history of TB and one was HIV positive. All patients presented with a breast lump, 58% in the upper outer quadrant. 25 patients initially presented to their general practitioner (GP), of which 24 were referred to breast clinic and 1 directly to TB clinic. Eight cases presented to hospital. In two cases there was insufficient data. The breast lump was associated with skin changes in six cases, inverted nipple in three, discharge in one, and 49% had ipsilateral axillary lymphadenopathy. Erythrocyte sedimentation rate and C-reactive protein was raised in 84% and 53% cases respectively. Thirty percent of patients had abnormal mammography, 68% abnormal ultrasound breast findings. 25 out of 35 cases had biopsies/fine needle aspirations (FNA), all of these were sent for culture; 17 were culture positive with 3 drug resistant cases. Nine cases had necrotising granulomatous changes on histology, of which 1 was positive for Ziehl-Neelson (ZN) stain, 9 cases had non-necrotising granulomas, of which 2 were ZN positive, and 7 cases had inflammatory changes only (none were ZN positive). All patients received at least three anti-tuberculous drugs. Median treatment duration was six months, leading to complete resolution of breast TB.

**Conclusion** This case series highlights the difficultly in diagnosing breast TB. Raising awareness of the classical presentation of breast TB amongst GPs and breast services may improve diagnosis and treatment of this rare disease.

## P258 MULTI-DRUG RESISTANT TUBERCULOSIS MONITORING GUIDANCE: ARE WE FOLLOWING THE NATIONAL GUIDELINES?

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**Introduction** Multi-Drug Resistant Tuberculosis (MDR-TB) is a form of TB that is resistant to the two most powerful first-line anti-tuberculosis antibiotics available, rifampicin and isoniazid. Between 2004 and 2011, the proportion of cases with MDR-TB increased from 1.2% to 1.6%, of which it has remained stable over the past 3 years. Due to the complexity of treatment regimens used for MDR-TB, national monitoring guidelines have been developed to aid monitoring for adverse effects during treatment.[1] A previous study identified that prior to the development of these monitoring guidelines the incidence of adverse effects associated with MDR TB medicines was high.[2]

**Objective** To establish whether national guidelines for the monitoring of MDR-TB medicines at a tertiary centre are being adhered to.

**Results** 9 patients with MDR-TB were included in the audit. The findings (see Table 1) show that baseline monitoring was not undertaken in the majority of patients. Whilst on-going monitoring was predominantly undertaken in over 80% of occasions, the audit standard was not met.

**Conclusions** Despite the presence of national guidance to support the monitoring of complex regimens for MDR-TB, this audit shows that monitoring of these in a tertiary centre is below the audit standard. Whilst adherence to on-going monitoring parameters were usually undertaken in over 80% of instances, it is of particular concern that baseline monitoring was significantly below the audit standard. Pharmacists are ideally placed to support the safe and effective monitoring of these often toxic medicines. The development of a pharmacist to support the TB clinics and specifically to support the monitoring of patients with MDR-TB could significantly improve this adherence and reduce the risk of adverse effects as a result of sub-optimal monitoring.

**Abstract P258 Table 1**

| Drug | Number of patients taking drug [n = 9] | Baseline monitoring carried out (%) | On-going monitoring carried out (%) | Drug specific monitoring carried out (%) |
|---|---|---|---|---|
| **Amikacin** | 6 | 58% | 85% | 91% |
| **Capreomycin** | 1 | 81% | 85% | **100%** |
| **Clofazamine** | 3 | 71% | 90% | 55% |
| **Co-amoxiclav** | 3 | 38% | 77% | **N/A*** |
| **Cycloserine** | 9 | 61% | 82% | 91% |
| **Ethambutol** | 4 | 64% | 84% | 52% |
| **Linezolid** | 4 | 66% | 82% | 48% |
| **Moxifloxacin** | 6 | 72% | 84% | 17% |
| **PAS** | 4 | 53% | 82% | 94% |
| **Prothionamide** | 8 | 60% | 83% | 53% |
| **Pyrazinamide** | 3 | 46% | 71% | **N/A*** |
| **Rifampicin** | 1 | 69% | 72% | **N/A*** |

*Drugs did not require specific monitoring, according to drug monographs.

### REFERENCES

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## P259 CENTRAL NERVOUS SYSTEM TUBERCULOSIS: DIAGNOSTIC DIFFICULTIES

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**Introduction** Central nervous system (CNS) tuberculosis (TB) is difficult to diagnose. There is often a delay in diagnosis and a lack of robust diagnostic criteria.

**Methods** We conducted a retrospective study of all patients treated at our institution for CNS TB from 2009–2014 excluding those with HIV co-infection. Data including demographics, symptoms, microbiological and radiological features was recorded.

**Results** 55 cases of CNS TB were identified. The mean age was 36 (4 months – 81 years). Most patients were from the Indian Subcontinent (70.9%), 10.8% were from South East Asia, 1.8% from Africa, 10.9% were UK born and 5.5% were unknown. Symptoms and signs at presentation included headache (67.3%), fever (49%), confusion (34.5%), focal neurological deficit (27.3%), weight loss (27.3%), night sweats (23.6%), altered GCS (23.6%) and seizures (20%). 29% of patients also had pulmonary TB, 11% had TB lymphadenopathy and 11% had miliary TB.

89% of patients had a CT head, of which 42.8% were reported normal, 28.5% reported tuberculomas, 14.2% hydrocephalus and 20.4% exhibited other abnormalities. 87% had an MRI head, of which 10% were normal, 39.6% reported tuberculomas, 33% meningeal enhancement, 6% hydrocephalus, and 23% demonstrated other abnormalities.

Lumbar puncture (LP) was performed in 73% of cases, and CSF protein was elevated in 73% of these. The WCC was elevated in 60% with 63% having a predominant lymphocytosis.

CSF Glucose was documented in 80% of cases and levels were low (<2.5 mmol/L) in 47%. TB PCR was performed on 15 samples (38%), 2 (13%) were positive. Five CSF samples were not sent for AFB or culture. No samples were smear positive, 26% of CSF samples were culture positive; one was Isoniazid resistant.

7 patients died (one death attributed to TB chemotherapy), 3 became fully dependent for all activities of daily living and 6 patients had significant cognitive or neurological deficit.

**Conclusions** CNS TB causes significant morbidity and mortality. CSF examination should always be performed if feasible. Imaging by MRI should be considered in all patients with suspected TB meningitis in view of the much higher diagnostic yield compared to CT.

## P260 POTENTIAL IMPACT OF THE 2015 NICE CONSULTATION GUIDELINE FOR TUBERCULOSIS ON THE NUMBER OF CHILDREN ASSESSED AND TREATED FOR TB INFECTION AND DISEASE IN THE UK

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**Background** NICE Tuberculosis (TB) guideline 2015 recommends all children, regardless of BCG status, with Mantoux ≥5 mm induration receive treatment for latent TB once active TB has been excluded. The 2011 version defines a positive Mantoux as ≥6 mm (no prior BCG) and ≥15 mm (prior BCG). NICE 2011 recommends screening of household contacts of all cases of TB compared with the 2015 guideline which recommends screening of contacts of pulmonary TB only.

**Objectives** To establish the impact of the change in NICE recommendations on the number of children assessed and treated for latent TB infection (LTBI) or TB disease in our department.

**Methods** We performed a retrospective analysis of all children.

**Results** 445 patients were referred, 75 with symptoms, 138 new entrants, 63 non-pulmonary contacts and 169 pulmonary contacts.

Of those with symptoms, 5 had positive Mantoux (NICE 2011) compared with 18 (NICE 2015). In this group 0/75 were treated for LTBI and 7/75 for TB disease.

Results of patients referred for contact tracing/new entrant screening are shown in Table 1. Two contacts with LTBI and 1 with TB disease (all IGRA positive) would have been missed by the 2011 guideline but identified in 2015.

**Abstract P260 Table 1** Number of patients referred for contact tracing or new entrant screening by Mantoux test result and TB disease status

| Guideline | Mantoux | LTBI | TB disease | No LTBI or TB disease | Total |
|---|---|---|---|---|---|
| 2011 | Positive | 9 | 3 | 2 | 14 |
| | Negative | 3 | 1 | 352 | 356 |
| 2015* | Positive | 11 | 4 | 32 | 47 |
| | Negative | 1 | 0 | 259 | 260 |

*Non-pulmonary contacts not included in 2015 data.

Following NICE 2015 63 non-pulmonary contacts would not have been seen. None of these had LTBI or TB disease. Of the remaining 307 contacts/new entrants 47(15%) had a positive Mantoux of whom 11(4%) had LTBI and 4(1%) TB disease.

**Conclusion** 37% more children will be investigated and treated for TB infection/disease under the new NICE TB guideline. In a 12 month period in our clinic this represents 33 additional children with 1 extra case of TB disease and 2 cases of LTBI identified.

## P261 CHEMOPROPHYLAXIS FOR LTBI FOLLOWING MASS SCREENING IN THE WORKPLACE: UNEXPECTED OUTCOMES IN THE OVER 35S

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**Introduction** In 2014, over 500 workers in a local factory were screened for TB. 3 cases of active pulmonary TB were identified and seen in the next weekly TB Clinic. 128 workers were identified for further assessment by the local TB Service, of whom 100 were found to be IGRA-reactive. This was declared a major incident and a TB Action Group was set up to facilitate additional out-of-hours TB clinics.

**Methods** The local CCG commissioned the additional TB clinics at standard respiratory out-patient tariff: approximately 35 workers were to be assessed by 5 TB clinicians in 2 weekly sessions (18:00–21:00 – 20 min slots) for the first 2 weeks, so that by week 3, all workers would be assessed. As in the weekly TB Clinic, the TB Pharmacy Team would be present to dispense TB medication with drug information leaflets and contact details. Chemoprophylaxis for LTBI was offered to all workers with reactive IGRA and no evidence of active TB independent of their age despite NICE guidance.

**Results** Of the 100 workers with reactive IGRA: 18 did not attend; 82 were offered chemoprophylaxis of whom 15 declined treatment; 67 started chemoprophylaxis of whom only 33 completed 3 months treatment with rifampicin and isoniazid. The rate of completion of chemoprophylaxis in the eligible group was 9/35 (25.7%) compared to 24/47 (51.1%) in the over 35 year olds. There was a transient rise in liver enzymes in 1 worker aged over 35 but otherwise there were no other significant side-effects.

**Discussion** It is difficult to deny chemoprophylaxis for LTBI infection on the basis of age in a large screening event such as this when the average age is 40 (range 17–63) and the oldest member of the cohort tolerated chemoprophylaxis without significant side-effects. The reasons for reluctance to continue chemoprophylaxis in this cohort are poorly understood although lifestyle issues such as reducing alcohol consumption were perceived to be barriers to successful completion of treatment.

**Conclusion** Chemoprophylaxis for LTBI in this cohort was not tolerated in the eligible population. When undertaking mass screening, it is important to ensure that non-standard treatment is funded, if this is to be offered. Treatment of the over 35s significantly increased the workload and cost of this cohort, although uptake of chemoprophylaxis and successful completion was twice that of the workers aged 35 or less.