded on the first and last days. FeNO was also recorded on day 4. Data are presented as mean $\pm$ SD.

Results Sixteen subjects (7 males, age 43 ± 18 years) completed assessments (1 did not have day 4 FeNO value). All but one