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2180 GIRMA, S.; ZEWEDE, G.; TAFESS, K.; JIBAT, T. **Assessment of awareness on food borne zoonoses and its relation with veterinary public health services in and around Addis Ababa, Ethiopia.** *Journal of Public Health and Epidemiology* (2012) 4(2) 48-51 Nairobi, Kenya; Academic Journals [En, 13 ref.] College of Veterinary Medicine, Haramaya University, P. O. Box 138, Dire Dawa, Ethiopia. Email: jibattariku@gmail.com

A qualitative survey was conducted to assess the awareness on food borne zoonoses and its relation with veterinary public health services in Addis Ababa and its surrounding districts. Structured questionnaire was used in the study. Factors like educational level, information source, and profession, were considered for possible explanation of the results. The most frequently known zoonotic diseases were rabies (100%), followed by anthrax (94.27%), teniasis (89.06%), tuberculosis (88.54%), brucellosis (49.48%), and mentioned others (31.25%). The importance of veterinary public health in the overall public health institutions was assessed by looking at the responses to questions and it is shown that the public health institutions do not yet see the need of having veterinarians in the public health. In conclusion, this study demonstrated that the awareness and use of inspected and packed animal products is relatively low, which exposes the people to risk of food borne pathogens. The authors would like to recommend to the government and concerned bodies to raise the awareness of the public, using the appropriate

communication media, and to strengthen the contribution of public health veterinarians in the public health services for better community health.

2181 NASROLLAHI, M.; BAGHER, M. P.; AHANJAN, M.; KHALILIAN, A. R. **[The diagnostic value of gyrB RFLP PCR test in differentiation between pathogenic Mycobacteria in patients with clinical suspicions of tuberculosis in Mazandaran.]** *Journal of Mazandaran University of Medical Sciences* (2012) 22 (86) Pe141-Pe150 Sari, Iran; Mazandaran University of Medical Sciences [pe, en, 35 ref.] Department of Microbiology, Molecular Cell-Biology Research Center, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Iran. Email: mphd65@yahoo.com

BACKGROUND AND PURPOSE: *Mycobacterium tuberculosis* complex (MTBC) members are causative agents of human and animal tuberculosis. Differentiations of MTBC members are required for appropriate treatment of individual patients and reduce the drug resistances. MATERIALS AND METHODS: 1345 samples were collected of patients with clinical suspicions of tuberculosis that referred to health care center of Mazandaran from July 2010 to June 2011. The specimens were stained by the Ziehl-Neelsen staining technique and were cultured on Lowenstein-Jensen medium to detect the mycobacteria. For recognition of *Mycobacterium tuberculosis* complex were a used MTUB-f and MTUB-r primer (gyrB-PCR1). For differentiation of

Mycobacterium tuberculosis complex members were used MTUB-756-Gf and MTUB-1450Cr (gyrI3-PCR2) and RFLP PCR using *RsaI* restriction enzyme. RESULTS: Of 1345 specimens, only 65 (4.83%) isolates were positive culture. Out of 65,59 (90.76%) were MTBC and 6 (9.24%) identified as Mycobacteria other than tuberculosis. All of 59 isolates were *M. tuberculosis* and to be showed the typical *RsaI* pattern. CONCLUSION: The gyrB-RFLP PCR and using the *RsaI* restriction enzyme is a rapid and easy technique to perform for differentiation of the members of *M. tuberculosis* complex and it is useful for rapid treatment of patients and avoids facilities.

2182 QUEIROGA, R. P. F. DE; SÁ, L. D. DE; NOGUEIRA, J. DE A.; LIMA, E. R. V. DE; SILVA, A. C. O.; PINHEIRO, P. G. O. D.; BRAGA, J. U. **Spatial distribution of tuberculosis and relationship with living conditions in an urban area of Campina Grande - 2004 to 2007.** *Revista Brasileira de Epidemiologia* (2012) **15** (1) 222-232 Rio de Janeiro, Brazil; Associação Brasileira de Pós-Graduação em Saúde Coletiva [En, pt, 30 ref.] Unidade Acadêmica de Ciências da Saúde da Universidade Federal de Campina Grande, PB, Brazil. Email: rodrigopfq@yahoo.com.br

This research aimed to study the spatial distribution of tuberculosis and its relationship with living conditions in the urban area of the city of Campina Grande in the period from 2004 until 2007. It is an ecologic study which used the city's neighborhood distribution; demographic, social and economic data from year 2000 Census; and the new cases of tuberculosis reported to the Disease and Reporting Information System. Georeferencing was done for the cases of tuberculosis, and disease incidence was calculated by neighborhood. Rates were softened and the Global Moran Index was calculated. Social-economic data were grouped in quartiles according to the Life Condition Index, calculating the incidence of TB in each stratum of living conditions. The results showed that the spatial

distribution of tuberculosis in the city is not uniform. Grouping neighborhoods according to the Life Conditions Index revealed social differences that can justify the occurrence of higher incidence rates in the most socially and economically vulnerable regions. The best living condition stratum presented a high incidence possibly due to the underreporting of the cases of tuberculosis caused mainly by the centralization of disease control services. We hope that this study may help outline control strategies for the city of Campina Grande, from the perspective of health promotion, for a disease so socially determined, as is the case of TB.

2183 GARG, A. K.; PARAG GARG; AYAN, S.; VIKAS KESHARI; DEBI KUNDU; GAUFAM BHATTACHARYA **Anterior decompression and anterior instrumentation of tuberculosis of cervicothoracic spine by cervicomansubrial approach.** *Al Ameen Journal of Medical Sciences* (2012) **5** (2) 124-131 Bijapur, India; Environmental Health Research Unit [En, 31 ref.] Department of Orthopedics, Nil Ratan Sarkar Medical College and Hospital, AB Quarter, Room No. 6, Kolkata, West Bengal, India. Email: anantgargno1@yahoo.co.in, orthoanant@gmail.com

BACKGROUND: Evaluation of result of anterior cervical approach with manubriotomy and anterior instrumentation in tuberculosis of cervicothoracic spine in terms of the neurological recovery, reconstruction of spine and prevention of deformity along with relief of pain. MATERIALS AND METHODS: All five patients with cervicothoracic caries spine had surgery through anterior cervical approach with manubriotomy in our hospital and underwent excision of the involved vertebrae and intervertebral discs followed by anterior spinal reconstruction with titanium spacer cage filled with cancellous iliac crest bone graft and Orion plate with locking screw. Antitubercular drugs were administered for 12 months. The followup period ranged from 12 to 36 months. RESULTS: Analysis of result was

done on the basis of clinical and radiological criteria. Clinical assessment based on Frankel grade and modified JOA score showed significant improvement from preoperative findings. Radiological assessment showed osteointegration, no spinal instability and no progression of the deformity. The pain control, based on visual analog scale changed from a pre-operative average of 7.5 to 2 at the last follow-up thereby indicating significant improvement and all patients returned to preoperative functional status. One patient had transient hoarseness of voice. No other complication had been encountered in the immediate post operative and during the follow-up period. **CONCLUSIONS:** Our study showed that anterior cervical approach with manubriotomy and anterior insertion of titanium cage, filled with autogenous bone graft, secured with locking plate instrumentation has a successful role in the eradication of infection, neurological recovery, segmental spinal reconstruction and it also reduces surgical time, blood loss, and surgical complications and approach related comorbidity in follow up period. Level of Evidence-Level 4, Case series.

2184 NASSAJI, M.; GHORBANI, R. **Risk factors for latent tuberculosis infection among healthcare workers in a university-affiliated hospital.** *Southern African Journal of Epidemiology & Infection* (2012) **27** (1) 30-33 Johannesburg, South Africa; South African Institute for Medical Research [En, 34 ref.] Department of Infectious Disease, Fatemieh Hospital, Semnan University of Medical Sciences, Semnan, Iran. Email: hnassaji@yahoo.com. mnzmoharnmad@gmail.com

Healthcare workers represent an important risk group for exposure, infection, and potentially disease by *Mycobacterium tuberculosis*. The aim of this study was to assess the prevalence and risk factors for latent tuberculosis infection among healthcare workers in a teaching hospital. A cross-sectional study was conducted in 2009 at the

Fatemieh Hospital. Semnan, Iran. Information about age, gender, occupation, history of BCG vaccination and duration of employment was obtained by a structured questionnaire. All subjects received a Mantoux tuberculin skin test. Induration of ≥ 10 mm was considered a positive test. A total of 180 healthcare workers (60.5% female, 39.5% male) were enrolled. Twenty-five (13.9%) had a positive skin test. History of BCG vaccination was detected in 159 (88.3%) of participants. In logistic regression analysis, employment for >five years (OR=4.10; 95% CI, 1.07-15.68) and for > 10 years (OR=4.59; 95% CI, 1.45-14.59) was significantly associated with increased risk of a positive test. Age, gender, history of BCG vaccination and type of occupation were not significantly associated with a positive TST response. A low prevalence of latent tuberculosis infection was found among healthcare workers in this hospital. Longer duration of employment was significantly associated with increased risk of positive tuberculin skin test.

2185 SUN, L.; YUAN, Q.; FENG, J.; YAO, L.; FAN, Q.; MA, J.; WANG, L. **Be alert to tuberculosis-mediated glomerulonephritis: a retrospective study.** *European Journal of Clinical Microbiology & Infectious Diseases* (2012) **31** (5) 775-779 Berlin, Germany; Springer-Verlag GmbH [En, 24 ref.] Department of Nephrology, The First Affiliated Hospital of China Medical University, Nanjing North Street 155#, Heping District, Shenyang City, Liaoning Province 110001, China. Email: fengjiangmin45@yahoo.com.cn

Mycobacterium tuberculosis infection causing glomerulonephritis is a rare disorder. This retrospective study analyzed the clinical characteristics of patients diagnosed with tuberculosis-mediated glomerulonephritis (TB-GN) between 2002 and 2009, as well as the diagnostic tools used. These findings were then compared with those of patients with primary glomerulonephritis (PGN). The records of all patients were reviewed. The diagnosis of TB-GN was based on

renal hematuria and/or proteinuria and cure after antituberculosis therapy alone plus urine culture positive for *M. tuberculosis*, demonstration of typical tubercle granulomas on renal biopsy specimens, or the detection of *M. tuberculosis* DNA by polymerase chain reaction (PCR) on renal specimens. Forty-six patients with TB-GN and 49 patients with P-GN were included. Compared with patients in the P-GN group, most (76%) patients with TB-GN had a history of TB. Systemic symptoms were much more frequent in patients with TB-GN than local genitourinary symptoms. Serological testing showed a statistical difference between the two groups. Immunoglobulin A nephropathy was found in the majority (72%) of patients with TB-GN. *M. tuberculosis* DNA detection was positive in 39 (84.8%) patients, a much higher positive rate of diagnosis than that with urine culture for *M. tuberculosis*. The manifestation of TB-GN is atypical and nonspecific. It warrants a high index of suspicion when patients with renal hematuria and proteinuria fail to respond to standard treatments for P-GN. Clinicians should pay close attention to the medical history and results of special laboratory tests. *M. tuberculosis* DNA detection on renal biopsy specimens should be considered in order to confirm the diagnosis of TB-GN.

2186 WESTREICH, D.; FOX, M. P.; RIE, A. VAN; MASKEW, M. **Prevalent tuberculosis and mortality among HAART initiators.** *AIDS* (2012) **26** (6) 770-773 Hagerstown, USA; Lippincott Williams & Wilkins, Inc. [En, 18 ref.] Department of Obstetrics and Gynecology, Duke Global Health Institute, Duke University, Durham, NC 27710, USA. Email: daniel.westreich@duke.edu

The effect of tuberculosis on mortality in people initiating highly-active antiretroviral therapy (HAART) remains unclear; here, we strengthened a previous cohort analysis. Multivariate Cox proportional hazards models were used to assess the association of baseline, tuberculosis and time to all-cause mortality among HAART initiators. In

reanalysis, treatment for tuberculosis at time of HAART initiation remained unassociated with increased risks of all-cause mortality, with adjusted hazard ratios ranging from 1.0 to 1.09.

2187 DAI LIHUA; HUANG WENHUA **[Smear detection results for new smear positive pulmonary tuberculosis patients at end of intensive treatment in Licheng district in Putian municipality, Fujian province.]** *Disease Surveillance* (2011) **26** (12) 949951 Beijing, China; Editorial Board of Disease Surveillance [Ch, en, 4 ref.] Licheng District Center for Disease Control and Prevention, Putian Municipality, Putian 351100, Fujian, China. Email: shali6269@163.com.

OBJECTIVE: To explore the influential factors to sputum smear negative conversion rate among new smear-positive pulmonary tuberculosis (TB) patients at the end of intensive treatment. METHODS: Directly observed treatment strategy (DOTS) was applied in 1227 new smear-positive pulmonary TB patients, and 2 sputum specimens were collected from them at the end of the treatment for smear detection, the bacteria amount and the involved area in lung disease were analyzed. RESULTS: The differences on bacteria amount in sputum smear, the involved area in lung, finding of cavity in lung, prevalence of complicated diabetes, time of drug administration and the patients' outcome were all statistically significant ($P < 0.05$). CONCLUSION: It is necessary to strengthen the centralized management of TB to find TB or suspected TB cases actively and conduct early treatment.

2188 ZHOU JIAN; MA LU; YANG QIN **[Analysis on newly detected leprosy cases in Guiyang from 2005 to 2009.]** *Chinese Journal of Dermatovenereology* (2012) **26** (3) 222-223 Shaanxi, China; Chinese Journal of Dermatovenereology [Ch, en, 6 ref.] Guiyang Center for Disease Control and Prevention, Guiyang 550003, China.

Data on newly detected leprosy cases during the 2005-2009 period in Guiyang City, Guizhou Province, China were collected using Excel software for statistical analysis. During 2005-2009, a total of 63 new leprosy cases were detected in Guiyang. The average detection rate was 0.34/100000. The age at onset mainly ranged from 40 to 60 years old. The percentage of patients who acquired the disease at age 40-60 years was 38.10%. Paediatric cases accounted for 4.76% among all new patients. Based on occupational status, peasants were the most affected (82.54%). The average delay time of the disease was 3.7 years. The disability rate among all patients was 58.73%. Early detection and nerve function monitoring are still the key interventions in leprosy prevention and control. Besides continuing to promote leprosy control knowledge to the public, attention should also be given to professional training for doctors working in general hospitals at the county and township levels.

2526 RÔÇAS, I. N.; SIQUEIRA JÚNIOR, J. F. **Characterization of microbiota of root canal-treated teeth with posttreatment disease.** *Journal of Clinical Microbiology* (2012) **50** (5) 1721-1724 Washington, USA; American Society for Microbiology (ASM) [En, 31 ref.] Department of Endodontics and Molecular Microbiology Laboratory, Faculty of Dentistry, Estacio de Sa University, Rio de Janeiro, Rio de Janeiro, Brazil. Email: jose.siqueira@estacio.br.

This study evaluated the microbiota of root canals undergoing retreatment. The most prevalent taxa detected by checkerboard included *Propionibacterium* species, *Fusobacterium nucleatum*, streptococci, and *Pseudoramibacter alactolyticus*. Quantitative real-time PCR detected *Enterococcus faecalis* and streptococci in 38% and 41% of the cases, comprising 9.76% and 65.78% of the total bacterial counts, respectively. The findings call into question the status of *E. faecalis* as the main

pathogen and suggest that other species can be candidate pathogens associated with persistent/secondary endodontic infections.

2527 SMITA CHANDRA; HARISH CHANDRA; NEENA CHAUHAN; GAUR, D. S.; HARENDRA GUPTA; PATHAK, V. P.; BURATHOKI, S. K. **Male genitourinary tuberculosis -13 years experience at a tertiary care center in India.** *Southeast Asian Journal of Tropical Medicine and Public Health* (2012) **43** (2) 364-369 Bangkok, Thailand; SEAMEO Regional Tropical Medicine and Public Health Network [En, 21 ref.] Department of Pathology, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Doiwala, Dehradun-248 140, Uttarakhand, India. Email: smita_harish@yahoo.com

We conducted a retrospective study of genitourinary tuberculosis (TB) among males attending a hospital in the northern Himalayan region of India. Records from 1 January 1997 to 31 December 2009 were reviewed for clinical history, relevant radiological findings laboratory data, histopathology and treatment. Of the 1,113 male urogenital non-neoplastic specimens received at the histopathology laboratory of the hospital, tuberculosis was diagnosed in 25 cases (2.2%). Urinary bladder and prostate were the most common organs involved. Thirty-six percent of cases had a previous history of TB; 12% of cases presented with no symptoms. Ziehl-Neelsen staining was positive in 72% of cases. Cultures were positive for TB in 42.8% of cases and polymerase chain reaction was positive in two cases in which it was performed. Antituberculosis treatment was required for up to 12 months in some cases and surgery was required in 32% of cases. Genitourinary TB in this study had varying presentations. Cases having strong clinical and radiological findings and suggestive histopathology for tuberculosis, even without demonstration of mycobacteria may be considered for TB treatment, particularly in endemic areas. Patients living in more remote areas may have

more specific and severe symptoms due to late presentation. Histopathology plays a crucial role in diagnosis due to lack of sophisticated techniques. The emphasis should be on early detection followed by prompt treatment to avoid further complications.

2528 HLA SOE TINT; PHYU PHYU THIN ZAW; MYITZU TIN OUNG; BO MYINT; MOE ZAW; KYAW KO KO HTET; KAY THWE THWE MAUNG; KYAW THU SOE **Patients' perspectives on public-private mix initiatives in tuberculosis control.** *Myanmar Health Sciences Research Journal* (2011) **23** (3) 145-152 Yangon, Myanmar; Department of Medical Research, Ministry of Health [En, 14, ref.]

A considerable number of public-private mix (PPM) initiatives have been launched since the 1990s in Myanmar. This study was conducted to explore the patients' perspectives on PPM initiatives in tuberculosis control. A total of 300 patients, 150 each taking treatment at the National Tuberculosis Program (NTP) clinics and at general practice (GP) clinics, were interviewed from June 2006 to September 2007. A community-based, cross-sectional analytic study was conducted using quantitative and qualitative approaches at five townships in Mandalay Division where PPM initiatives were running concurrently. Relatively older patients were taking treatment at NTP clinics while younger patients at GP clinics, mean ages of 42 ± 16.2 years and 38 ± 15.8 years, respectively ($p=0.020$). Mobile populations were taking treatment at GP clinics while more stable people preferred to take treatment at NIP clinics. Poorer patients were taking treatment at NTP clinics while relatively well-to-do patients at GP clinics ($p=0.018$). Only one-third of studied patients had good knowledge of TB and Directly Observed Treatment Short Course (DOTS) strategy. Patients taking treatment at GP clinics knew better about PPM compared to those at NTP clinics ($p=0.012$). A good program implementation with PPM

initiatives and good patients' compliance will ensure effective tuberculosis control.

2529 MUHAMMAD YOUSUF; SALIH SALIH; AL-JOHANI. S.; ADEL ALOTHMAN **Erythrocyte sedimentation rate at diagnosis in culture positive cases of active tuberculosis.** *Pakistan Journal of Medical Sciences* (2012) **28** (1) 87-90 Karachi, Pakistan; Professional Medical Publications [En, 14 ref.] Division of Internal Medicine, Department of Medicine, Mail Code: 1443, PO Box 22490, King Abdulaziz Medical City, Riyadh 11426, Saudi Arabia. Email: drmyousuf@hotmail.com

OBJECTIVE: To evaluate the Erythrocyte Sedimentation Rate (ESR) at the time of diagnosis in culture positive cases of different types of active tuberculosis (TB). METHODOLOGY: In this retrospective descriptive study conducted at King Abdulaziz Medical City, Riyadh, Saudi Arabia, ESR was done by a modified Westergren method using a rapid test. Cases of active TB (defined as a case of TB up to two weeks from the start of anti-tuberculous treatment), were evaluated for ESR at the time of diagnosis. RESULTS: Of 246 cases of culture positive TB, ESR results during active phase were available in 195 (79.3%) patients. Number (%) of patients with pulmonary, extrapulmonary and disseminated TB were 69 (35%), 78 (40%) and 49 (25%) respectively. Two (1%) of these patients were HIV positive. ESR was elevated in 169 (87%) and was normal in 26 (13%) patients. Mean ESR in all patients was 67.6 mm/hr with no statistical difference between patients with different TB types. ESR between 1-30, 31-60, 61-90; 91-120 and 121-150mm/hr represented 19%, 23%, 23%, 19% and 6% of the cases respectively, whereas, 44 (22.6%) of the patients had ESR more than 100 mm/hr. CONCLUSION: In HIV negative patients with suggestive features of TB but without any other underlying disease affecting the ESR, the baseline ESR may be a valuable diagnostic test to suspect TB in resource poor countries.

2530 ABDULLAH, F. E.; NABLA FARHAN; AMNA SHAIKH **Status of First-Line anti-TB drugs: an audit of 84 clinical sputum AFB isolates in Karachi.** *Pakistan-Journal of Medical Sciences* (2012) **28** (1) 105-107 Karachi; Pakistan Professional Medical Publications [En; 16 ref.] Pathology Department, Dow Medical College, Dow University of Health Sciences, Essa Lab, B-122, Block-H, Shahrah-e-Jahangir, Karanchi, Pakistan. Email: drfarhanessa@essalab.com

OBJECTIVE: To evaluate current incidence of multidrug-resistant tuberculosis (MDR-TB) among positive sputum culture isolates in two commercial laboratories in Karachi, Pakistan. **METHODOLOGY:** In this laboratory-based study eighty four AFB smear positive sputum culture isolates grown on routine Löwenstein Jensen (LJ) medium in two separate diagnostic labs during 12 months ending August 2011 were identified and subjected to antimicrobial susceptibility testing using LJ medium and anti-TB First-Line drugs (FLD). MICs of the control H37RV-NCTC strain 7416 were compared with the test strains inoculated with the batch tested. Results were evaluated by the traditional resistance ratio method. **RESULTS:** The sputa expectorated by 45 females (53.57%) and 39 males (46.43%) aged 15-58 years yielded 84 *M. tuberculosis* isolates. The percentages of FLD resistance were Rifampicin (48.8%), Streptomycin (28.57%), Ethambutol (7.14%), and Isoniazid (4.76%). Kanamycin (28.57%) was also tested. Only 12 (14.28%) of these were sensitive to all the FLDs, and 4 (4.76%) were MDR-TB strains (indifferent to Rifampicin and Isoniazid). **CONCLUSION:** The sparse labs in Karachi that do AFB-cultures should periodically assess and publicize the frequency of MDR-TB isolates to guide empirical therapy. Rifampicin, a consistent part of the initial drug regimen for empirical prescription, was currently least effective on the strains encountered.

2531 SALEH, M. A.; HAMMAD, E.; RAMADAN, M., M.; EL-RAHMAN, A. A. ENEIN, A. F. **Use of**

adenosine deaminase measurements and QuantiFERON in the rapid diagnosis of tuberculosis peritonitis. *Journal of Medical Microbiology* (2012) **61** (4) 514-519 Reading, UK; Society for General Microbiology [En, 44 ref.] Department of Medical Microbiology and Immunology, Damietta Faculty of Medicine, Al-Azhar University, Cairo, Egypt. Email: amamod@gmail.com

Peritoneal tuberculosis (TB) is a considerable problem in certain developing nations. Current diagnostic tests for peritoneal TB are difficult and time-consuming. This study aimed to determine the effectiveness of an adenosine deaminase (ADA) assay and the QuantiFERON-Gold (QFT-G) assay in the rapid diagnosis of TB peritonitis. Forty-one patients with a presumptive diagnosis of TB peritonitis with ascites were admitted to Mansoura University Hospital and included in the study. Ascitic fluid and blood samples were collected from each patient. Fluid samples were examined biochemically (protein concentration), cytologically (white blood cell count) and microbiologically (Ziehl-Neelsen stain and TB culture in Löwenstein-Jensen media), and ADA levels were determined using colorimetry. Interferon-levels in whole-blood samples were measured using the QFT-G assay. Fourteen (34%) patients received a final clinical diagnosis of TB peritonitis; these patients were subclassified as definite (positive culture for *Mycobacterium tuberculosis*; eight patients), highly probable (four patients) and probable (two patients) for TB peritonitis. Of the 14 patients with a final clinical diagnosis of TB peritonitis, 3 (21%) tested positive using an acid-fast bacilli smear, which showed a sensitivity of 21% and a specificity of 100%. A receiver operating characteristic curve showed that a cut-off value of 35 IU l⁻¹ for the ADA level produced the best results as a diagnostic test for TB peritonitis, yielding the following parameter values: sensitivity 100%, specificity 92.6%, positive predictive value (PPV) 87.5% and

negative predictive value (NPV) 100%. The QFT-G assay yielded the following values: sensitivity 92.9%, specificity 100%, PPV 100% and NPV 96.4%. The ADA and QFT-G assays might be used to rapidly diagnose TB peritonitis and initiate prompt treatment while waiting for a final diagnosis using the standard culture approach.

2532 ABLORDEY, A.; AMISSAH, D. A.; ABOAGYE, I. F.; HATANO, B.; YAMAZAKI, T.; SATA, T.; ISHIKAWA, K.; KATANO, H. **Detection of *Mycobacterium ulcerans* by the loop mediated isothermal amplification method.** *PLoS Neglected Tropical Diseases* (2012) **6** (4) e1590 San Francisco, USA; Public Library of Sciences (PLoS) [En, 35 ref.] Department of Bacteriology, Noguchi Memorial Institute for Medical Research, University of Ghana, Legon, Ghana. Email: aablordey@noguchi.mimcom.org

BACKGROUND: Buruli ulcer (BU) caused by *Mycobacterium ulcerans* (*M. ulcerans*) has emerged as an important public health problem in several rural communities in sub-Saharan Africa. Early diagnosis and prompt treatment are important in preventing disfiguring complications associated with late stages of the disease progression. Presently there is no simple and rapid test that is appropriate for early diagnosis and use in the low-resource settings where *M. ulcerans* is most prevalent. **METHODOLOGY:** We compared conventional and pocket warmer loop mediated isothermal amplification (LAMP) methods (using a heat block and a pocket warmer respectively as heat source for amplification reaction) for the detection of *M. ulcerans* in clinical specimens. The effect of purified and crude DNA preparations on the detection rate of the LAMP assays were also investigated and compared with that of IS2404 PCR, a reference assay for the detection of *M. ulcerans*. Thirty clinical specimens from suspected BU cases were examined by LAMP and IS2404 PCR **Principal Findings:** The lower detection limit of both LAMP methods at 60°C was 300 copies of IS2404 and 30

copies of IS2404 for the conventional LAMP at 65°C. When purified DNA extracts were used, both the conventional LAMP and IS2404 PCR concordantly detected 21 positive cases, while the pocket warmer LAMP detected 19 cases. Nine of 30 samples were positive by both the LAMP assays as well as IS2404 PCR when crude extracts of clinical specimens were used. **CONCLUSION/SIGNIFICANCE:** The LAMP method can be used as a simple and rapid test for the detection of *M. ulcerans* in clinical specimens. However, obtaining purified DNA, as well as generating isothermal conditions, remains a major challenge for the use of the LAMP method under field conditions. With further improvement in DNA extraction and amplification conditions, the pwLAMP could be used as a point of care diagnostic test for BU.

2533 MESFIN, N.; DERIBEW, A.; YAMI, A.; SOLOMON, T.; GEER-TRUYDEN, J. P. VAN; COLEBUNDERS, R. **Predictors of antiretroviral treatment-associated tuberculosis in Ethiopia: a nested case-control study.** *International Journal of STD & AIDS* (2012) **23** (2) 94-98 London, UK; Royal Society of Medicine Press Limited [En, 23 ref.] Department of Internal Medicine, Hawassa University, Hawassa, Ethiopia. Email: hakimulig@gmail.com

Little is known about the predictors of anti-retroviral treatment (ART)-associated tuberculosis (TB) in developing nations. The objective of this study was to determine predictors of ART-associated TB in adults with HIV infection at Jimma University Hospital, Ethiopia. A nested case-control study was conducted in October 2009. The study population consisted of adults with HIV infection (aged >14 years) who developed active TB in the first six months since ART initiation and controls that did not develop active TB. Data were collected using a structured and pretested questionnaire. Cox proportions hazards analysis was done to determine predictors of ART-associated TB. A total of 357

patients (119 cases and 238 controls) participated in the study. After six months of follow-up, cumulative incidence of ART-associated TB was 5.2% (123/2355). Forty (33.6%) cases were lost to follow-up after they developed ART-associated TB and 11 (9.2%) died. Fifty-one (21.4%) controls interrupted ART and 11 (4.6%) died. A CD4 lymphocyte count increase $>0.5/\mu\text{L}/\text{day}$ (adjusted hazard ratio [AHR]=19.80, 95% confidence interval [CI]: 9.52, 41.12, $P<0.001$), a base-line CD4 lymphocyte count <200 cells/ μL (AHR=9.59, 95% CI: 2.36, 39.04, $P=0.002$), World Health Organization (WHO) clinical stage 3 or 4 (AHR=3.04, 95% CI: 1.62, 5.69, $P<0.001$), night sweats during ART initiation (AHR=1.53, 95% CI: 1.06, 2.21, $P<0.001$) and high ART adherence (AHR=1.30, 95% CI: 1.13, 1.50, $P<0.001$) were independent predictors of ART-associated TB. HIV-infected adults with these risk factors should be followed cautiously for the development of ART-associated TB. Good ART adherence and a good immunological response during ART were associated with ART-associated TB, most likely because of an immune reconstitution inflammatory syndrome unmasking the TB.

2534 ALAVI, S. M.; KHOSHKHOY, M. M. **Pulmonary tuberculosis and diabetes mellitus: co-existence of both diseases in patients admitted in a teaching hospital in the southwest of Iran.** *Caspian Journal of Internal Medicine (CJIM)* (2012) **3** (2) 421-424 Babol, Iran; Babol University of Medical Sciences [En, 18 ref.] Joundishapour Infectious and Tropical Diseases Research Center, Joundishapour University of Medical Sciences, No. 52, West 11th Ave., Kianabad, Ahvaz, Iran. Email: alavi.seyedmohammad@yahoo.com

BACKGROUND: A number of former studies have shown that tuberculosis (TB) is higher in diabetes mellitus (DM) patients than non-diabetics. Both DM and TB are major public health problems in Iran, and because of the lack of investigation in this field in the region, we conducted this study to

evaluate the prevalence of DM in admitted pulmonary tuberculosis patients. **METHODS:** The medical files of documented tuberculosis cases and DM patients hospitalized in Infectious Diseases Ward in Razi Hospital in Ahvaz, southwest Iran from 2008 to 2010 were reviewed. The study population was divided into 2 groups as DM-TB and non-DM-TB. The data in the two groups were compared. **RESULTS:** One hundred and forty eight TB cases [36 (24.3%) DM cases with the mean age of 56.6 ± 12.7 years, and 112 (75.7%) non-DM with mean age of 44.8 ± 18.3 years] were studied. The estimated odds ratio (OR) of the association between DM and tuberculosis was 2.65 [95% confidence interval (CI), 1.77 to 3.95], $p<0.001$. There was significant difference in HIV infection, illicit drug use and imprisonment between the two groups ($p<0.05$). **CONCLUSION:** We found that the frequency of DM in TB patients in the region is more prevalent than it was expected. Tuberculosis had positive association to DM. DM might be an important risk factor for developing tuberculosis.

2535 BOLADO-MAIUÍNEZ, E.; PÉREZ-MENDOZA, A.; ALEGRÍAMORQUECHO, F. M.; CANDIA-PLATA, M. DEL, C.; AGUAYO-VERDUGO, M. DEL, R.; ÁLVAREZ-HERNÁNDEZ, G. **[DNA mutations associated to rifampicin or isoniazid resistance in *M. tuberculosis* clinical isolates from Sonora, Mexico.]** Mutaciones asociadas con resistencia a rifampicina o isoniazida en aislamientos clínicos de *m. tuberculosis* de Sonora, México. *Salud Pública de México* (2012) **54** (2) 167-170 Cuemavaca, Mexico; Instituto Nacional de Salud Pública [Es, en, 16 ref.] Departamento de Ciencias Químico Biológicas, Universidad de Sonora, Blvd. Luis Encinas y Rosales, 83000, Hermosillo, Sonora, Mexico. Email: ebolado@guayacan.uson.mx

OBJECTIVE : To perform the analysis of specific regions of the major genes associated with resistance to isoniazid or rifampin. **MATERIALS AND METHODS :** Twenty two *M. tuberculosis*

strains, isolated from human samples obtained in Sonora, Mexico. Specific primers for hotspots of the *rpoB*, *katG*, *inhA* genes and the *ahpC*-*oxyR* intergenic region were used. The purified PCR products were sequenced. RESULTS : Mutations in the promoter of *inhA*, the *ahpC*-*oxyR* region, and codon 315 of *katG* and in 451 or 456 codons of *rpoB*, were identified. CONCLUSIONS : Detection of mutations not previously reported requires further genotypic analysis of *Mycobacterium tuberculosis* isolates in Sonora.

2536 MALEKMOHAMMAD, M.; MARJANI, M.; TABARSI, P.; BAGHAEI, P.; SADR, Z.; NAGHAN, P. A.; MANSOURI, D.; MASJEDI, M. R.; VELAYATI, A. A. **Diagnostic yield of post-bronchoscopy sputum smear in pulmonary tuberculosis.** *Scandinavian Journal of Infectious Diseases* (2012) **44** (5) 369-373 Stockholm, Sweden; Informa Healthcare [En] Clinical Tuberculosis and Epidemiology Research Centre, National Research Institute of Tuberculosis and Lung Disease, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

BACKGROUND: The early definitive diagnosis of pulmonary tuberculosis (TB) is important for control of the disease in the community. We performed this study to evaluate the additional gain of post-bronchoscopy sputum in the diagnosis of pulmonary TB. METHODS: Bronchoscopy and bronchoalveolar lavage were performed for 126 patients suspected of pulmonary TB who either had 3 negative sputum smears for acid-fast bacilli or could not expectorate. After bronchoscopy the patients were asked to give sputum samples for 3 consecutive days. All of the obtained specimens were investigated for *Mycobacterium tuberculosis* by smear and culture. RESULTS: Pulmonary TB was confirmed in 56 patients. Among all confirmed cases, the sensitivity of bronchoalveolar lavage smear was 57.1% (32 of 56), sensitivity of post-bronchoscopy smear was 76.7% (43 of 56), and the yield of a combination of the 2 methods was

83.9% (47 of 56). Results of post-bronchoscopy sputum smears were not significantly related to sex, age, human immunodeficiency virus (HIV) infection, presence of cavitory lesions on chest X-ray, or the ability to expectorate before bronchoscopy ($p>0.05$). CONCLUSION: Evaluation of post-bronchoscopy sputum smears is helpful for earlier diagnosis of pulmonary TB and is an inexpensive and accessible assay.

2537 KIM HYEIN; KIM SHINWOO; CHANG HYUNHA; LEE JONGMYUNG; KIM NEUNGSU; KWON KITAE; RYU SEONGYEOL; HUR JIAN **[Causes and risk factors of mortality in adult patients with hemophagocytic syndrome.]** *Infection and Chemotherapy* (2012) **44** (2) 51-55 Seoul, Korea Republic; Korean Society of Infectious Diseases and Korean Society of Chemotherapy [Ko, en, 38 ref.] Department of Internal Medicine, School of Medicine, Kyungpook National University Hospital, 50 Samduk-dong 2-ga, Jung-gu, Daegu 700-721, Korea Republic. Email: ksw2kms@knu.ac.kr

BACKGROUND: Hemophagocytic syndrome (HS) is a distinct clinical entity characterized by high fever and hemophagocytosis with histiocytosis in tissue biopsy. We seldom encounter patients who suffer from unexplained, persistent fevers. Although there have been many studies about childhood HS, studies about adult HS are relatively rare. The causes and prognoses of HS in adults were evaluated in this study. We focused on infection-related HS. MATERIAL AND METHODS: We enrolled 41 adult patients with HS retrospectively from four hospitals in Kyungbuk province and Daegu city. The patients were diagnosed by bone marrow or liver biopsy, either of which showed hemophagocytosis with histiocytosis and had clinical findings consistent with HS. We explored the etiologies, clinical symptoms, laboratory findings, treatments, and outcomes of each case. RESULTS: The most common cause of HS Was infection, such as the Epstein-Barr virus (EBV) or *Mycobacterium*

tuberculosis. Old age and malignancy-associated HS had a poor prognosis. The overall mortality rate was 17.1%. Most patients survived after conservative therapy and the control of underlying diseases, in contrast to previous studies that showed a poor prognosis of infection-associated HS. CONCLUSIONS: A proper investigation is crucial to determine the cause of HS in patients who have unexplained persistent fever and hemophagocytosis with histiocytosis in their tissue. Cases of infection-related HS are common, but physicians should consider undiagnosed malignancy that may be related to a poor prognosis. Treatments appropriate to the causes are important for better outcomes in adult HS.

2538 ANAND KRISHNAN; RAKESH KUMAR; BARIDALYNE NONGKYNRIH; PUNEET MISRA; RAHUL SRIVASTAVA; KAPOOR, S. K. **Health in less well studied populations adult mortality surveillance by routine health workers using a short verbal autopsy tool in rural north India.** *Journal of Epidemiology & Community Health* (2012) **66** (6) 501-506 London, UK; BMJ Publishing Group [En, 34 ref.] Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi, India. Email: kanandiyer@yahoo.com

BACKGROUND: Most of the standard verbal autopsy tools are long and are used in a research setting. This study aims to compare a short verbal autopsy (VA) tool developed at Ballabgarh, India to be used by health workers for routine mortality surveillance with a standard tool. METHODS: A short VA tool was developed which was used by health workers during their routine house visits while a standard International Network of Field Sites with continuous Demographic Evaluation (INDEPTH) VA tool was filled by trained research workers for all adult deaths that occurred in 2008. The cause-specific mortality fraction using two tools, validity of the Comprehensive Rural Health Services Project (CRHSP) VA tool with INDEPTH VA tool as reference and agreement between the

two tools, was compared. RESULTS: The cause-specific mortality fraction was 11.6% and 12% for ischaemic heart disease (IHD), 10.6% and 11.8% for chronic pulmonary obstructive disease (COPD), and 9.4% and 7.3% for tuberculosis, using the INDEPTH and CRHSP VA tool, respectively. 16% and 21% of the deaths could not be classified using the INDEPTH and CRHSP VA tool respectively. The sensitivity of the CRHSP VA tool was 78.5% for IHD, 80% for COPD, 58.3% for tuberculosis, 92.8% for malignant neoplasm and 97.2% for intentional self harm. The kappa between two tools for IHD, COPD, tuberculosis, malignant neoplasm and intentional self harm was 0.754, 0.711, 0.628, 0.876 and 0.892 respectively. CONCLUSION: The short VA tool had a good sensitivity and fair to excellent agreement with the standard tool in different age groups across the major causes of death. It can be used within the routine healthcare delivery framework and can fill the gap in mortality surveillance.

2539 BALWANT SINGH; GARG, R. K.; SINGH, M. K.; RAJESH VERMA; MALHOTRA, H. S.; AMEETA JAIN; RAGINI SINGH; NEERA KOHU; PHADKE, R. Y.; RAKESH SHUKLA; ANIT PARIHAR **Computed tomography angiography in patients with tuberculous meningitis.** *Journal of Infection* (2012) **64** (6) 565-572 Oxford, UK; Elsevier Ltd [En, *Focus on mycobacterial disease.*] Department of Neurology, Chhatrapati Shahuji Maharaj Medical University, Uttar Pradesh, Lucknow - 226 003, India. Email: garg50@yahoo.com

BACKGROUND: Strokes in tuberculous meningitis are important determinant of prognosis. Strokes are caused by tuberculosis related vasculopathy. In this study, we aimed to demonstrate the value of computed tomography angiography. We also assessed value of angiographic findings in determining the prognosis. METHODS: We included consecutive patients of tuberculous meningitis and prospectively followed them for 6 months. Computed tomography angiography was performed at inclusion. Follow-up angiography,

after 6 months, was done in the patients, who had given consent. Angiographic findings were evaluated by experienced neuroradiologists. RESULTS: Initial computed tomography angiography revealed arterial narrowing or occlusion in 33 patients. In 30 patients the anterior cerebral circulation and in 9 patients posterior cerebral circulation was involved. Six (18.2%) patients had lesions in both the territories. The most frequently involved arteries were supraclinoid portion of the internal carotid artery, and proximal portions of the anterior cerebral and middle cerebral arteries. On univariate analysis, predictors of angiographic abnormalities were impaired vision ($p=0.019$), hemiparesis ($p=0.002$), hydrocephalous ($p<0.001$), basal exudates ($p<0.001$), meningeal enhancement ($p<0.026$) and infarcts ($p<0.001$). On multivariate analysis basal exudates was a significant predictor. Angiographic abnormalities were associated with insignificantly poorer prognosis. On follow-up angiograms, 3 patients showed resolution in vascular abnormalities. Two patients had developed new angiographic abnormalities. CONCLUSION: Arterial narrowing and occlusion is seen in majority of patients with tuberculous meningitis. Angiographic abnormalities may be associated with poor prognosis.

2540 CHANG KAI; LU WEIPING; WANG JUNJI; ZHANG KEJUN; JIA SHUANGRONG; LI FAKE; DENG SHAOLI; CHEN MING **Rapid and effective diagnosis of tuberculosis and rifampicin resistance with Xpert MTB/RIF assay: a meta-analysis.** *Journal of Infection* (2012) **64** (6) 580-588 Oxford, UK; Elsevier Ltd [En, *Focus on mycobacterial disease.*] Department of Clinical Laboratory Medicine, Institute of Surgery Research, Daping Hospital, The Third Military Medical University, Chongqing 400042, China. Email: chenming1971@yahoo.com

OBJECTIVES: Xpert MTB/RIF (Cepheid) assay has been introduced for the diagnosis of tuberculosis (TB) and RIP-resistance. The meta-analysis was

used to establish the overall accuracy of Xpert MTB/RIF assay for diagnosing TB and RIP-resistance. METHODS: Based on comprehensive searches of the Pubmed and Embase, we identified outcome data from all articles estimating diagnostic accuracy with Xpert MTBIRIF assay. A summary estimation for sensitivity, specificity, diagnostic odds ratios (DOR) and the area under the summary ROC curve (AUC) was calculated by using the bivariate random-effects approach. RESULTS: The meta-analysis included 18 studies (10,224 suspected specimens). The summary estimate was 90.4% (95%CI 89.2%-91.4%) for sensitivity, 98.4% (95%CI 98.0%-98.7%) for specificity and 328.3/0.9822 for DOR/AUC in pulmonary tuberculosis (PTB). The sensitivity, specificity and DOR/AUC of detecting RIP-resistance were 94.1%, 97.0% and 177.8/0.9832, respectively. For extrapulmonary tuberculosis, the overall pooled sensitivity was 80.4% and specificity was 86.1%. The findings in subgroup analysis were as follows: the accuracy of Xpert MTB/RIF assay is higher in smear-positive specimens and the sensitivity of diagnosing PTB in adults was higher than that in children (90.8% versus 74.3%). CONCLUSIONS: TB and RIP-resistance can be rapidly and effectively diagnosed with Xpert MTB/RIF assay.

2541 OCHERETINA, O.; MOROSE, W.; GAUTHIER, M.; JOSEPH, P.; D'MEZA, R.; ESCUYER, V. E.; RASFOGI, N.; VERNET, G.; PAPE, J. W.; FITZGERALD, D. W. **Multidrug-resistant tuberculosis in Port-au-Prince, Haiti.** *Revista Panamericana de Salud Pública/Pan American Journal of Public Health* (2012) **31** (3) 221-224 Washington, USA; Pan American Health Organization [En, es, 15 ref.] Center for Global Health, Division of Infectious Diseases, Department of Medicine, Weill Cornell Medical College, New York, New York, USA. Email: oko2001@med.cornell.edu

OBJECTIVE: To determine the prevalence of multidrug-resistant tuberculosis (MDR-TB) among

patients with new smear positive pulmonary TB in Port-au-Prince, Haiti. **METHODS:** Sputum samples were cultured from 1006 patients newly diagnosed with TB in 2008. The core region of the *rpoB* gene that is associated with resistance to rifampin was sequenced. All isolates with *rpoB* mutations were sent to the New York State reference laboratory for conventional drug susceptibility testing (DST). All isolates were also tested with the GenoType MTBDRplus line-probe assay. **RESULTS:** *Mycobacterium tuberculosis* was isolated from 906 patients. Twenty-six (2.9%) of the isolates had missense mutations or deletions in *rpoB* and were resistant to rifampin by DST. All 26 were also resistant to isoniazid and classified as MDR-TB. Fortysix control isolates without *rpoB* mutations were found to be rifampin sensitive by DST. The GenoType MTBDRplus line-probe assay correctly identified 26 MDR-TB strains. It misclassified one pansusceptible isolate as rifampin resistant. **CONCLUSIONS:** This study shows an MDR-TB prevalence of 2.9% in newly diagnosed TB patients in Haiti and suggests that *rpoB* sequencing and hybridization assays are good screening tools for early detection of MDR-TB.

2542 MADHUKAR, PAI **As India grows, tuberculosis control must not be left behind.** *Lancet Infectious Diseases* (2012) **12** (4) 263-265 Oxford, UK; Elsevier Ltd [En, 16 ref.] Respiratory Epidemiology and Clinical Research Unit, Montreal Chest Institute, Montreal, Canada. Email: madhukar.pai@mcgill.ca

This commentary discusses the state of tuberculosis in India, the problem of drug resistance, and the success and challenges of control programmes in both public and private sectors.

2543 PEREIRA, S. M.; BARRETO, M. L.; PILGER, D.; CRUZ, A. A.; SANTANNA, C.; HIJAR, M. A.; ICHIHARA, M. Y.; SANTOS, A. C.; GENSER, B.; RODRIGUES, L. C. **Effectiveness and cost-effectiveness of first BCG vaccination against**

tuberculosis in school-age children without previous tuberculin test (BCG-REVAC trial): a cluster-randomised trial. *Lancet Infectious Diseases* (2012) **12** (4) 300-306 Oxford, UK; Elsevier Ltd [En, 35 ref.] Instituto de Saude Coletiva, Universidade Federal da Bahia, Rua Padre Feijo, 29, 40.110-179 Salvador, Bahia, Brazil. Email: mauricio@ufba.br

BACKGROUND: Neonatal BCG vaccination is part of routine vaccination schedules in many developing countries; vaccination at school age has not been assessed in trials in low-income and middle-income countries. Catch-up BCG vaccination of school-age children who missed neonatal BCG vaccination could be indicated if it confers protection and is cost-effective. We did a cluster-randomised trial (BCG REVAC) to estimate the effectiveness (efficacy given in routine settings) of school-age vaccination. **METHODS:** We assessed the effectiveness of BCG vaccination in school-age children (aged 7-14 years) with unknown tuberculin status who did not receive neonatal BCG vaccination (subpopulation of the BCG REVAC cluster-randomised trial), between July, 1997, and June, 2006, in Salvador, Brazil, and between January, 1999, and December, 2007, in Manaus, Brazil. 763 schools were randomly assigned into BCG vaccination group or a not-vaccinated control group. Neither allocation nor intervention was concealed. Incidence of tuberculosis was the primary outcome. Cases were identified via the Brazilian Tuberculosis Control Programme. Study staff were masked to vaccination status when identified cases were linked to the study population. We estimated cost-effectiveness in Salvador by comparison of the cost for vaccination to prevent one case of tuberculosis (censored at 9 years) with the average cost of treating one case of tuberculosis. Analysis of all included children was by intention to treat. For calculation of the incidence rate we used generalised estimating equations and correlated observations over time. **FINDINGS:** We

randomly assigned 20 622 children from 385 schools to the BCG vaccination group and 18507 children from 365 schools to the control group. The crude incidence of tuberculosis was 54.9 (95% CI 45.3-66.7) per 100 000 person-years in the BCG vaccination group and 72.7 (62.8-86.8) per 100 000 person-years in the control group. The overall vaccine effectiveness of a first BCG vaccination at school age was 25% (343%). In Salvador, where vaccine effectiveness was 34% (8-53%), vaccination of 381 children would prevent one case of tuberculosis and was cheaper than treatment. The frequency of adverse events was very low with only one axillary lymphadenitis and one ulcer greater than 1 cm in 11 980 BCG vaccinations. INTERPRETATION: Vaccination of school-age children without previous tuberculin testing can reduce the incidence of tuberculosis and could reduce the costs of tuberculosis control. Restriction of BCG vaccination to the first year of life is not in the best interests of the public nor of programmes for tuberculosis control.

2544 MURTO, C.; ARIZA, L.; OLIVEIRA, A. R.; CHICHAVA, O. A.; ALENCAR, C. H.; SILVA, L. F. M. DA; TANNER, M.; HEUKELBACH, J. **Motives and determinants for residence change after leprosy diagnosis, central Brazil.** *Leprosy Review* (2012) **83** (1) 16-23 Colchester, UK; LEPRO [En, 38 ref.] Department of Community Health, School of Medicine, Federal University of Ceara, Rua Professor Costa Mendes 1608, 5. andar, Fortaleza CE, 60430-140, Brazil. Email: heukelbach@web.de

OBJECTIVE: To determine the extent of population movement after diagnosis with leprosy and to describe the underlying motives and determinants for relocation. DESIGN: A cross-sectional study was conducted among those newly diagnosed with leprosy in 79 endemic municipalities in the state of Tocantins, central Brazil. Individuals were identified through the National Information System for Notifiable Diseases (SINAN) database and interviewed with structured questionnaires. RESULTS: In total, 224

(20.9%) out of 1070 individuals relocated after their diagnosis with leprosy. Respondents moved to another neighbourhood in the same municipality ($n=178$, 79.5%), followed by another municipality in Tocantins state ($n=26$, 11.6%) and in another state ($n=11$, 4.9%). The primary motives and/or determinants for relocation were: home ownership ($n=55$, 28.4%), familial reasons ($n=43$, 19.2%), to seek better living conditions ($n=27$, 13.9%), employment ($n=26$, 11.6%), and better neighbourhood ($n=22$, 9.8%). Other motives were related to better access to leprosy diagnosis/treatment ($n=11$, 4.9%), owner-terminated rental ($n=5$, 2.2%), personal finances/could not afford housing ($n=4$, 1.8%). Perceived stigma due to leprosy was mentioned by one participant (0.5%). CONCLUSION: In Tocantins state, population movement is lower among individuals recently diagnosed with leprosy, as compared to the overall population. The primary motives for relocation after leprosy diagnosis were related to lifestyle changes. Stigma and treatment-related reasons did not appear to be common motives for population movement. These results may reflect policy changes instituted from the Brazilian Program of Leprosy Control to decentralise leprosy services and intensify health education campaigns within a broader concept of Information, Education and Communication.

2545 VELARDE FÉLIX, J. S.; CÁZAREZ-SALAZAR, S.; RÍOS-TOSTADO, J. J.; FLORES-GARCIA, A.; RANGEL-VILLALOBOS, H.; MURILLO-LLANES, J. **Lack of effects of the TNF- α and IL-10 gene Polymorphisms in Mexican patients with lepromatous leprosy.** *Leprosy Review* (2012) **83** (1) 34-39 Colchester, UK; LEPRO [En, 33 ref.] Centro de Medicina Genómica del Hospital General de Culiacán "Dr. Bernardo J. Gastélum", Servicios de Salud de Sinaloa, Juan Aldama y Nayarit s/n, Col. Rosales, Culiacán, Sinaloa, México, C.P. 80230, Mexico. Email: jsvelfe@hotmail.com

Several human genetic variants have been associated with susceptibility or resistance to leprosy. The aim of this study was to assess whether gene polymorphisms of -308 G/A TNF- and -819 T/C IL-10 are associated with lepromatous leprosy in Mexican mestizo patients from northwest Mexico. We genotyped these polymorphisms by means of polymerase chain reaction (PCR) and restriction fragment length polymorphisms (RFLPs) in 68 patients with lepromatous leprosy and 144 healthy Mexican Mestizo controls. We found that the -308G TNF- allele was predominant in both cases (94.3%) and controls (92.3%) without statistical significance and the frequencies of -819C IL-10 allele were also similar for the cases (56.0%) and controls (59.0%). These negative findings suggest that other genes or polymorphisms may be important in the susceptibility to leprosy infection in the Mexican mestizos.

2546 SHETTY, V. P.; PANDYA, S. S. **One year follow up of a cohort of suspected leprosy cases: findings from a leprosy 'Selective Special Drive' in Gadchiroli district, Maharashtra, India.** *Leprosy Review* (2012) **83** (1) 64-70 Colchester, UK; LEPRO [En, 3 ref.] The Foundation for Medical Research, 84-A, R.G. Thadani Marg, Worli, Mumbai - 400 018, India. Email: fmr@fmrindia.org

OBJECTIVES : The study involves a follow-up visit in 2010, to hyper-endemic Gadchiroli district of Maharashtra, India, to evaluate the current status of those suspected in 2009 of having skin/nerve lesions suggestive of leprosy, and to study the interactions between such people and the State leprosy programme. **DESIGN:** The study cohort comprised of those confirmed with leprosy ($n=151$) and 157/233 absentee 'suspects' who were not examined by the study team in 2009 in 14 of 45 Primary Health Centres (PHCs). At follow-up, the treatment status of the confirmed cases was checked from PHC registers and cross-checked by direct questioning of patients and

their views were sought on PHC leprosy services. The 157 absentee 'suspects' were queried about the reasons for their absence. **RESULTS:** Thirty nine 'absentee suspects' were found to have leprosy. A notable feature of the follow-up visit was that 114 people in the communities, other than those listed as 'suspects' by Community Health Workers (CHWs), voluntarily sought out the team for their opinion on hypopigmented/ anaesthetic lesions, which resulted in a further 39 new cases being brought to light. (Total new cases=78). The follow-up revealed discrepancies (100% vs. 75%) between PHC records and testimonies of the registered patients about regularity of treatment; irregularity of MDT supply was cited by some for dropping out of treatment. Other reasons proffered for irregularity were lepra reaction, fear of stigma, ignorance about leprosy and preference for faith healers. Medical Officers of PHCs were not trained in the management of lepra reactions; that task, along with disability care being entrusted to a paramedical worker of an NGO during periodic visits. **CONCLUSIONS:** There are remediable lacunae in the recording and dispensing of MDT by the State apparatus, as well as a need for refresher training in leprosy diagnosis for PHC staff, and in lepra reaction management for medical officers. The large number (78) of new cases detected in the follow-up, in part of Gadchiroli district strongly suggests more to-be-discovered cases in the communities.

2547 VALSA AUGUSTINE; LONGMORE, M.; MANNAM EBENEZER; RICHARD, J. **Effectiveness of social skills training for reduction of self-perceived stigma in leprosy patients in rural India - a preliminary study.** *Leprosy Review* (2012) **83** (1) 80-92 Colchester, UK; LEPRO [En, 22 ref.] Schieffelin Institute of Health Research & Leprosy Centre, Karigiri, Tamil Nadu 632 106, India. Email: valsaaugustine@yahoo.com

OBJECTIVES: To assess the effectiveness of social skills training in leprosy patients to raise self-esteem and reduce self-perceived stigma. **DESIGN:** Five leprosy patients were given 10 day-long group-sessions of social skills training over 3 weeks. **TRAINING INVOLVED:** identification of the emotions and concerns of patients when interacting socially; analysis of positive and negative social interactions and non-verbal and verbal skills training. Role-plays, videos and live models were used. Self-esteem and a reduction in self-perceived stigma were assessed qualitatively before and after training using semi-structured interviews. Assessment of change was scored under the indicators: self-perception, family, wider community and job. Patients were assessed for displaying new ways of interacting with people and changes in expectations for the future. **RESULTS:** Qualitative analysis of the interviews before and after training suggested that social skills training could raise the self-esteem of leprosy patients and combat self-perceived stigma. Increase in self-esteem, as evident through the verbal interactions with the interviewers and behavioural changes in the

community, were noted in the majority of patients. **CONCLUSION:** Social skills training along with counseling may be able to increase the self-esteem of leprosy patients, and so be a useful part of leprosy rehabilitation schemes to try and combat the stigma of leprosy.

2548 NIDHI MAHAJAN; SEEMA RAO; PARUL SOBTI; NITA KHURANA; GARG, V. K.; SHY AMA JAIN **Anaplastic large cell lymphoma and lepromatous leprosy: a rare coexistence.** *Leprosy Review* (2012) **83** (1) 104-107 Colchester, UK; LEPRO [En, 9 ref.] Maulana Azad Medical College, New Delhi - 110 002, India. Email: seemaraol974@yahoo.co.in

Lepromatous leprosy (LL) has been reported in the literature with Non Hodgkin Lymphoma and rarely with Hodgkin Lymphoma. However, an extensive search of the literature shows no case report describing anaplastic large cell lymphoma (ALCL) in association with LL. We report a case of a young male with LL who was found to have ALCL. This is an interesting case of coexistence of an endemic infectious disease and a rare lymphoma involving the same lymph node, with a brief review of the literature.