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Gender perspective demographic study of MDR-TB affected population in Thane suburbs

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Background: Tuberculosis (TB) is the leading cause of death from an infectious disease in women worldwide. WHO estimates that in 2015, 3.5 million women fell ill with TB and Tuberculosis is one of the five killers of women among highly reproductive age group. Social stigma and discrimination in some settings can be the reason for delay in seeking treatment for this fatal disease. Pregnant women living with TB are twice as likely to have premature babies, and their babies are six times more likely to die within a few weeks of birth.

Objective: The objective is to conduct demographic analysis to study the effect of multiple-drug resistant pulmonary tuberculosis on women in Thane suburbs.

Methods: Retrospective cohort study of 100 positive cases of pulmonary and extra pulmonary tuberculosis by using BACTEC-MGIT 960. Drug sensitivity was studied for first line drugs to look for MDR cases. Female vignette was studied in detail for mono-resistance, Poly-resistance and MDR.

Results: The ratio of Pulmonary tuberculosis: Extra Pulmonary Tuberculosis is 63:37. The Male : Female ratio of tuberculosis positive is 51:49. There is an alarming sign of equal number of male and female patients indicating status of women health and 80% tuberculosis positive cases of females are in young and reproductive age group of 15-29. 60% of tuberculosis positive cases of females have MDR-TB.

Conclusion: Increasing percentage of women patients may be due to social stigma, gender discrimination, and poor access to resources making them more vulnerable to ill health resulting in loss of reproductive lives. Findings of this study may be used to develop new strategies for policy makers, it also underlines that even today women have less community support, limited access to treatment. The study also emphasizes efforts to enhance gender sensitivity, more in-depth studies on demography and socio-economy to promote awareness of this fatal disease in society.

Speaker Biography

Kishore D is currently pursuing his PhD from University of Mumbai, India. He is a full time Teacher in the Department of Medical Lab Technology, School of Para-Medical Sciences in Birla College, Kalyan since last 25 years. He has presented 2 posters in national and international conferences. He is an active member of various NGOs in India. He loves to work for underprivileged and puts efforts to bring them into mainstream. Along with his team of doctors he conducts free health check up and health awareness camps for underprivileged people. He has been awarded prestigious "Giants Ratna" for his service to society by Giants International and has also been awarded with Life Time Achievement Award by Today foundation. Tuberculosis is rampant worldwide. His efforts are to create awareness among society and policymakers for combating TB.

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Notes:

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High incidence of tuberculosis in the absence of isoniazid and cotrimoxazole preventive therapy in children living with HIV in northern Ethiopia: Aretrospective follow-up study

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Objective: To identify the incidence of and predictors for tuberculosis in children living with HIV in Northern Ethiopia.

Design: Observational, retrospective follow-up study.

Methods: A total of 645 HIV-infected children were observed between September 2009 and September 2014. Cox regression analysis was used to identify predictors for developing TB.

Results: The incidence rate of tuberculosis was 4.2 per 100 child-years. Incidence of tuberculosis was higher for subjects who were not on cotrimoxazole preventive therapy, were not on isoniazid preventive therapy, had delayed motor development, had a CD4 cell count below the threshold, had hemoglobin level less than 10 mg/dl and were assessed as World Health Organization (WHO) clinical stage III or IV.

Conclusion: Incidence of TB in children living with HIV was high. This study reaffirmed that isoniazid preventive therapy is one of the best strategy to reduce incidence of TB in children living with HIV. All children living with HIV should be screened for TB but for children with delayed motor development, advanced WHO clinical stage, anemia or immune suppression, intensified screening is highly recommended.

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Predominance of *Mycobacterium tuberculosis* Beijing genotype among presumptive multidrug resistance patients from North East India

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Northeast India is the easternmost region of India and comprises of Seven Sister States—Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura—and the Himalayan state of Sikkim. Though there are many studies characterizing M. tuberculosis isolates from different parts of India, studies highlighting genotypic diversity among isolates from north east India are rare. The present study aimed to obtain an initial insight into the predominant spoligotypes prevalent in north east region. Sputum samples from presumptive MDR patients were received from the north east states for Drug suseptitibility testing (DST). All specimens were screened for presence of AFB by Ziehl-Neelsen (ZN) staining. The samples were processed by N-acetyl-L cysteine - Sodium hydroxide (NALC-NaOH) method. Drug susceptibility testing (DST) was performed by either Line Probe Assay (Hains, MTBDR plus for RIF and INH) or by MGIT960 liquid culture system (Becton Dickinson, Sparks, MD) after routine mycobacterial identification. (RIF; 1 µg/ml, INH; 0.1 µg/ml). 148 isolates randomly selected from existing stocks were subjected to spoligotyping as per standard protocol and spoligo patterns obtained were compared to those within the SITVIT2 database. The age of the patients varied from 10-77 years with mean age of 31 years. 99 (67.0%) patients were male and 49 (33%) were female with a male female ratio of 2: 1. 28 (19%) isolates were sensitive to both the drugs whereas 107 (72.3%) isolates were MDR. 8(5.4%) isolates were INH resistant and 2 (1.3%) were mono RIF resistant. Spoligotyping yielded 31 different patterns, 23 of these were unique (1 isolate only) whereas 8 patterns containing 125 isolates were clustered (2 or more isolates) with a clustering rate of 84.45%. SIT 1 predominated in this study with 104/148 (70.2%) isolates. Apart from SIT 1 there were no major clusters. The predominant family in this study was found to be Beijing (73.64% of total strains). Other families corresponded to Central Asian (CAS) and East African Indian (EAI). The Harlem family, the poorly defined T family and "Manu" were present as minor families. Among 107 MDR strains, 85 belonged to SIT1. Of these mutation data was available for 67 isolates. For rifampicin, commonest mutation was at codon S531L of rpoB gene (58/67; 86.5%) followed by H526Y (2/67; 3.0%) and D516V (2/67; 3.0%). In 5 isolates (7.5%), resistance was determined by absence of wild type probes alone. For INH high level resistance corresponding to mutation in codon 315 of Kat G gene occurred in 97.0% (65/67) of samples whereas low level resistance in -15 promoter region was present in two strain. According to previous available data EAI and CAS were found to be predominant in India. High percentage of Beijing genotype in north east India is significantly higher than the rest of India. Considering the fact that this genotype is the major cause of outbreaks involving drug resistant variants worldwide, our findings are major cause of concern for health authorities.

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A cost effectiveness analysis of pulmonary tuberculosis case finding strategies among high risk communities in Kampala, Uganda

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Introduction: Tuberculosis (TB) is a major global health risk in Sub-Saharan Africa. Passive Case Finding (PCF) is limited due to delays in case detection. Active case finding (ACF) strategies including Household Contact Investigation (HCI) and Enhanced Case Finding (ECF) have been alternatively proposed to improve TB case detection, but little is known about their cost-effectiveness. We assessed the cost-effectiveness of PCF+ECF+HCI combination compared to PCF only for TB case detection among high-risk communities in Kampala from provider's perspective.

Methods: Data on costs and yield of TB cases for PCF only and a combination of PCF+ECF+HCI was collected among adults in highly-congested areas of Kampala over 12 months. Costs were adjusted to US$ for the 2015 annual average. The main outcome was the Incremental Cost Effectiveness Ratio (ICER) representing the cost to detect an additional TB case. The decision threshold used was three times Uganda's GDP (US$ 2089). One-way sensitivity analysis was done to assess uncertainty of the ICER around key variables.

Results: Based on Uganda TB program data, 4,755 pulmonary TB cases from 12,298 presumptive TB cases were identified through PCF alone. PCF+ECF+HCI combination yielded 5,120 cases from 12,915 presumptive cases. The average cost per patient for PCF and PCF+HCI+ECF was US$ 895.8 and US$ 4909.9 respectively. The cost of detecting one additional TB case was US$ 8211.8 using PCF+ECF+HCI compared to using PCF only. In one-way sensitivity analyses, the ICER was most sensitive to number of household contacts screened, number of TB cases identified through ECF and probability of having chronic cough.

Conclusion: From the provider's perspective, PCF+ECF+HCI was costlier and had a marginally higher yield of TB cases than PCF only, but it was not a cost-effective strategy. In settings with minimal resources, low-cost approaches to improving household contact screening and enhanced case finding might add value to passive TB case detection.

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How common is breakthrough tuberculosis disease among people with HIV receiving Isoniazide preventive therapy? Observations from a multisite study in Ethiopia

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Introduction: Isoniazide preventive therapy (IPT) is a proven means to prevent tuberculosis (TB) disease from surfacing among people living with HIV (PLHIV). However, there is concern that patients often develop tuberculosis disease while receiving IPT, defined here as breakthrough tuberculosis, which may affect follow-up outcome. In this study, we evaluated the magnitude and determinants of breakthrough tuberculosis.

Methods: A multisite retrospective cohort study from year 2005 to 2013 involving 11 randomly selected hospitals from Addis Ababa, SNNPR, and Gambela regions of Ethiopia was carried out to assess the occurrence of breakthrough tuberculosis. Multinomial logistic regression was used to study factors associated with it.

Results: 4,484 patients in chronic HIV care received IPT of which 80% also received antiretroviral therapy (ART). 88/4,484 (1.9%) patients developed tuberculosis of which 29/4,484 (0.6%) were diagnosed while receiving IPT. The incidence of breakthrough tuberculosis was 2.3 per 1000 person-years of observation (95% CI: 1.6-3.3 per 1000 PY). 7/29 (24%) breakthrough TB cases were diagnosed within the first month of IPT initiation. 9/19 (47%) breakthrough TB cases were diagnosed within the first six months of ART initiation. Baseline CD4 count ≥350 and being on ART were associated with having less odds of developing breakthrough TB (OR=0.1 (95%CI: 0.1-0.2), p value<0.01).

Conclusion: Breakthrough TB was uncommon in the study setting. A significant proportion of it occurred in the first month of treatment and could be due to difficulty to diagnose TB with AFB+/- Chest X-ray or failure to strictly follow TB screening algorithm to rule out TB after adequate follow-up.

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Design and identification of *Mycobacterium tuberculosis* Glutamate racemase (MurI) inhibitors

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In the present study, we attempted to develop novel Mycobacterium tuberculosis (Mtb) inhibitors by exploring the pharmaceutically underexploited enzyme targets which are majorly involved in cell wall biosynthesis of mycobacteria. For this purpose glutamate racemase (coded by MurI gene) was selected. This enzyme is able to construct these cell walls by synthesizing D-glutamate from L-glutamate through racemization. Furthermore enzyme is not expressed nor its product, D-glutamate is normally found in mammals, and hence inhibiting this enzyme should not result in toxicity to the mammalian host organism. A library of BITS in house compounds were screened against Mtb MurI enzyme using Glide module in Schrodinger software. Based on docking scores, interactions and synthetic feasibility one of the hit lead was identified, further optimization of lead was attempted and its derivatives were synthesized. Forty eight derivatives of 2-phenylbenzo[d]oxazole and 2-phenylbenzo[d] thiazole were synthesized and evaluated for Mtb MurI inhibition study, in vitro activities against Mtb, cytotoxicity against RAW 264.7 cell line. Few compounds have shown IC50 of 4-5µM which are remarkable and were found to be non-cytotoxic. Molecular dynamics, dormant models and cardiotoxicity studies of the most active molecules are in process.

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Prediction of transition to Multidrug resistant Tuberculosis (MDR-TB) among individuals with tuberculosis using computational intelligence.

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Tuberculosis (TB) is a global public health threat and a major leading cause of death in the world. In 2015, 10.4 million people fell ill with TB and 1.8 million died from the disease (including 0.4 million among people with HIV). Over 95% of TB deaths occur in low- and middle-income countries, Swaziland inclusive. The TB problem is compounded by the emergence of multidrug resistant TB in which there is annual estimate of 480 000 people having multidrug-resistant TB (MDR-TB). TB in Swaziland has reached an epidemic stage and the rate and pattern of transition to multidrug resistant TB from individuals having TB is unknown, yet treatment and care for clients with multidrug resistant TB poses serious burden on the economy of the nation and leads to high mortality, hence the need for the nation to prepare adequate human resources and finance to mitigate the impact of the disease. Predicting the rate of transition to multidrug resistant among individuals with TB using computational intelligence will assist government in preparing manpower and materials to deal with the menace thus reducing the effect of the epidemic. Computational intelligence uses computational methodologies and approaches to address complex real-world problems such as prediction of transition from TB to MDR-TB. Results revealed that given the current prevalence of TB in the country, three out of every ten individuals with TB develop MDR-TB most of the transition occurs from second year of contracting TB and among those who default treatment. In the light of the result, government should scale up prevention strategies and procure diagnostic and treatment resources. Training of human resources for the diagnosis, treatment and care of MDR-TB has been recommended to the government.

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CT features and analysis for misdiagnosis of parotid tuberculosis

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Purpose: To analyze the computed tomography (CT) features and the reasons for misdiagnosis of parotid tuberculosis (TB). Methods: CT features of 13 cases of parotid TB identified more than a 10-year period (2005–2015) were retrospectively analyzed. The CT features were analyzed for nature, range, and extent of the various pathological patterns. Results: Because of the nonspecific CT features, 10 of 13 cases were misdiagnosed as benign and malignant tumors of parotid gland and received surgery. Ten cases of lymph nodal TB, one case of parenchymal TB, and two cases of mixed (concurrence of lymph nodal and parenchymal types) TB were found in the parotid gland. On contrast-enhanced CT scan, two cases showed homogeneous enhancement and eight cases showed ring enhancement (including five cases with thin-walled ring enhancement, two cases with flower-ring enhancement, and one case with thick-walled and eccentric ring enhancement); diffuse enhancement was seen in the one case of parenchymal type; the two cases of mixed type showed diffuse enhancement of parotid gland and ring enhancement of lymph node. Thickened skin around the parotid gland was seen in eight cases, including sinus tract between the lesion and skin in two cases. Ipsilateral cervical lymphadenopathy was found in 10 patients and bilateral was found in 3 patients. Conclusions: Nonspecific CT features of parotid TB closely relate with pathological changes. Recognition and understanding the spectrum of CT features of parotid TB is helpful for differential diagnosis, but the definitive diagnosis still depends on laboratory and pathological examination.

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Colorimetric detection of active pulmonary tuberculosis using gold nanoparticles

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Since 2006, nanodiagnostics for tuberculosis (TB) have witnessed considerable development. Around thirty-five TB nanoassays have been partially or fully characterized. Accuracy, low-cost, and short time-to-result represent the common properties of proposed platforms. Among variable metals, gold NPs are the most used in the proposed platforms. Despite several advantages and high potential, translation into clinical use has not been reached. Most of the published reports do not proceed beyond proof of concept. This study aims to evaluate clinical performance of TB nanodiagnostic in clinical sputum samples using anionic unmodified gold nanoparticles. The study follows diagnostic case-control design where 60 participants are involved. Briefly, TB DNA was extracted from sputum samples and unmodified anionic gold nanoparticles were directly added to TB amplicon after amplification of TB IS6100 loci using conventional PCR. Colorimetric result was obtained after 15 min by direct visualization. Sputum culture (BACTEC™ MGIT™) was used as the reference test. Results of nano-gold assay were compared with those obtained by sputum smear microscopy and chest X-ray. Our assay prototype shows concordance with culture results, and higher clinical performance than sputum smear and chest X-ray. Obtained sensitivity was 95% and specificity 100%.The total turnaround time was 3 hours, and the obtained lower limit of detection was 11.2 ng/ µl TB DNA. Future studies are needed to lower assay cost through optimizing DNA extraction protocol using simple reagents. DNA amplification could be performed using Loop mediated isothermal amplification (LAMP) or rolling circle amplification (RCA) to minimize cost. Future studies could adopt diagnostic test accuracy study (DTA) design for accurate assessment of assay performance. To the best of our knowledge, this is the first study to assess performance of TB nanodiagnostic by using unmodified gold nanoparticles in real clinical settings. Our prototype shows potential for point-of-care use in developing countries where TB burden prevails.

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Status of Xpert MTB/RIF assay implementation in Ethiopia

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Background: Since December 2010, WHO has endorsed Xpert MTB/RIF Assay for the diagnosis of tuberculosis and rifampicin resistance tuberculosis. Based on this recommendation, Ethiopia has been implementing the use of Xpert MTB/RIF Assay since 2012. Monitoring and evaluation of Xpert MTB/RIF Assay implementation is necessary to ensure the effective and efficient use of resources and to guide for further scale-up.

Objective: To assess implementation outcomes, gaps and staff profile after the implementation of Xpert MTB/RIF Assay for the diagnosis of Tuberculosis and Rifampicin resistant Tuberculosis in Ethiopia.

Methodology: Data was collected and analyzed from 87 GeneXpert sites from 15 May to 11 June 2016. A structured questionnaire was used to collect information on staff profile and trainings taken. Data was extracted from GeneXpert machine since the date of installation from 70 GeneXpert sites. Records were reviewed from laboratory register book and from archived laboratory request formats by using a comprehensive assessment tool to evaluate the laboratory personnel competency and clinician's adherence to the national algorithm.

Result: A total of 80,683 specimens were examined by using Xpert MTB/RIF Assay starting from the date of installation up to June 2016 in 70 GeneXpert sites. *Mycobacterium tuberculosis* was detected in 12,422 (15.4%) of specimens. From all Tuberculosis detected results 83.75% (10,403), 12.68% (1,591) and 3.45% (428) were susceptible, resistance and indeterminate to Rifampicin respectively. The error rate was 14.1%. There were 285 Xpert MTB/RIF Assay trained laboratory professionals at 87 GeneXpert sites. An average of 3 trained laboratory professionals were working in each facility. At least one trained laboratory professional was found in each facility, but untrained laboratory professionals were performing Xpert MTB/RIF Assay in 67 facilities. National Tuberculosis Program approved Xpert MTB/RIF Assay testing algorithm was not followed in 36% of sites. Most of the clinicians did not properly fill request papers. Standardized request formats and laboratory log books were not available in 15% and 8% of facilities respectively. Xpert MTB/RIF Assay results were correctly recorded on the laboratory log book in 87% of sites. Critical result (rifampicin resistant tuberculosis) communication was not appropriate in 25.6% of facilities. Xpert MTB/RIF Assay test results were not archived regularly in 47% of laboratories.

Conclusion: Detection rate of tuberculosis with the Xpert MTB/RIF Assay was low; this may be due to inappropriate requesting. Xpert MTB/RIF Assay showed an advantage for detecting rifampicin resistant tuberculosis cases in peripheral laboratory level which is important for early management of drug resistant tuberculosis. Error rate was high as compared to the expected standard. There was 100% Xpert MTB/RIF Assay training coverage. It was found that untrained laboratory professionals were doing Xpert MTB/RIF Assay which may have a negative impact for the control of tuberculosis and drug resistant tuberculosis.

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Challenges faced by MDR-TB patients and health workers involved in clinic-based ambulatory care in Kampala Uganda, a cross sectional study

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Background: Multidrug resistant TB (MDR-TB) caused by a strain of mycobacterium tuberculosis which is resistant to isoniazid and rifampicin is a growing concern in Uganda. To address the issue of costs of hospitalization and limited space, clinic-based ambulatory care has been adopted. This study explored the challenges faced by MDR-TB patients and health workers involved in clinic-based ambulatory care in Kampala, Uganda.

Methods: For this cross sectional study, we conducted 8 in-depth interviews among MDR-TB patients and 9 key informant interviews among health workers involved in providing clinic based ambulatory care. The focus was on the salient themes and recurring points with respect to challenges faced by MDR-TB patients and health workers. Thematic analysis was be conducted and contents of in-depth and key informant interviews were then grouped according to themes and analyzed in an excel sheet.

Results: From the 8 in-depth interviews among MDR-TB patients, side effects of the treatment, long duration and burden of the MDR-TB treatment, drug stock-outs, feeding issues and cost of accessing treatment were cited as major challenges faced. From the 9 key informant interviews, health workers reported non-adherence of MDR-TB patients to MDR-TB drugs, drug stock-outs and limited space at the peripheral facilities.

Conclusions: Non-adherence among MDR-TB patients was a key challenge identified by the health workers hence the number of counselling sessions should be increased. There is need for the National Tuberculosis and Leprosy Program and Ministry of Health to ensure an uninterrupted supply of quality-assured second-line drugs to avoid drug stock-outs. For the Clinic-based ambulatory care approach to be effective, there's need to address the challenges reported in Uganda.

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Effects of introducing Xpert MTB/RIF test on Multi-drug resistant tuberculosis diagnosis in KwaZulu-Natal South Africa

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Background: South Africa has the highest incidence of TB in the world which the world health organization estimated to be 860 per 100 000 in 2013. Compounding the problem of TB is the high co-infection with HIV and the increasing drug resistance. This led to the introduction of Xpert MTB/RIF test (Xpert) in 2011 to improve the diagnosis of TB and detection of drug resistant TB. The guidelines recommend treatment of all Xpert rifampicin resistant patients as MDR-TB cases while awaiting confirmation by phenotypic or genotypic drug susceptibility testing. This study evaluates how the Xpert has influenced the diagnosis and management of drug resistant TB in the highest burdened district of KwaZulu-Natal Province.

Methods: Data was retrospectively collected from all patients with rifampicin resistance on Xpert performed between March 2011 and April 2012. Xpert results were compared with those of phenotypic and/genotypic drug susceptibility testing. Patients' medical records were used to determine the time to treatment initiation.

Results: Out of 637 patients tested by Xpert, 50% had confirmatory results, of which a third were sent on the same day as Xpert test. The rate of rifampicin discordance and monoresistance was 8.8% and 13.4% respectively and there was no difference between phenotypic and genotypic confirmation. Among those who had been initiated on treatment, 28%, 40%, 21% and 8% of patients commenced within 2 weeks, 1 month, 2 months and 3 months of Xpert testing respectively, while the remaining 3% were observed without treatment.

Conclusion: This study emphasizes the importance of complying with the guidelines in confirming all Xpert rifampicin resistant cases so as to ensure proper management of these patients. Despite having a rapid diagnostic tool which can generate results in a few hours, system associated challenges continue to result in delays in treatment initiation

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Manifestations of tuberculosis in elderly versus young hospitalized patients in Amritsar, India

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Tuberculosis (TB), known to mankind since ages, is an infectious bacterial disease, caused by Mycobacterium tuberculosis and still remains a major threat to healthcare workers world-wide. Published literature on the clinical characteristics of TB amongst elderly patients in India, as well as globally is scarce; as the problem of geriatric TB has not received the attention, it deserves in the present scenario when world's older population continues to grow at an unprecedented rate. With increasing life expectancy at birth, population aging is a global phenomenon and today 8.5% (617 million) of people worldwide are of geriatric age group and literature projects this figure to jump to nearly 17% (approx 1.60 billion) by 2050. Tuberculosis is well known for its variable presentation and progression in different persons at different age groups, or even in the same person at different occasions & settings, thus often confusing the clinicians, engaged in its management. India, the second most-populous country on this planet, after China, bears a fifth of the global burden of the disease. Unfortunately, the often neglected research on the issue, with little evidence on which to base practice and make decisions about the extent of investigations and interventions, appropriate for the management of such individuals, fueled the present study to compare the two groups. The conclusions drawn are certainly meaningful and helpful pan-globally in the management of this 'monster disease', with special reference to elderly cases. Undeniably, it will affect the success of TB control program vis-à-vis its eradication drive.

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A comparative analysis of Xpert MTB/RIF Versus AAFB Smear in the diagnosis of suspects of TB/HIV and multidrug Resistant TB: a nine-month retrospective data from Northwestern Nigeria

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Background: HIV remains the strongest risk factor for Tuberculosis (TB).The World Health Organization (WHO) recommended genexpert technology as the initial diagnostic test for individuals suspected of having Multi Drug Resistance TB (MDR-TB) or HIV and TB. However, access to modern diagnostic technique like Genexpert is still poor in low and middle income countries where many laboratories are underfunded and sputum microscopy still remains only available TB diagnostic method. Using the hub and spoke matric model, Management Science for Health with funding from USAID in July 2015 rolled out financial support for transportation and logging of sputum samples for Genexpert investigation from 6 remote local governments and hospitals to Federal Medical Center Birnin Kebbi, Northwestern Nigeria where the Genexpert machine is domiciled.

Objective: The objective of the study is to determine capacity of Sputum Alcohol Acid fast bacilli (AAFB) compared with genexpert technology in the diagnosis of TB/HIV co-infection and multidrug resistance TB with the view to argue for increased roll out of better diagnostic approach in low resource settings.

Methodology: By reviewing 9-month (July 2015 and March 2016) Sputum investigation data in both Sputum AAFB as well as Genexpert registers, data were disaggregated into no of samples collected in the review period, HIV positive and negative samples, samples with unknown status, No of Mycobacterium TB (MTB) and MDR-TB detected in the total samples, samples with MTB and MDR-TB among the total HIV positive samples that were processed in both AFB and genexpert registers for the review period. This helped to analyze MDR-TB cases and compare the MTB/HIV as well as MDR-TB/HIV co-infected rates for both investigations.

Results: Genexpert technology has higher MTB/HIV (8.24%) as well as higher MDR-TB/HIV co-infection (3.12%) detection rates compared with sputum AAFB with MTB/HIV and MDR-TB/HIV co-infection detection rates of 3.12% and 0% respectively. 15.7% and 0% of total samples sent for AAFB were MTB and MDR-TB detected respectively while 15.9% and 1% of total samples for genexpert were MTB and MDR-TB detected respectively. 83% and 12% of sputum samples sent for AAFB and Genexpert respectively have unknown HIV status.

Conclusion: Genexpert technology has been shown to be a better diagnostic tool in detection of TB/HIV co-infection and multidrug resistance TB but comparative capacity to detect MTB.TB/HIV collaboration is important to scale up HIV testing in TB settings which is still low. Governments and donors need to scale up genexpert technology for improved access to TB diagnosis in low resource settings. Further studies need to investigate access of the TB/HIV co-infected and MDR-TB cases to anti-TB drugs and impact of early detection with genexpert technology on treatment outcomes in this setting.

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