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1445 RYMAN, T. K.; ELSAYED, E. A.; MUSTAFA, A. A. M.; WIDAA, N. M.; OMER, A.; KAMADJEU, R. **Implementation of the reaching every district (RED) approach: experience from North Sudan.** *Eastern Mediterranean Health Journal* (2011) **17** (11) 804-812 Cairo, Egypt; World Health Organization, Regional Office for the Eastern Mediterranean [En, ar, fr, 7 ref.] Global Immunization Division, National Center for Immunization and Respiratory Diseases, US Centers for Disease Control and Prevention, Atlanta, Georgia, USA. Email: tryman@cdc.gov, tryman@uw.edu

The purpose of this evaluation was to assess the extent and quality of implementing the Reaching Every District (RED) approach in North Sudan and its impact on immunization coverage. The evaluation was conducted in all 70 districts of North Sudan, excluding Darfur. District RED implementation data for 2006 were collected from district staff and used to quantify implementation by calculating Implementation Scores (IS) using a 10-point scale, with 10 being fully implemented. Overall RED IS ranged from 1.6 to 8.9. The percentage of districts with diphtheria-pertussis-tetanus (DPT) 3 coverage $\geq 80\%$ increased as the overall RED IS increased, 78%, 87%, and 96% in low-, medium-, and high-scoring groups respectively. The degree of RED implementation varied across districts. Although it is not possible to directly attribute the overall increase in DPT3 coverage to RED implemen-

tation, RED implementation quality might be associated with improved DPT3 coverage.

1446 KANG NAIMIN; ZHANG XIUJUAN **[Postoperative treatment of pleuropneumonectomy for tuberculosis destroyed lung in intensive care unit.]** *Chinese Journal of Respiratory and Critical Care Medicine* (2011) **10** (6) 586-589 Sichuan, China; Editorial Department of Chinese Journal of Respiratory and Critical Care Medicine [Ch, en, 8 ref.] Intensive Care Unit, Beijing Chest Hospital Affiliated to Capital Medical University, Beijing 101149, China. Email: naimin3k@sohu.com

OBJECTIVE : To investigate the postoperative treatment of pleuropneumonectomy of tuberculosis-destroyed lungs in patients in the ICU. **METHODS :** Clinical data of 52 patients who suffered from tuberculosis-destroyed lungs and who underwent pleuropneumonectomy from June 2008 to June 2010 were analysed retrospectively. All of the subjects received routine treatment in the ICU after the operation. Moreover, diagnosis and treatment of postoperative bleeding, application of fiberbronchoscope to aspirate the sputum after the operation, sequential non-invasive ventilation after the invasive ventilation for acute respiratory failure after operation, were done. **RESULTS :** A total of 52 patients underwent pleuropneumonectomy operation. Bleeding occurred in 11 cases after operation but was resolved after the integrated therapy. Eight patients suffered from acute

respiratory failure and improved after sequential ventilation. There was no mortality from post-operative bleeding nor from acute respiratory failure. **CONCLUSIONS** : Patients who suffered from tuberculosis with destroyed lung who underwent pleuropneumonectomy with post-operative bleeding and acute respiratory failure have a good prognosis after appropriate postoperative management in the ICU.

1447 DENG FUQIU; CHEN MEIJUAN; WEI YIRONG **[Retrospective analysis of 98 cases AIDS with pulmonary tuberculosis.]** *Chinese Journal of Dermatovenereology* (2011) **25** (12) 958-959 Shaanxi, China; Chinese Journal of Dermatovenereology [Ch, en, 10 ref.] Department of Infectious Diseases, Heng County People's Hospital, Nanning 530300, China.

OBJECTIVE : To understand epidemiological features of the HIV (AIDS) combined with pulmonary tuberculosis, and try to provide evidence for prevention of it. **METHOD** : A retrospective analysis on clinical data of 98 cases AIDS with pulmonary tuberculosis including their educational background, age, occupational distribution, treatment and prognosis was carried. **RESULTS** : Most of AIDS patients with pulmonary tuberculosis were in the 20-39 age group. The percentage in 20-29 years old group and 30-39 years old group was 34.69% and 33.67% respectively; in which 88,71% was farmers; 50.00%, 33.67%, 14.29% and 2.04% graduated from elementary, middle, high school or secondary school, college or above respectively; a total number of 70 patient (71.43%) were survival after treatment. **CONCLUSION** : Health education and behavior intervention should be strengthened for migrant workers to reduce the incidence of AIDS combined with tuberculosis.

1448 FREIDLIN, P. J.; GOLDBLATT, D.; KAIDAR-SHWARTZ, H.; DVEYRIN, Z.; RORMAN, E. **Quality assurance for molecular epidemiology**

of tuberculosis methods in the mycobacterium reference laboratory. In *Proceedings of the 4th International Conference on Metrology, Jerusalem, Israel, 23-24 May 2011, Accreditation and Quality Assurance* (2011) **16** (12) 623-635 Heidelberg, Germany; Springer Berlin [En, 31 ref.] National Mycobacterium Reference Laboratory, National Public Health Laboratory, Ministry of Health, Tel Aviv, Israel. Email: paul.freidlin@phlta.health.gov.il

In the National Mycobacterium Reference Laboratory of the Israeli National Public Health Laboratory (hereafter referred to as "the laboratory"), three methods are employed for the molecular epidemiology of *Mycobacterium tuberculosis* IS6110 restriction fragment length polymorphism typing (RFLP typing), 43 spacer oligonucleotide typing (spoligotyping), and 24 loci Mycobacterial Interspersed Repeating Unit-Variable Number of Tandem Repeats typing (MIRU-VNTR typing). In this article, we describe the main practical aspects concerning quality assurance of these methods that are based on standardized, internationally agreed upon conditions, including consensus reference strains and markers. All three methods were validated by classical epidemiology (confirmed transmission) and clinical information. The laboratory has introduced a new 5 colors, 4 primer sets multiplex modification of the optimal 24-miru typing system that includes an easily produced in-house internal standard for the high-throughput capillary electrophoresis system. Quantitative measurement of the internal standards yielded statistics for measurement uncertainty that include the frequency distribution, mean, standard deviation, 95% confidence interval and coefficient of variation. Use of the new internal standard developed in our laboratory allowed us to introduce the first quantitative-evaluation of the system performance of the AB3130x1

capillary electrophoresis genetic analyzer for MIRU-VNTR typing. The results are discussed, in terms of expected accuracy and precision of MIRU-VNTR result R, and possible implications for forensic microsatellite typing which may be much more sensitive to the observed intra- and inter-plate variation.

1449 SANTOS, V. S. M. DOS **[Philanthropy, government, and the fight against leprosy (1920-1945).]** *Filantropia, poder público e combate à lepra (1920-1945)*. In *Seminário Internacional Estado, Filantropia e Assistência, Rio de Janeiro, Brazil, 2009*. [Edited by Sanglard, G.; Ferreira, L. O.; Freire, M.; Barreto, M.; Pimenta, T.]. *História, Ciências, Saúde - Manguinhos* (2011) **18** (Supplement 1) 253-274 Rio de Janeiro, Brazil; Casa de Oswaldo Cruz [Pt, en, 46 ref.] Programa de Pós-graduação em História, Política e Bens Culturais/Centro de Pesquisa e Documentação de História Contemporânea do Brasil/Fundação Getúlio Vargas, Praia de Botafogo, 190/14° andar, 22250-900, Rio de Janeiro, RJ, Brazil. Email: vsaul@uol.com.br.

The 1920s creation of Sociedades de Assistência aos Lázaros e Defesa Contra a Leprosia under Brazil's First Republic (1889-1930) represented a milestone in relations between assistance organizations and the government. Although these organizations were at first autonomous decision-makers, their guidelines changed after they established closer relations with the government, which enacted reforms in policies to fight leprosy following the 1930 creation of the Ministry of Education and Public Health, especially during the long tenure of Minister Gustavo Capanema (1934-1945).

1450 MASSEY, P. D.; VINEY, K.; KIENENE, T.; TAGARO, M.; ITOGO, N.; ITUASO-CONWAY, N.; DURRHEIM, D. N. **Ten years on: highlights and challenges of directly observed treatment short-course as the recommended TB control strategy**

in four Pacific Island nations. *Journal of Rural and Tropical Public Health* (2011) **10**, 44-47 Townsville, Australia; Anton Breinl Centre, School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University [En, 23 ref.] Hunter New England Population Health, NSW, Australia, Email: peter.massey@hnehealth.nsw.gov.au

OBJECTIVES : The internationally recommended tuberculosis (TB) control strategy, Directly Observed Treatment, Short course (DOTS) was implemented in most Pacific Island countries and territories during the year 2000, with expansion of DOTS into outer islands and rural areas over the past ten years. The objective of this study was to better understand successful strategies and challenges faced in implementing DOTS in outer islands and rural areas of selected high burden Pacific countries from the perspective of National TB Program (NTP) staff. **METHODS :** National TB Program Managers or Coordinators from four Pacific countries, Solomon Islands, Vanuatu, Kiribati and Tuvalu, were surveyed and participated in in-depth interviews exploring what had been particularly effective and what challenges had emerged during DOTS implementation in outer islands and rural areas. Information from the interviews was analysed for shared experiences with data coded inductively using a thematic coding scheme. **RESULTS :** The positive aspects of DOTS implementation in outer islands and rural areas were in three main themes: support from health workers and the community; enablers and incentives; and better treatment completion. The challenges could be categorised in five main themes: working with volunteers; stigma; traditional healers; distance and communication; and financial challenges. Local health workers, pastors, church leaders, chiefs and traditional healers were all key players in the TB Program in outer islands. Local health workers are

integral to effective TB control due to accessibility and being known by the community. CONCLUSIONS : Reviewing the highlights and challenges of implementing DOTS in outer islands and rural areas in four Pacific countries has revealed some important issues. Increasing support to local health workers, actively engaging with pastors, church leaders, chiefs and traditional healers and addressing the barriers to communication and transport for people living in the outer islands are particular issues to address. Much has been achieved in TB control in outer islands but if the burden of TB is to be reduced and drug resistant TB is to be prevented, additional and ongoing investment is required.

1451 OMOIKHUDU, O. P.; ODIMEGWU, D. C.; UDOFIA, E.; ESIMONE, C. O. **Multi-drug-resistant bacteria isolates recovered from herbal medicinal preparations in a Southern Nigerian setting.** *Journal of Rural and Tropical Public Health* (2011) **10**, 70-75 Townsville, Australia; Anton Breinl Centre, School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University [En, 35 ref.] Division of Microbiology, Department of Science Laboratory, Auchu Polytechnic, Edo State, Nigeria. Email: nonsodimegwu@yahoo.co.uk

OBJECTIVES : The microbial qualities of some herbal medicinal products circulated within southern Nigeria were evaluated. METHODS : sampling, isolation and characterization of contaminating microorganisms was carried out using established protocols. Agarose gel electrophoresis was employed for the characterization of possible R-plasmids. RESULTS : Out of the 18 herbal preparations 13 (72.2%) showed contamination with either bacteria or fungal microorganisms or both. *Bacillus anthracis* was isolated from five (38.5%) of the contaminated preparations (liquid preparation), *Staphylococcus aureus* from one (7.70%) solid preparation,

Corynebacterium diphtheriae from three (23.08%) preparations (2 liquid, 1 solid), and *Candida albicans* from 11 (84.62%) preparations (6 liquid, 5 solid). The antimicrobial susceptibility-resistance pattern of the contaminating microorganisms revealed that three out of the five *B. anthracis* strains isolated demonstrated resistance to four out of 12 antimicrobial agents (Ofloxacin, Ciprofloxacin, Pefloxacin, Augmentin, Ampiclox, Erythromycin, Cephalexin, Clindamycin, Ceftriaxone, Gentamicin, Co-trimoxazole, Amoxicillin) employed in the study. *S. aureus* displayed over 50% resistance coverage while the resistance pattern recorded by the *Corynebacterium diphtheriae* isolates appeared to be inconsistent. The various isolates of *C. diphtheriae* recorded 40, 0, and 50 percents respectively. Submerged agarose gel electrophoresis employed for the molecular characterization for possible R-plasmids revealed that one plasmid each was isolated from each of five resistant bacteria strains IAa (*Corynebacterium diphtheriae*), IAb (*Bacillus anthracis*), L10a (*Corynebacterium diphtheriae*), L10b (*Staphylococcus aureus*), S6 (*Bacillus anthracis*). It also shows that the largest plasmid size (23.05 kbp) was recorded for the *C. diphtheriae* strain IAa while the *C. diphtheriae* strain L10a gave the smallest plasmid size (2.03 kbp). CONCLUSIONS : The results of the study showed that herbal medicinal preparations are a potential source for the dissemination of multi-drug resistant microorganisms.

1452 FRANCE, GROUPE BIBLIOGRAPHIQUE DE LA SPILF **[Early identification of patients requiring isolation when tuberculosis is suspected. Result of the analysis of 13 scores.]** Identification précoce des patients nécessitant réellement un isolement lorsqu'une tuberculose est suspectée: 13 scores au banc d'essai. *Médecine et Maladies Infectieuses* (2011) **41** (12)

671-672 Issy-les-Moulineaux, France; Elsevier Masson SAS [Fr, 6 ref.]

A study was carried out to determine the use of 13 scores in identifying patients with pulmonary tuberculosis (PTB). 345 patients with suspected PTB upon hospital admission in Lima, Peru during 2002-03 were included. The components of the 13 scores are described in detail. Scores had generally good sensitivity but still failed accurate identification in some areas. Results suggest that the clinical and radiological scores are still not that effective in identifying patients with PTB.

1453 ANAMIKA GUPTA; MATHURIA, J. P.; SINGH, S. K.; GULATI, A. K.; SHAMPA ANUPURBA **Antitubercular drug resistance in four healthcare facilities in North India.** *Journal of Health, Population and Nutrition* (2011) **29** (6) 583-592 Dhaka, Bangladesh; International Centre for Diarrhoeal Disease Research [En, 39 ref.] Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi 221 005, India. Email: shampa_anupurba@yahoo.co.in

Tuberculosis (TB) is a major public-health problem in India, having the highest number of incident and multidrug-resistant (MDR) TB cases. The study was carried out to appraise the prevalence of first-line anti-TB drug resistance in *Mycobacterium tuberculosis* (MTB) and its patterns among different types of TB patients from different settings in a province of North India. Of 3,704 clinical specimens, 345 (9.3%) were culturepositive, and drug-susceptibility testing was carried out for 301 MTB strains. A high level of primary and acquired drug resistance of MTB was observed in the region studied, with weighted mean of 10.5% and 28.08%, 12.11% and 29.72%, 17.12% and 29.94%, 11.97% and 27.84%, and 10.74% and 23.54% for rifampicin, isoniazid, streptomycin, ethambutol-resistant and MDR cases respectively. Drug resistance was

significantly higher in pulmonary ($p=0.014$) and acquired drug-resistant TB cases ($p<0.001$). Any drug resistance ($p=0.002$) and MDR TB were significantly ($p=0.009$) associated with HIV-seropositive cases. An urgent plan is needed to continuously monitor the transmission trends of drug-resistant strains, especially MDR-TB strains, in the region.

1454 AZURA, S.; HUSSIN, S.; RAHMAN, M. M. **Drug resistance and susceptibility of *Mycobacterium tuberculosis* identified at University Kebangsaan Malaysia Medical Centre.** *Pakistan Journal of Medical Sciences* (2011) **27** (5) 1107-1111 Karachi, Pakistan; Professional Medical Publications [En, 13 ref.] Department of Medical Microbiology and Immunology, Medical Centre, Faculty of Medicine, University Kebangsaan Malaysia, Cheras 56000, Kuala Lumpur, Malaysia. Email: mmr@ppukrn.ukm.my, mostabau@yahoo.com

OBJECTIVE : The prime objective of the study was to evaluate drug resistance and susceptibility of *Mycobacterium tuberculosis* isolated at University Kebangsaan Malaysia Medical Centre. **METHODOLOGY :** A total number of 726 specimens in the form of sputum and bronchial lavage obtained from patients suspected to tuberculosis were analysed for confirmatory identification and antibiotic susceptibility testing. The bacteria was identified initially by culture and staining and finally by BDProbeTecTM ET Mycobacteria kits (2008). All *Mycobacterium tuberculosis* isolates were subjected to antibiotic susceptibility against streptomycin, isoniazid, rifampicin and ethambutol using BACTECTM MGIT™ 960 system. **RESULTS :** Out of 726 specimens 16 (32.65%) were identified as mono drug resistance 7 (14.29%) as poly drug resistance, 4 (8.16%) as multi-drug resistance (MDR-TB). Identified TB bacteria were analysed in the light of sources of samples where brief history

of the patients' age, gender and community noted. **CONCLUSION** : Bacteriologic testing with antibiotic sensitivity, standardized treatment with supervision and patient support, provision and management of the drugs used in treatment are necessary for effective treatment of tuberculosis.

1794 EKUNDAYO, E.O.; ABBEY, S.D.; ACHI, O.K. **Assessment of the diagnostic potential of clinotech TB screen test for diagnosis of pulmonary tuberculosis in Nigeria.** *African Journal of Clinical and Experimental Microbiology* (2012) **13** (1) 56-60. Kwara State, Nigeria; *African Journal of Clinical and Experimental Microbiology* [En, 14 ref.] Department of Microbiology, College of Natural and Applied Sciences, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria. Email: emma_ekundayo@yahoo.com

The Clinotech TB Screen test, a 3rd generation multi-antigen rapid chromatographic immunoassay for detection of IgG antibodies in serum against recombinant protein antigens 38kDa, 16kDa and 6kDa, was assessed for its diagnostic potential for diagnosis of active pulmonary TB in routine TB control programme in Abia State, Nigeria. The overall sensitivity and specificity of Clinotech TB Screen test were 24.1% and 87.8% (95% Confidence intervals [CI]: 14.7-33.5% and 80.6-95.0%) respectively. The positive and Negative Predictive Values (PPV and NPV) were 79.2% and 37.5% respectively. The performance of the test was inferior to that of the sputum smear microscopy which had a sensitivity of 50.0% (95% CI, 39.0%-61.0%) and specificity of 92.3 (95% CI: 86.498.2%). In 37 culture positive smear positive PTB cases, Clinotech TB Screen test was positive in 18 (48.65%). The rapid test showed a very low degree of sensitivity in smear-negative culture positive PTB cases; detecting just one (2.38%) out of 42 cases. These results indicate that the diagnostic value of Clinotech TB

Screen test for routine diagnosis of PTB in this setting is limited.

1795 KIERTIBURANAKUL, S.; SUEBSING, S.; KEHACHINDAWAT, P.; APIVANICH, S.; SOMSAKUL, S.; SATHAPATAYAVONGS, B.; MALATHUM, K. **Five-year prospective study of tuberculin skin testing among new healthcare personnel at a university hospital in Thailand.** *Journal of Hospital Infection* (2012) **80** (2) 173-175 Oxford, UK; Elsevier Ltd [En, 10 ref.] Department of Medicine, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand. Email: kmalathum@hotmail.com

We determined the prevalence of a positive tuberculin skin test (TST) and the incidence of TST conversion among new healthcare personnel (RCP) in a hospital in Thailand. During 2005-2008, TST was performed on 1438 HCP and the prevalence of positive TST was 66.3%. Age, male gender, and the presence of Bacille Calmette-Guérin (BCG) scar were associated with odds of positive TST (all $P < 0.05$). The incidence of TST conversion was 4.8 per 100 HCP-years. Nine (0.6%) HCP were diagnosed with active tuberculosis. The annual surveillance programme is important for the early diagnosis and prevention of tuberculosis among HCP in Thailand.

1796 HUANG SHIANGFEN; SU WEIJUIN; DOU HORNGYUNN; FENG JIA YIH; LEE YUCHIN; HUANG RUAYMING; LIN CHINGHSIUNG; HWANG JHIJHU; LEE JENJYH; YU MINGCHIH. **Association of *Mycobacterium tuberculosis* genotypes and clinical and epidemiological features - a multi-center study in Taiwan.** *Infection, Genetics and Evolution* (2012) **12** (1) 28-37 Amsterdam, Netherlands; Elsevier B.V. [En, 31 ref.] Department of Chest Medicine, Taipei Veterans General Hospital, No. 201, Sec. 2, Shipai Rd., Beitou District, Taipei, Taiwan. Email: sfhuang.dr@gmail.com, wj.wjsu@gmail.com

Genotypes of *Mycobacterium tuberculosis* (MTB) are related to the geographic origin of the patients and population migration. The relationship between genotypes of MTB and clinical presentations has mainly focused on transmission of multi-drug resistant MTB strain in population. This study aimed to investigate the molecular epidemiology and dynamic change of MTB genotypes in Taiwan, and their association with clinical presentation among patients with pulmonary tuberculosis. A multi-center, two-year study which enrolled 516 patients with 516 MTB isolates was conducted, including: (1) 254 isolates from northern Taiwan; (2) 38 isolates from mid-western Taiwan; (3) 211 isolates from southern Taiwan; and (4) 13 isolates from the east coast of Taiwan. The isolates were genotyped with spoligotyping and standardized 12-lociMIRU-VNTR method. The results showed Beijing/Beijing-like family was the major genotype of MTB in the northern (58%), eastern (53%), and southern (33%) regions. The second most widely spread lineage were the EAI-Manila (20% in the west and south) and Haarlem family (13-27% in the south, west, and east). According to the cluster analysis of 12-MIRU-VNTR genotypes, there were differences in distribution of MTB genotype between the northern and southern regions, and a temporal relationship between isolation year and 12-MIRU-VNTR genotype especially in loci 26 and 39 might exist. Furthermore, some patients with cavity lesions on chest films were associated with a cluster of Beijing family MTB strains, which can be defined by cluster analysis of 12MIRU-VNTR genotype. However, the results of 12-loci-MIRUVNTR genotyping in a longitudinal study should be interpreted with caution due to its short term instability. Further investigations of different molecular methodologies are necessary.

1797 TURANKAR, R. P.; MALLIKA LAVANIA;

MRADULA SINGH; SAI, K. S. R. S.; JADHAV, R. S. **Dynamics of *Mycobacterium leprae* transmission in environmental context: deciphering the role of environment as a potential reservoir.** *Infection, Genetics and Evolution* (2012) **12** (1) 121-126 Amsterdam, Netherlands; Elsevier B.V. [En, 34 ref.] Stanley Browne Laboratory, TLM Community Hospital, Nand Nagari, Delhi 110 093, India. Email: rujenjadhav@yahoo.com

Leprosy is a disease caused by *Mycobacterium leprae*. Various modes of transmission have been suggested for this disease. Transmission and risk of the infection is perhaps related to presence of the infectious cases and is controlled by environmental factors. Evidence suggests that humidity may favor survival of *M. leprae* in the environment. Several reports show that non-human sources like 'naturally' infected armadillos or monkeys could act as reservoir for *M. leprae*. Inanimate objects or fomites like articles used by infectious patients may theoretically spread infection. However, it is only through detailed knowledge of the biodiversity and ecology that the importance of this mode of transmission can be fully assessed. Our study focuses here to decipher the role of environment in the transmission of the disease. Two hundred and seven soil samples were collected from a village in endemic area where active cases also resided at the time of sample collection. Slit skin smears were collected from 13 multibacillary (MB) leprosy patients and 12 household contacts of the patients suspected to be hidden cases. DNA and RNA of *M. leprae* were extracted and amplified using *M. leprae* specific primers. Seventy-one soil samples showed presence of *M. leprae* DNA whereas 16S rRNA could be detected in twenty-eight of these samples. Samples, both from the environment and the patients, exhibited the same genotype when tested by single nucleotide

polymorphism (SNP) typing. Genotype of *M. leprae* found in the soil and the patients residing in the same area could help in understanding the transmission link in leprosy.

1798 BELAY TESSEMA; BEER, J.; EMMRICH, F.; SACK, U.; RODLOFF, A. C. **Analysis of gene mutations associated with isoniazid, rifampicin and ethambutol, resistance among *Mycobacterium tuberculosis* isolates from Ethiopia.** *BMC Infectious Diseases* (2012) **12** (37) (10 February 2012) London, UK; BioMed Central Ltd [En, 38 ref.] Department of Medical Laboratory Technology, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia. Email: bt1488@yahoo.com, Joerg.Beer@medizin.uni-leipzig.de, Frank.Emmrich@medizin.uni-leipzig.de, Ulrich.Sack@medizin.uni-leipzig.de, acr@medizin.uni-leipzig.de

BACKGROUND : The emergence of drug resistance is one of the most important threats to tuberculosis control programs. This study was aimed to analyze the frequency of gene mutations associated with resistance to isoniazid (INH), rifampicin (RMP) and ethambutol (EMB) among *Mycobacterium tuberculosis* isolates from Northwest Ethiopia, and to assess the performance of the GenoType® MTBDRplus and GenoType® MTBDRs1 assays as compared to the BacT/ALERT 3D system. **METHODS :** Two hundred sixty *Mycobacterium tuberculosis* isolates from smear positive tuberculosis patients diagnosed between March 2009 and July 2009 were included in this study. Drug susceptibility tests were performed in the Institute of Medical Microbiology and Epidemiology of Infectious Diseases, University Hospital of Leipzig, Germany. **RESULTS :** Of 260 isolates, mutations conferring resistance to INH, RMP, or EMB were detected in 35, 15, and 8 isolates, respectively, while multidrug resistance (MDR) was present in 13 of the isolates. Of 35 INH resistant strains, 33 had

mutations in the *katG* gene at Ser315Thr 1 and two strains had mutation in the *inhA* gene at C15T. Among 15 RMP resistant isolates, 11 had *rpoB* gene mutation at Ser531 Leu, one at His526Asp, and three strains had mutations only at the wild type probes. Of 8 EMB resistant strains, two had mutations in the *embB* gene at Met306Ile, one at Met306Val, and five strains had mutations only at the wild type probes. The GenoType® MTBDRplus assay had a sensitivity of 92% and specificity of 99% for INH resistance, and 100% sensitivity and specificity to detect RMP resistance and MDR. The GenoType® MTBDRsl assay had a sensitivity of 42% and specificity of 100% for EMB resistance. **CONCLUSION :** The dominance of single gene mutations associated with the resistance to INH and RMP was observed in the codon 315 of the *katG* gene and codon 531 of the *rpoB* gene, respectively. The GenoType® MTBDRplus assay is a sensitive and specific tool for diagnosis of resistance to INH, RMP and MDR. However, the GenoType® MTBDRsl assay shows limitations in detecting resistance to EMB.

1799 CUI ZHENLING; WANG YONGZHONG; FANG LIANG; ZHENG RUIJUAN; HUANG XIAOCHEN; LIU XIAOQIN; ZHANG GANG; RUI DONGMEI; JU JINLIANG; HU ZHONGYI **Novel real-time simultaneous amplification and testing method to accurately and rapidly detect *Mycobacterium tuberculosis* complex.** *Journal of Clinical Microbiology* (2012) **50** (3) 646-650 Washington, USA; American Society for Microbiology (ASM) [En, 46 ref.] Shanghai Key Laboratory of Tuberculosis, Shanghai Pulmonary Hospital, Medical School, Tongji University, Shanghai, China. Email: shtblab@163.com

The aim of this study was to establish and evaluate a simultaneous amplification and testing method for detection of the *Mycobacterium tuberculosis* complex (SAT-TB assay) in clinical specimens by using isothermal RNA amplification

and real-time fluorescence detection. In the SAT-TB assay, a 170-bp *M. tuberculosis* 16S rRNA fragment is reverse transcribed to DNA by use of Moloney murine leukemia virus (M-MLV) reverse transcriptase, using specific primers incorporating the T7 promoter sequence, and undergoes successive cycles of amplification using T7 RNA polymerase. Using a real-time PeR instrument, hybridization of an internal 6-carboxyfluorescein-4-[4-(dimethylamino) phenylazo] benzoic acid N-succinimidyl ester (FAM-DABCYL)-labeled fluorescent probe can be used to detect RNA amplification. The SATTB assay takes less than 1.5 h to perform, and the sensitivity of the assay for detection of *M. tuberculosis* H37Rv is 100 CFU/ml. The TB probe has no cross-reactivity with nontuberculous mycobacteria or other common respiratory tract pathogens. For 253 pulmonary tuberculosis (PTB) specimens and 134 non-TB specimens, the SAT-TB results correlated with 95.6% (370/387 specimens) of the Bactec MGIT 960 culture assay results. The sensitivity, specificity, and positive and negative predictive values of the SAT-TB test for the diagnosis of PTB were 67.6%, 100%, 100%, and 62.0%, respectively, compared to 61.7%, 100%, 100%, and 58.0% for Bactec MGIT 960 culture. For PTB diagnosis, the sensitivities of the SAT-TB and Bactec MGIT 960 culture methods were 97.6% and 95.9%, respectively, for smear-positive specimens and 39.2% and 30.2%, respectively, for smear-negative specimens. In conclusion, the SAT-TB assay is a novel, simple test with a high specificity which may enhance the detection rate of TB. It is therefore a promising tool for rapid diagnosis of *M. tuberculosis* infection in clinical microbiology laboratories.

1800 ZHANG RANGZHI; LI HONGXING; WANG JINGQUAN; YANG LIANGBIN [**Clinical features of leprosy reaction in the period of MDT and the therapeutic effect of glucocorticoids.**] *Chinese*

Journal of Dermatovenereology (2012) **26** (1) 30-32 Shaanxi, China; Chinese Journal of Dermatovenereology [Ch, en, 14 ref.] Center for Disease Prevention and Control of Dongtai City, Jiangsu 224200, China. Email: yanlb@ncstdlc.org

OBJECTIVE : To explore the situation of leprosy reaction occurred in the period of multidrug therapy (MDT) and evaluate the therapeutic effect of glucocorticoids. **METHODS :** The clinical data of the new and relapse leprosy cases, who were treated with MDT till cure during the period 1986-2005, were retrospectively analyzed. **RESULTS :** Seventy-two episodes of leprosy reaction occurred in 37 out of 63 cases, in which 34 episodes of type 1 reaction happened in 23 cases, 31 episodes of type 2 reaction in 15 cases, and 7 episodes of mixture in 7 cases, respectively. 73.53% of type 1 reactions occurred in less than 1 year of MDT, and all type 2 reactions in more than 1 year of MDT, but the type of mixed reactions in different times of MDT. Leprosy reactions were characterized by skin lesions, with presentation rates of 64.71% (Type 1), 100% (type 2) and 100% (mixture), and peripheral nerves involvement, with those of 100% (Type 1), 61.29% (type 2) and 42.86% (mixture), respectively. Among 72 episodes, 24 cured, 19 excellent. 21 Improved, 0 invalid, 8 deteriorated, with a total effective rate of 59.72%. Glucocorticosteroides treatment caused upset stomach in 25 cases (34.72%), moonshaped and bloody face in 16 cases (22.22%), osteoporosis pain in 7 cases (9.72%), which were mild and did not influence the treatment. **CONCLUSION :** Leprosy reaction has high prevalence in MDT and dominates relatively with nerve involvement Glucocorticosteroides has certain remedial effect to leprosy reaction, but the treatment regimen should be improved to some extent.

1801 KANJEE, Z.; AMICO, K. R.; LI, F.; MBOLEKWA, K.; MOLL, A. P.; FRIEDLAND, G. H.

Tuberculosis infection control in a high drug-resistance setting in rural South Africa: information, motivation, and behavioral skills.

Journal of Infection and Public Health (2012) **5** (1) 67-81 Oxford, UK; Elsevier Ltd [En, 37 ref.] Office of Student Affairs, Yale University School of Medicine, New Haven, Connecticut, USA. Email: zkanjee@partners.org

BACKGROUND : Tuberculosis (TB) is transmitted in resource-limited facilities where TB infection control (IC) is poorly implemented. Theory-based behavioral models can potentially improve IC practices. **Methods:** The present study used an anonymous questionnaire to assess healthcare worker (HCW) TB IC information, motivation, and behavioral skills (1MB) and implementation in two resource-limited rural South African hospitals with prevalent drug-resistant TB. **RESULTS:** Between June and August 2010, 198 surveys were completed. Although the respondents demonstrated information proficiency and positive motivation, 22.8% did not consider TB IC to be worthwhile. Most tasks were rated as easy by survey participants, but responding HCWs highlighted challenges in discrete behavioral skills. The majority of responding HCWs reported that they always wore respirators (54.3%), instructed patients on cough hygiene (63.0%), and ensured natural ventilation (67.4%) in high-risk areas. Most respondents (74.0%) knew their HIV status. Social support items correlated with the implementation of the first three aforementioned practices but not with the respondents knowledge of their HIV status. In most cases, motivation and behavioral skills, but not information, were associated with implementation. **CONCLUSION :** HCWs in rural South African hospitals with high drug-resistance demonstrated moderate 1MB and implementation of TB IC. Improvement efforts should emphasize the development of HCW motivation and behavioral

skills as well as social support from colleagues and supervisors. Such interventions should be informed by baseline 1MB assessments. In the present study, a trimmed/modified 1MB model helped characterize TB IC implementation.

1802 SHU, C. C.; WANG, J. T.; WANG, J. Y.; YU, C. J.; LEE, L. N.; TAIWAN, TAMI GROUP **Mycobacterial peritonitis: difference between non-tuberculous mycobacteria and *Mycobacterium tuberculosis*.** *Clinical Microbiology and Infection* (2012) **18** (3) 246-252 Oxford, UK; Wiley-Blackwell [En, 30 ref.] Department of Internal Medicine, National Taiwan University Hospital, No. 7, Chung-Shan South Road, Taipei 100, Taiwan. Email: jyywang@ntu.edu.tw

Unlike tuberculous peritonitis, peritonitis due to non-tuberculous mycobacteria (NTM) has unclear clinical manifestations. This study aimed to clarify the clinical manifestations and laboratory results of NTM peritonitis and compare it to tuberculous peritonitis. This retrospective study was conducted from 2000 to 2008 in a medical centre in Taiwan. Patients with mycobacteria isolated from ascites were identified and compared according to causative pathogens (*Mycobacterium tuberculosis* or NTM). Those with NTM peritonitis were further classified into the 'probable' and 'possible' groups based on diagnostic evidence. Twenty-five patients with NTM peritonitis and 65 with tuberculous peritonitis were reviewed. *Mycobacterium avium* complex was the most common NTM pathogen (52%). There was no obvious difference between the 'probable' and 'possible' NTM peritonitis groups regarding age and laboratory data. Patients with NTM peritonitis and those with tuberculous peritonitis had no differences in age or gender but varied in symptoms and serum laboratory data. NTM peritonitis was 100% associated with underlying

co-morbidities and had lower proportions of lymphocytes and albumin level in ascites. Twelve (48%) NTM peritonitis and 21 (32%) tuberculous peritonitis patients died during the 6-month follow-up. Anti-mycobacterial treatment, but not mycobacterial species, was correlated with better 6-month survival. In Taiwan, NTM is responsible for 28% of mycobacterial peritonitis cases, which have a poor prognosis if untreated. There are some differences in clinical manifestations between NTM and tuberculous peritonitis. NTM peritonitis should be considered in patients with peritonitis but without causative microorganisms identified other than NTM.

1803 DO DUY CUONG; THORSON, A.; SÖNNERBORG, A.; NGUYEN PHUONG HOA; NGUYEN THI KIM CHUC; HO DANG PHUC; LARSSON, M. **Survival and causes of death among HIV-infected patients starting anti-retroviral therapy in north-eastern Vietnam.** *Scandinavian Journal of Infectious Diseases* (2012) **44** (3) 201-208 Stockholm, Sweden; Informa Healthcare [En] DiviSlon of Global Health (IHCAR), Department of Public Health Sciences, Karolinska Institutet, Solna Campus, Nobels väg 9, SE-171 77, Stockholm, Sweden. Email: doduy.cuong@gmail.com

BACKGROUND : There is a lack of knowledge on mortality and causes of death among human immunodeficiency virus (HIV) infected patients after initiation of antiretroviral therapy (ART) in Vietnam. We investigated the mortality rate, risk factors, causes of death, and impact of enhanced adherence support on survival among 640 Vietnamese treatment naive HIV-infected patients receiving ART in a cluster randomized controlled trial. METHODS : Patients in the intervention group received enhanced adherence from peer-supporters. Data were collected through medical records and a verbal autopsy questionnaire. We used Kaplan-Meier analysis to

describe the survival trends and the Cox proportional hazard model to identify predictors of acquired immune deficiency syndrome (AIDS)-related deaths. RESULTS : After a median follow-up of 15.2 months, there were 60 deaths, 73% of which occurred within 6 months. The mortality rate was 7.41100 person-y and survival probability was 91% after 1 y. There was no significant difference in mortality rate between the intervention and the control groups. At baseline, the predictive factors for AIDS-related death were age >35 y, clinical stage 3 or 4, body mass index (BMI) <18 kg/m², CD4 count <100/μl, haemoglobin level <100 g/l, and plasma viral load > 100,000 copies/ml. Tuberculosis (TB) was the most common cause of death (40%). CONCLUSIONS : Early deaths occurred after ART, and delay of ART caused a significant decrease in CD4 count and a high mortality. Adherence support had no impact on survival at the early stage of ART. Early ART initiation and intensive follow-up of patients during the first 6 months of ART are therefore necessary to reduce AIDS-related mortality.

1804 AKPABIO, U. S.; VILLERS, P. J. DE **A description of patients with recurrence of pulmonary tuberculosis in a tuberculosis hospital, Ermelo.** *African Journal of Primary Health Care and Family Medicine* (2011) **3** (1) Article ID 261 Cape Town, South Africa; African Online Scientific Information Systems/AOSIS (Pty) Ltd [En, 49 ref.] Ermelo Provincial Hospital, Ermelo, Mpumalanga Province, South Africa. Email: Akpabio@telkomsa.net

BACKGROUND : Retreatment TB (tuberculosis) is a serious category of pulmonary TB with a treatment outcome that could include MDR-TB (multidrug resistant TB). In the Msukaligwa municipality of Mpumalanga Province, South Africa, the burden of TB is high with poor treatment outcome indicators, thus creating

some preconditions for retreatment TB. Knowledge of the characteristics of the patients and related health system factors would help in designing interventions to improve the care for patients, the adherence to medication and the prevention of retreatment TB. AIM OF THE STUDY : The aim was to describe the occurrence, characteristics and management outcome of retreatment pulmonary tuberculosis in patients in a TB hospital in Ermelo. OBJECTIVES : The specific objectives were to describe the socio-demographic, behavioural and clinical factors related to recurrence of TB in patients; to determine the contribution of defaulting treatment to recurrence of TB in the study population; to identify the prevalence of resistance to TB medication amongst patients with retreatment TB; and to identify treatment outcomes in patients who have been followed up for the duration of retreatment TB. This study was set in the 58-bed TB hospital in Ermelo. The study design was cross-sectional and descriptive, and the study population comprised of patients admitted with TB at the Ermelo TB hospital between 01 January 2005 and 31 December 2007. Data were collected from the patients' medical records and the TB registers by using a pre-designed form. Data were analysed with Microsoft Excel Spreadsheet at the Centre for Statistical Consultation at the University of Stellenbosch. RESULTS : All of the 388 patient records with retreatment TB, which formed 19.6% of TB patients admitted between 2005 and 2007, were reviewed. This comprised 66% male patients with a mean age of 41.4, and 34% female patients with a mean age of 35.3. They were mostly unemployed, and 93% had a primary education; 43% were unmarried and 34% were married. Retreatment TB was diagnosed with sputum smear microscopy in 71%, with a *bacilli* load of 3+ in 45% of the patients. Almost three-

quarters (74%) of the patients have been afflicted by TB, 1-3 years before the episode under study. Retreatment TB categories were: 'after treatment completed', 69%; 'default', 19%; 'after cure', 8%, and 'treatment failure', 4%. The majority, that is, 98% (169/172) of patients tested, had a HIV-positive status; the median CD4 cell count was 106 cells/ μ L at the time of retreatment, and very few (5%) were on ART (antiretroviral drug treatment). Drug resistance to primary TB drugs was as follows: Rifampicin (16%), Isoniazid (29%), Ethambutol (19%), and Streptomycin (23%). The treatment outcomes for those for whom data were available were: 'successful' (49.1%), 'death' (23.8%); and 'treatment default' (22.9%). MDR-TB caused complications in 3.3% of the patients. CONCLUSION: The majority of the retreatment TB patients were male patients with an average age of 41, and unemployed. More than two-thirds of the patients had completed TB treatment previously, and defaulting treatment accounted for less than one-quarter of retreatment categories. The process of care was better in terms of the diagnosis of TB with sputum smear. Improvement in the documentation of key factors such as smoking, alcohol, drug use amongst patients and co-morbidity, as well as counselling and testing for HIV and provision of ARTs, is required. Treatment outcomes with regard to successful outcomes should be monitored and improved.

1805 TUMBO, J. M.; OGUNBANJO, G. A. **Evaluation of directly observed treatment for tuberculosis in the Bojanala health district, North West Province of South Africa.** *African Journal of Primary Health Care and Family Medicine* (2011) **3** (1) Article ID 191 Cape Town, South Africa; African Online Scientific Information Systems/AOSIS (Pty) Ltd [En, 13 ref.] Department of Family Medicine and Primary Health Care, University of Limpopo, Medunsa campus, PO Box

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BACKGROUND : Tuberculosis (TB) remains one of the top public health problems in South Africa. Approximately 150 000 new cases and 10 000 TB-related deaths are reported in South Africa annually. In declaring TB a global emergency in 1993, the World Health Organization developed control strategies that include active case finding, laboratory support, directly observed treatment (DOT, contact tracing, and prevention of multi-drug and extreme drug-resistant tuberculosis (MDR-TB and XDR-TB). High DOT rates reported in some countries have been discordant with 'low cure' and 'high MDR' rates. **OBJECTIVES :** The aim of the study was to evaluate the use of DOT for TB in the Bojanala health district, North West Province, South Africa, by estimating the proportion of DOT use (1) amongst all TB patients and (2) in the initial TB treatment regimen compared to retreatment regimens. **METHOD :** A cross-sectional, descriptive study was conducted in 2008. Data regarding implementation of DOT were collected from eight purposefully selected primary health care clinics and one prison clinic in the health district. Upon receiving their informed consent, a questionnaire was administered to patients receiving TB treatment at the selected facilities. **RESULTS :** A total of 88 (of 90 selected) patients participated in the study, of whom 50 (56.8%) were on DOT and had DOT supporters. However, 35 (40%) had never heard of DOT. DOT was used mainly for patients on the retreatment regimen (87.5%), rather than for those on first-line treatment (48;6%). **CONCLUSION :** In this South African rural health district, the DOT utilisation rate for TB was 56.8%, mainly for patients on the TB retreatment regimen. Strict implementation of DOT in all patients undergoing TB treatment is a known strategy for improving TB cure rate and preventing recurrence and drug resistance.

1806 RASHID, I.; MABUZA, L. H.; GOVENDER, I.; PRETORIUS, D. **Volume of sputum to detect acid-fast bacilli as a measure of quality for the diagnosis of pulmonary tuberculosis at the Dr George Mukbari Hospital, South Africa.** *African Journal of Primary Health Care and Family Medicine* (2011) **3** (1) Article ID 240 Cape Town, South Africa; African Online Scientific Information Systems/AOSIS (Pty) Ltd [En, 29 ref.] Department of Family Medicine and Primary Health Care, University of Limpopo (Medunsa Campus), PO Box 222, Medunsa, 0204, South Africa. Email: dr_riqbal@yahoo.com

BACKGROUND : Optimum sputum results for acid-fast bacilli (AFB) microscopy are linked to a sputum quantity of at least 5.0 mL. This study was aimed at establishing the effect of sputum quantity in the pick-up rate of AFB microscopy by comparing sputum samples of 5.0 mL and 2.0 mL. **METHODS :** An analytical cross-sectional study was carried out at the Dr George Mukhari Hospital (DGMH) in Pretoria, South Africa, from 05 January 2007 to 04 January 2008. Two sputum samples, 5.0 mL and 2.0 mL, were collected from each of the 330 adult PTB (pulmonary tuberculosis) suspects. Fluorescence microscopy was used in the sputum analysis. The yield through microscopy of the 2.0 mL specimen versus the 5.0 mL specimen was compared and analysed, using culture results as the gold standard. **RESULTS :** From a sample of 330 specimens, 77 tested AFB positive on microscopy. In the 5.0 mL samples, the sensitivity was 76.6% (95% CI, 66.0%-84.7%), specificity 99.6% (95% CI 97.8%-99.9%), positive predictive value (PV+) 98.3% (95% CI 91.1%-99.7%), negative predictive value (PV-) 93.3% (95% CI 89.7%-95.7%), the likelihood ratio (LR) for a positive microscopy 192 and the LR for a negative test was 0.23. In the 2.0 mL specimens, the sensitivity was 75.3% (95% CI 64.6%-83.6%), specificity 99.2% (95% CI 97.1%-

99.8%), positive predictive value (PV+) 96.7% (95% CI 88.6%-99.1%), negative predictive value (PV-) 93.0% (95% CI 89.3%-95.4%), the LR for a positive microscopy was 94 and 0.25 for a negative microscopy. There was a statistically significant association (p-value <0.001) between the microscopy and culture tests in both the 5.0 mL and the 2.0 mL specimen categories. The strength of association between the microscopy and culture, as indicated by the kappa test was 0.83 and 0.81 in the 5.0 mL and 2.0 mL categories, respectively. CONCLUSION : Compared to the 2.0 mL specimen category, the yield for AFB microscopy in the 5.0 mL specimen category was consistently superior, as indicated by the higher sensitivity, specificity, predictive values and the likelihood ratios in the 5.0 mL specimen category. It is recommended that sputum specimen collection for AFB microscopy should aim for a minimum volume of 5.0 mL.

1807 DANG THI MINH HA; NGUYEN THI NGOC LAN; WOLBERS, M.; VO SY KIET; HOANG THI THANH HANG; NGUYEN HONG DUC; TO MY HUONG; VUONG MINH BACH; NGUYEN THI PHUONG THAO; TRAN VANQUYET; NGUYEN THI BICH TUYEN; VO THI HA; NGUYEN THI NHO; DAI VIET HOA; PHAN THI HOANG ANH; NGUYEN HUY DUNG; FARRAR, J.; CAWS, M. **Evaluation of microscopic observation drug susceptibility assay for diagnosis of multidrug-resistant tuberculosis in Viet Nam.** *BMC Infectious Diseases* (2012) **12** (49) (1 March 2012) London, UK; BioMed Central Ltd [En, 32 ref.] Pham Ngoc Thach Hospital, 120 Hung Vuong, District 5, Ho Chi Minh City, Vietnam. Email: hadtm@oucru.org, ngoclan0456@yahoo.com, mwolbers@oucru.org, kietvs@oucru.org, hanghtt@oucru.org, drnguyenhongduc@yahoo.com, Tomyhuong@gmail.com, bsminhbach@yahoo.com, thaongth@yahoo.com, quyetrtran80@gmail.com, tuyen135200@yahoo.com, kathy201004

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BACKGROUND : Early diagnosis of tuberculosis (TB) and multidrug resistant tuberculosis (MDR TB) is important for the elimination of TB. We evaluated the microscopic observation drug susceptibility (MODS) assay as a direct rapid drug susceptibility testing (DST) method for MDR-TB screening in sputum samples. METHODS : All adult TB suspects, who were newly presenting to Pham Ngoc Thach Hospital from August to November 2008 were enrolled into the study. Processed sputum samples were used for DST by MODS (DST-MODS) (Rifampicin (RIF) 1 µg/ml and Isoniazid (INH) 0.4 µg/ml), MGIT culture (Mycobacterial Growth Indicator Tube) and Lowenstein Jensen (LJ) culture. Cultures positive by either MGIT or LJ were used for proportional DST (DST-LJ) (RIF 40 µg/ml and INH 0.2 µg/ml). DST profiles on MODS and LJ were compared. Discrepant results were resolved by multiplex allele specific PCR (MAS-PCR). RESULTS : Seven hundred and nine TB suspects/samples were enrolled into the study, of which 300 samples with DST profiles available from both MODS and DST-LJ were analyzed. Cording in MODS was unable to correctly identify 3 Mycobacteria Other Than Tuberculosis (MOTT) isolates, resulting in 3 false positive TB diagnoses. None of these isolates were identified as MDR-TB by MODS. The sensitivity and specificity of MODS were 72.6% (95%CI: 59.8, 83.1) and 97.9% (95%CI: 95.2, 99.3), respectively for detection of INH resistant isolates, 72.7% (95%CI: 30.9, 93.7) and 99.7% (95%CI: 98.1, 99.9), respectively for detecting RIF resistant isolates and 77.8% (95%CI: 39.9, 97.1) and 99.7% (95%CI: 98.1, 99.9), respectively for detecting MDR isolates. The positive and negative predictive values (PPV and NPV) of DST-MODS

were 87.5% (95%CI: 47.3, 99.6) and 99.3% (95%CI: 97.5, 99.9) for detection of MDR isolates; and the agreement between MODS and DST-LJ was 99.0% (κ : 0.8, $P < 0.001$) for MDR diagnosis. The low sensitivity of MODS for drug resistance detection was probably due to low bacterial load samples and the high INH concentration (0.4 $\mu\text{g/ml}$). The low PPV of DST-MODS may be due to the low MDR-TB rate in the study population (3.8%). The turnaround time of DST-MODS was 9 days and 53 days for DST-LJ. CONCLUSION : The DST-MODS technique is rapid with low contamination rates. However, the sensitivity of DST-MODS for detection of INH and RIF resistance in this study was lower than reported from other settings.

1808 MOURA, V. C. N. DE; SILVA, M. G. DA; GOMES, K. M.; COELHO, F. S.; SAMPAIO, J. L. M.; MELLO, F. C. DE Q.; LOURENÇO, M. C. DA S.; AMORIM, E. DE L. T.; DUARTE, R. S. **Phenotypic and molecular characterization of quinolone resistance in *Mycobacterium abscessus* subsp. *bolletii* recovered from postsurgical infections.** *Journal of Medical Microbiology* (2012) **61** (1) 115-125 Reading, UK; Society for General Microbiology [En, 33 ref.] Departamento de Microbiologia, Imunologia e Parasitologia, Faculdade de Ciências Médicas, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, Brazil. Email: rsduarte@uflj.br

Several outbreaks of infections caused by rapidly growing mycobacteria (RGM) were reported in many Brazilian states (2032 notified cases) from 2004 to 2010. Most of the confirmed cases were mainly associated with *Mycobacterium massiliense* (recently renamed as *Mycobacterium abscessus* subsp. *bolletii*) BRA100 clone, recovered from patients who had undergone invasive procedures in which medical instruments had not been properly sterilized and/or disinfected. Since quinolones have been an

option for the treatment of general RGM infections and have been suggested for therapeutic schemes for these outbreaks, we evaluated the *in vitro* activities of all generations of quinolones for clinical and reference RGM by broth microdilution, and analysed the peptide sequences of the quinolone resistance determining regions (QRDRs) of GyrA and GyrB after DNA sequencing followed by amino acid translation. Fifty-four isolates of *M. abscessus* subsp. *bolletii*, including clone BRA100, recovered in different states of Brazil, and 19 reference strains of RGM species were characterized. All 54 *M. abscessus* subsp. *bolletii* isolates were resistant to all generations of quinolones and showed the same amino acids in the QRDRs, including the Ala-83 in GyrA, and Arg-447 and Asp-464 in GyrB, described as being responsible for an intrinsic low level of resistance to quinolones in mycobacteria. However, other RGM species showed distinct susceptibilities to this class of antimicrobials and patterns of mutations contrary to what has been traditionally defined, suggesting that other mechanisms of resistance, different from *gyrA* or *gyrB* mutations, may also be involved in resistance to high levels of quinolones.

1809 ENWEREJI, E. E.; AHUIZI, E. R.; IHEANOCHO, O. C.; ENWEREJI, K. O. **Medical rehabilitation of leprosy patients discharged home in Abia and Ebonyi State of Nigeria.** *Oman Medical Journal* (2011) **26** (6) 393-398 Al-Azaiba, Oman; Oman Medical Specialty Board [En, 28 ref.] Department of Community Medicine, College of Medicine, Abia State University, Uturu, Abia State, Nigeria. Email: hersng@yahoo.com

OBJECTIVES : To examine the extent to which medical coverage is available to discharged leprosy patients in communities. Evidence has shown that after care services, follow-up visits

and national disease prevention programs are important components of medical rehabilitation to leprosy patients discharged home after treatment. Denying them accessibility to these services could expose them to multiple disabilities as well as several disease conditions including HIV/AIDS. These adverse health conditions could be averted if health workers extend healthcare services to discharged leprosy patients. This study was conducted to examine the extent to which discharged leprosy patients have access to healthcare services in the communities. METHODS : All 33 leprosy patients who were fully treated with multidrug therapy (MDT) and discharged home in the two leprosy settlements in Abia and Ebonyi States of Nigeria were included in this study. The list of discharged leprosy patients studied and their addresses were provided by the leprosy settlements where they were treated. Also, snowball-sampling method was used to identify some of the leprosy patients whose addresses were difficult to locate in the communities. Instruments for data collection were questionnaire, interview guide and checklist. These were administered because respondents were essentially those with no formal education. Analysis of data was done quantitatively and qualitatively. RESULTS : Findings showed that 20 (60.6%) of discharged patients did not receive health programs like HIV/AIDS prevention or family planning. Also, followup visits and after-care services were poor. About 14 (42.4%) of the patients live in dirty and overcrowded houses. On the whole, discharged patients were poorly medically rehabilitated (mean score: 4.7 ± 1.1 out of total score of 7). CONCLUSION: Denying discharged leprosy patients opportunity of accessing health care

services could increase prevalence of infectious diseases including HIV/AIDS among them. There is need to extend national prevention programs, follow-up visits, after-care services and free treatment to discharged patients in the communities.

1810 YOON JUHWA; JUNG JA YOUNG; MIN JIWON; PARK SEON YOUNG; JEON YOUNGDO; HONG, H. C.; BANG JIHWAN; JHO JOONSUNG [Lymphobronchial fistula of tuberculous lymphadenitis in Acquired Immunodeficiency Syndro *Infection and Chemotherapy* (2012) 44 (1) 35-39 Seoul, Korea Republic; Korean Society of Infectious Diseases and Korean Society of Chemotherapy [Ko, en, 13 ref.] Department of Internal Medicine, National Medical Center, Euljiro 6-ga, Jung-gu, Seol 100-799, Korea Republic. Email: ssabana777@gmail.com

Bronchial invasion of tuberculous lymphadenitis in children has been reported in areas of high tuberculosis (TB) prevalence a complication due to primary pulmonary tuberculosis. However, it is rare in immunocompetent adults. When it appears, it often presents as a consequence of the reactivation of TB in the lung parenchyma. Primary TB occurs more frequently in patients with human immunodeficiency virus (HIV), with a history of organ transplants, or undergoing immunosuppressive treatments such as steroids. Furthermore, bronchial invasion of the bronchus by tuberculous lymphadenitis is considered to be very rare even among immunocompromised adults with primary TH, and has never before been reported in Korea. The authors report a case of bronchial invasion of the bronchus by tuberculous lymphadenitis, confirmed by bronchoscopy, in an Acquired Immunodeficiency Syndrome (AIDS) patient.