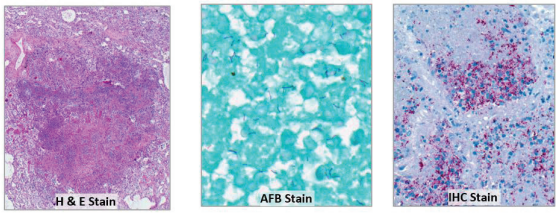
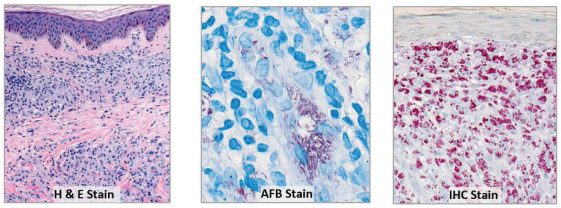
Figure 2. Mycobacteria IHC and AFB staining in lung and skin tissues

M. tuberculosis granulomatous pneumonia



M. leprae granulomatous dermatitis



Conclusion. FFPE tissue analysis by multigene targeted PCR assays expands the opportunities for rapid identification of *Mycobacterium* species, allows differentiation of MTBC from NTM, and helps to detect co-infections. Using multigene targeted PCRs in combination with histopathology and IHC improve the accuracy of diagnosis, particularly in the presence of commensal and environmental pathogens.

Disclosures. **All authors:** No reported disclosures.

2110. Interferon-γ Release Assay Performance in Pediatric Tuberculosis Disease in California

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Background. Interferon Gamma Release Assays (IGRAs) and Tuberculin Skin Tests (TSTs) are important adjunctive pediatric TB diagnostics. This study analyzes the use and performance of IGRAs in children diagnosed with active TB disease in a high-resource, low-incidence setting.

Methods. We retrospectively reviewed cases of children reported with TB to the California Department of Public Health (CDPH) Tuberculosis Registry during 2010–2015. Our cohort included 778 children, after excluding 68 without an IGRA or TST reported. We analyzed case characteristics associated with test selection and performance, and measured IGRA test sensitivity in children with laboratory confirmed TB disease.

Results. Of the 778 cases of pediatric TB reported, 360 were laboratory confirmed. Children tested with IGRAs were more likely foreign-born, aged ≥5 years, to have extrapulmonary disease only, and be laboratory confirmed, than those tested with TST. Children aged <2 years with confirmed disease were less likely to have a positive IGRA [PRR 0.72 (95% CI 0.55, 0.93] than children ≥2 years. Indeterminate IGRAs were associated with age <1 year [PRR 9.23, 95% CI 2.87, 29.8) and central nervous system (CNS) disease (PRR 2.69, 95% CI 1.06, 6.86) on multivariate analysis suggesting an association with severe disease. IGRA and TST sensitivity were similar in children <5 years with confirmed disease and test concordance was high in this age group, but sensitivity was <87% for both tests among children aged <2 years. IGRA was more sensitive than TST among children aged 5–18 years (96%, 95% CI 88%-99% vs. 83%, 95% CI 72–91%, P = 0.012).

Conclusion. Children presenting with TB symptoms and disseminated disease were more likely to be tested by IGRA than TST. In children <5 years, IGRA sensitivity is similar to TST, but sensitivity of both tests are reduced in children <2 years. Indeterminate results are higher, particularly in <1 year-olds and in CNS disease. In children aged ≥5 years with laboratory confirmed TB, IGRA has greater sensitivity than TST, and should be considered the preferred immunodiagnostic test. Our data suggest that IGRA is underutilized in this population.

Disclosures. **S. Islam**, Qiagen: Speaker's Bureau, Speaker honorarium and travel support

2111. Diagnostic Usefulness of Bronchoalveolar Lavage Fluid Xpert MTB/RIF in Patients with Suspected Pauci-bacillary Pulmonary Tuberculosis

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Background. Rapid and accurate diagnosis of tuberculosis (TB) is important for appropriate treatment initiation and control of disease transmission. Xpert TB/RIF has been widely used for rapid diagnosis especially in sputum AFB smear-negative pulmonary TB. However, about one-third of patients with pauci-bacillary pulmonary TB still reveal negative Xpert TB/RIF results from sputum specimens. Theoretically, bronchoalveolar lavage (BAL) fluid can provide more sensitive specimen in those with sputum-scarce or AFB smear-negative pulmonary TB than sputum.However, there is limited data on the diagnostic performance of Xpert TB/RIF from BAL fluid in patients with pauci-bacillary pulmonary TB.

Methods. All patients with suspected pulmonary TB who underwent BAL due to sputum-scarcity or negative AFB smear results and underwent Xpert TB/RIF from BAL fluid were retrospectively reviewed at a tertiary hospital, Seoul, South Korea (an intermediate TB-burden country) between October 2014 and April 2017. Confirmed TB was defined to those with clinical specimens positive for *M. tuberculosis* by culture or PCR assays. Patients those with caseating granuloma in biopsy tissue and shows a good response to anti-tuberculous therapy were classified as having probable TB.

Results. A total of 113 patients were included in the analysis. Of these 113 patients, 30 (27%) were classified as confirmed TB, 7 (6%) as probable TB, and 76 (67%) as not TB. Of these 37 patients with confirmed or probable TB, 8 (22%) had miliary TB and 12 (32%) were immunocompromised. Only 15 (50%) of the 30 confirmed TB patients revealed positive Xpert TB/RIF results from BAL fluid. Overall sensitivity, specificity, positive predictive value, and negative predictive value of Xpert TB/RIF from BAL fluid for the diagnosis of TB were 41% (95% CI, 31%-41%), 100% (95% CI, 95%-100%), 100% (95% CI 77%-100%), and 78% (95% CI 74%-77%), respectively

Conclusion. XpertTB/RIF from BAL fluid appears to be suboptimal to rule out pulmonary TB. The development of more sensitive and rapid test for pauci-bacillary pulmonary TB is needed.

Disclosures. **All authors:** No reported disclosures.

2112. Season Is Associated with Interferon Gamma Measured in QuantiFERON Gold In-Tube Test

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Background. The QuantiFERON Gold-in-tube (QFT) test is an Interferon Gamma Release Assay (IGRA) used to indirectly diagnose tuberculosis infection (TBI). The QFT measures Interferon gamma (INF-γ) released in response to specific *Mycobacterium tuberculosis (Mtb)* antigens. The main objective of this analysis is to determine whether there is a seasonal variation of the IFN-γ level released in QFT blood samples.

Methods. Data of the QFT assays conducted in health care workers (HCW) at Houston Methodist Hospital (HMH; Houston, TX) between August 2008 and April 2017 were analyzed and stratified by the season when the blood samples were drawn. Multivariate generalized linear models (GLM) controlling for age, gender and ethnicity were used to estimate IFN-γ measured in the nil and mitogen controls per season.

Results. Data from 10,089 QFT assays were included in the analysis. The tested HCW were primarily between the ages of 18 to 49 years (76.5%), female (65.9%), and non-Hispanic (77.0%). A significantly higher level of IFN-γ was found in the mitogen stimulated blood (Phytohemaglutinin) in the summer (June – August) (estimate: 0.19 IU/mL; P <0.001) compared with the other season, and a significantly lower level of IFN-γ was found in the fall (September – November) (estimate: -0.27 IU/mL; P <0.001) compared with the other seasons. The IFN-γ level was significantly lower in unstimulated blood (estimate: –0.02 IU/mL; P = 0.038) but not in the antigen stimulated blood samples drawn in the winter (December–February) compared with those drawn in other seasons.

Conclusion. We observed a seasonal variation of the IFN-γ level measured in unstimulated and antigen-stimulated blood samples drawn for the QFT assays, in which seasonal factors such as airborne antigens like pollen may play a role. Clinicians should take into account the possible seasonal variation when interpreting positive QFT results, especially those on the borderline of the assay's diagnostic cutoffs. Re-testing or implementing additional diagnostic tools should be considered if necessary. Further research would be needed to identify the specific seasonal factors that may influence the QFT results.

Disclosures. **All authors:** No reported disclosures.

2113. Safety & Benefits of Directly Observed Therapy with Rifapentine and Isoniazid for Latent Tuberculosis Infection – Less is More?

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Background. Latent tuberculosis infection (LTBI) treatment is essential in preventing the reactivation of tuberculosis. We compared the clinical and demographic characteristics of patients that have completed traditional therapy with 9 months of isoniazid (9H) with those that have completed 3 months of rifapentine plus isoniazid using directly observed therapy (3HP), focusing on adverse effects, a barrier to completion that may contribute to discontinuation of therapy.

Methods. We conducted a retrospective chart review (July 2013-March 2017) to compare the 9H group and 3HP group. Demographic and clinical variables were described by therapy type and groups were compared using Fisher's exact test or t-test, as appropriate.

Results. Patients in the study sample (n = 124) had a mean age of 49.8 (SD=14.8) years old. Approximately half received 3HP (n = 64, 51.6%). Demographics in the 3HP and 9H groups were similar. Significantly more patients in the 3HP group completed treatment (81.3% vs. 61.7%, $P < 0.0001$). No patients were lost to follow-up in the 3HP group, 14 (23.33%) were lost in the 9H group. Gastrointestinal (GI) upset (n = 16), elevated liver function tests (LFTs) (n = 11), and headaches (n = 9) were the most frequent side effects. Except for neuropathy and pancreatitis, all other adverse side effects had higher incidence in the 3HP group. Specifically, the incidence of GI symptoms (23.4% vs. 1.7%, $P = 0.0003$), weakness (9.4% vs. 0%, $P = 0.028$), and headache (14.1% vs. 0%, $P = 0.003$) were significantly higher in the 3HP group. Of the observed patients with adverse reactions that received 3HP, 88.24% (n = 30) had them resolved within the first two weeks.

Conclusion. The 3HP group had a higher completion rate and no loss to follow-up compared with 23% loss to follow-up in the 9H group, however, adverse reactions were significantly higher in the 3HP group. Closer weekly monitoring of the 3HP group could lend itself to capturing more adverse reactions, however, 88% of those adverse reactions resolved within the first two weeks of therapy. Liver function tests were not significantly different ($P = 0.2079$) between the two groups, and were mildly elevated. We conclude that three months of rifapentine plus isoniazid for the treatment of LTBI may be a favorable option over the traditional 9 months of isoniazid in certain populations.

Disclosures. **All authors:** No reported disclosures.

2114. Prevalence of Tuberculous Spondylodisciitis and Diagnostic Utility of Xpert MTB RIF

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Background. To understand the prevalence of TB spondylodisciitis and the diagnostic utility of Xpert MTB RIF test (Genexpert) in the diagnosis of TB spondylodisciitis as compared with a Composite Reference Standard (CRS) based on clinical, mycobacterial smear, culture, pathological, radiological findings and clinical follow up.

Methods. 69 patients with infective spondylodisciitis who underwent surgical or image guided tissue biopsy were evaluated during May 2014 to February 2017. Tuberculous spondylodisciiitis were classified as 'confirmed' if culture grew MTB, 'probable' if in the absence of positive AFB culture, clinical, radiological or pathological findings favor TB, 'possible' if all negative but response to ATT was noted.

Results. 36 patient had culture confirmed pyogenic spondylodisciitis; 17 cases were treated empirically though the tissue culture were negative as HPE was suggestive of pyogenic spondylodisciitis. 3 had non-infective etiology.

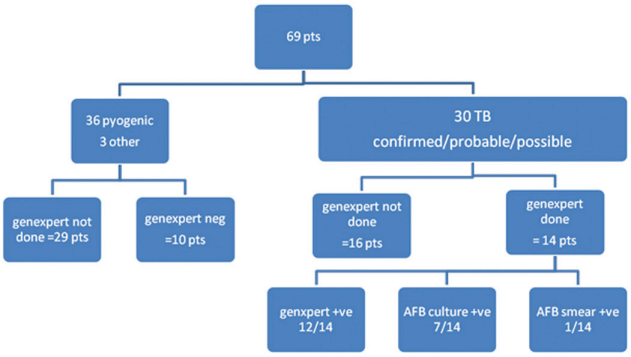
Among 30 who were treated as tuberculous spondylosdisciitis, in initial 16 patients genexpert was not done due to non-availability. Among these 16 patients, 1 had confirmed TB as the tissue grew MTB (MDR TB), 15 were treated as probable TB. All patients except one had good outcome. In the 14 patients treated as tuberculous spondylodisciitis in whom genexpert was done, 12 patients had positive genexpert as compared with 7 AFB culture positive patients. In two samples in which genexpert was negative, TB was confirmed by AFB culture and in another by HPE. All patients except one (who had underling lymphoma) improved with ATT. In all other 10 cases where genexpert was negative, the etiology was pyogenic.

Conclusion. Pyogenic spondylodisciitis is more prevalent than tuberculous spondylodisciits in this study. Genexpert in tissue from infective spondylodisciitis is more sensitive than AFB smear and culture in diagnosing tuberculous spondylodisciitis.

Table 1: Performance of Genexpert as compared with AFB culture

	genexpert +	genexpert -
Culture –	6	1
Culture +	6	1

Figure 1: Flow chart depicting distribution of cases and genexpert performance



Disclosures. **All authors:** No reported disclosures.

2115. Prevalence of Gene Mutations profiles by GenoType MTBDR*plus/sl* to First Line Antituberculosis Drugs and Clinical Characteristics in Drug Resistant Tuberculosis Patients Referred to the National Institute of Respiratory Diseases in Mexico City

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Background. Drug resistance tuberculosis, specially MDR and XDR are a big challenge for diagnosis and treatment. In Mexico the prevalence of MDR is between 3–5%, a number probably underestimated due to lack of diagnostic tests for susceptibility. The National Institute of Respiratory Diseases in Mexico City is the national referral center for MDR/XDR tuberculosis. In our country there is no data about the gene mutations involved in drug resistance to first line antituberculosis treatment nor the clinical characteristics that accompany these findings.

Objective: Evaluate the prevalence of genotyping profiles according to a line probe assay (LPA) in patients with drug resistance tuberculosis and their associated clinical characteristics

Methods. Retrospective cohort from 2010 to 2014 of *M. tuberculosis* isolates with any type of resistance to first line antituberculosis drugs identified by MGIT SIRE and in which GenoType MTBDRplus/sl were performed, we evaluate prevalence of genotyping profiles according to the LPA within the isolates and gather data from those with complete medical records to asses clinical characteristics.

Results. In 52 and 33 isolates phenotyping and genotyping MTBDRplus/sl respectively were performed, 41 resistant to Isoniazid INH with 75% genotypic concordance, 33 resistant to rifampicin RIF with 75.6% concordance, 14 to streptomycin SM with 23% concordance and 10 to ethambutol EMB with 100% concordance, 54% MDR tuberculosis. The genotyping profile for RIF was absence of probes rpoB Wild Type 8 (WT) 57.7%, WT 7 30.8% and presence of rpoB mutation 3 (MUT) 19.2%. For INH absence of InhA WT2 48.1% and InhA WT1 19.2%. For EMB absence of embB WT1 30.8% and for SM absence of rrs WT1 (19%). Absence of InhA WT1 was associated with female ($P = 0.01$) and DM2 ($P = 0.032$) patients, other clinical/biochemical characteristics and mortality was not different in patients with o without the genotypic profile for each drug. Cavitary disease by CT was more frequent in patients with WT probe absence in RIF and INH than those who did not have a LPA suggestive of resistance for this drugs.

Conclusion. Wild Type probe absense is the frequent finding in our isolates according to LPA in RIF, INH, EMB and SM, intrisic host factors and clinical characteristics seem not to be related to a particular resistant gene profile.

Disclosures. **All authors:** No reported disclosures.

2116. Resistance of Mycobacterium and Outcomes of Pulmonary Tuberculosis Depending on VNTR-Profile Among Different Age Groups of Patients in Ukraine

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Background. Ukraine is among the five countries with the highest burden of multiple drug-resistance tuberculosis (MDR TB). MDR TB has found in 22 % new cases of TB and in 56 % of retreated cases in Ukraine (WHO, 2015), and the elderlies among TB-affected persons are near 23%. The aim was to study the resistance of