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Abstracts

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Amir Ramezani et al., J Prev Infect Cntrol 2018, Volume 4
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RAPID BEDSIDE DIAGNOSIS OF BACTERIAL MENINGITIS

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Background: Hospital acquired infections (HAI)/nosocomial infections affect >20% of patients in intensive care units and have a high associated mortality rate of >30%. Patients receiving neurosurgical intensive care are exposed to several risk factors like multiple trauma, altered consciousness, impaired protective reflexes etc., for acquisition of nosocomial infections which can be presented as pneumonia, urinary tract infection, meningitis etc. Nosocomial meningitis is mainly seen in neurosurgical patients. Due to anatomical restrictions, the inflammatory response to intracranial bacterial infections exposes swollen brain tissues to pressure and ischemia, in a life-threatening condition. Rapid diagnosis and immediate empirical antibiotic therapy is highly important. However, diagnosing meningitis in patients after neurosurgical procedures is complicated, due to brain tissue damage and changes in cerebrospinal fluid (CSF) caused by surgery. Moreover, altered consciousness can make it difficult to establish a diagnosis in patients on ventilators that develop fever after neurosurgical operations. Neutrophils are important members of innate immunity that are activated by microbes. Neutrophils can kill pathogens extracellularly by releasing neutrophil extracellular traps (NETs) that are composed of chromatin bound to selected cytoplasmic proteins.

Materials & Methods: Chromatin has a high affinity to aniline dyes. Based on metachromatic staining's principle, we prepared simple and rapid tests that detected presence of NETs by immediate interaction to chromatin in CSF. CSF from neurosurgical patients that developed fever post-operatively were analyzed with the test and the results were compared with conventional diagnostic methods.

Results: CSF samples (n=163) were collected consecutively from patients. A positive CSF culture was chosen as golden standard. The results showed that the test detected culture positive bacterial meningitis with 100% sensitivity, 74.7% specificity and negative predictive value 100%.

Conclusion: The rapid test might be a valuable tool to detect bacterial meningitis immediately after lumbar puncture in patients with suspected infection

Biography

Amir Ramezani studied medicine at Karolinska institute Sweden 1988-1993, recieved his Medical degree. 1993. He has done his residency in neurosurgery in Linköping university hospital and become specialist in neurusurgery 2004. Work at the moment as consultant neurosurgeon and head of spinal unit in Linköping university hospital in Sweden and PhD student at Linköping university since 2016.

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Catherine K Derow, J Prev Infect Cntrol 2018, Volume 4
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HOST AND PARASITE GENE EXPRESSION PROFILING THROUGH TIME FROM INFECTION TO LATER STAGES OF DISEASE TO ALLOW RATIONAL DESIGN OF TRADITIONAL VACCINES, LATER-STAGE VACCINES AND THERAPIES TO TREAT SYMPTOMS

Catherine K Derow
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It would be informative for rational design of vaccines and symptom management-therapies to do disease-progression from infection stage gene expression profiling microarray studies for parasitic infections. This would be the study of host cells infected or other cells affected by the parasitic disease but not infected, at different stages of the infection to see what is the progression of parasite genes turned on/off up/down-regulated and the same for the host genes. This would give valuable data from infection of cell to cell death programme of say an HIV-infected T-cell. This could also be done for non-virus parasites such as bacterial infections, and nematode infections as well as say malaria. This could give information about how to rationally design post-infection vaccines if epitopes are created by the parasite due to particular gene expression patterns at any stage from initial infection to later stages. Later-stage vaccines could be designed to stimulate the host immune system against later stages of parasitic epitopes allowing later-stage vaccine intervention, where vaccination has not been possible before infection and yet a strong vaccine-stimulated immune response could cause later-stage elimination of the parasitic infection or at least amelioration by bringing down the levels of infectious agents. Vaccines can be rationally designed also for immune system elimination of infectious agent to fend off attempted infection. Thorough studies of gene expression profiles of host and parasite at all stages of the infection process and infection progression could allow rational design of drugs to counter symptoms. Annotation of all the studies described with gene/protein function data could allow valuable insights.

Recent Publications

1. Shi Z, Derow C K and Zhang B (2010) Co-expression module analysis reveals biological processes, genomic gain, and regulatory mechanisms associated with breast cancer progression. BMC Systems Biology 4:74.
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5. Chassagnole C, Jackson R C, Hussain N, Bashir L, Derow C, Savin J and Fell D A (2006) Using a mammalian cell cycle simulation to interpret differential kinase inhibition in anti-tumour pharmaceutical development. Biosystems 83(2-3):91-7.

Biography

Catherine K Derow research is focused on applying Systems Biology to Genomics and Proteomics as a means of solving health problems and answering important questions in the field of the Life Sciences. She currently works as an Associate for Biopharma Vantage, a competitive intelligence provider for Life Sciences companies. She has worked for Physiomics plc. on *in silico* anti-cancer therapeutics development, as well as at the European Bioinformatics Institute on the database IntAct, a molecular interactions resource, in the Proteomics section. She has also served as an expert invited by the European Union to evaluate research proposals as part of a panel to aid in the selection of projects for fellowship funding.

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ACTIVE SURVEILLANCE INCREASED THE NUMBER OF IMPORTED MALARIA CASES REPORTED AT POINT OF ENTRY (POE), CHINA

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Objective: In order to implement the elimination programme, we reviewed the cases diagnosed at PoE from Jan 2010 to July 2015, so as to provide suggestions to decrease the imported malaria cases.

Methods: Symptom-based surveillance was carried out on travellers at the PoE of China, those who have fever and/or from the Malaria endemic areas were actively monitored by infrared temperature monitoring or medical inspected by travel health experts. Rapid detect test (RDT), molecular or microscopically detect method was used to diagnose the malaria. Information relating to travel, demographics and others were recorded.

Results: During the implementation of the national malaria elimination programme (NMEP) from 2010 to 2015 in China, the indigenous cases declined continuously. However, the imported cases diagnosed at PoE increased annually. From Jan 2010 to July 2015, a total of 1035 cases were reported at PoE, the average age was 39.1±10 (ranged from 4 to 69) years old and male accounted for 95.3% (985/1053). A total of 981 cases are from China, distributed in Angola, Guinea, Nigeria, Ghana and other countries. Among 627 cases detected by typing methods, *Plasmodium falciparum* was the predominant, accounting 82.5%, then was *Plasmodium vivax* of 15.5%, *Plasmodium malariae* and *Plasmodium ovale* were the least of 1.4% and 0.6%, respectively.

Conclusions: The implementation of active surveillance at PoE has successfully increased the number of reported malaria cases annually, although the indigenous cases have dramatically declined since 2010. The reason may due to the implementation of China NMEP, as well as stricter measurements carried out at PoE when MERS, Ebola, Zika and Yellow fever spread globally, partly due to more sensitive detect methods used in the detection. In order to eliminate the malaria and protect the exported labour from infecting malaria, more efforts should be focus on individual protection measurements.

Recent Publications

1. Xiao Lili, Guo Hui, Sun Fujun, et al. (2006) Exploration on establishment of surveillance system for adverse events following immunization of inspection and quarantine. Chinese Frontier Health Quaratine 29(B08):124-125
2. Zhu Hong, Guo Hui, Zhang Yuanyuan, et al. (2005) The Curent Situatian and Countermeasure of AIDS Tests at Beijing port. Chinese Frontier Health Quarantine 28(03):134-135.
3. Xin Hui, Wang Yu, et al. (2004) Sequence Characteristics and Subtype Analysis of HIV-1 Infected Strain among Entry-Site Workers in Beijing. Chinese Frontier Health Quaratine 27(5): 261-262.
4. Zhu Hong, Li Hanping, Guo Hui, et al. (2004) Study on subtype and sequence of partial env gene of HIV-1 in people entering and exiting national frontiers. 10(4):250-252.
5. Li Linping, Liu Chunyan, Guo Hui, et al. (2001) An analysis if physical examination results of foreign stduents in Beijing area in 2000. Science of travel Medicine 7(4):15-16.

Biography

Guo Hui has his expertise in Travel Medicine. He served as Director of the Port of Hong Kong Port of the State Health Inspection and Quarantine Bureau; Director of the International Travel Health Center of Beijing Entry-Exit Inspection and Quarantine Bureau; Deputy Director of the Ministry of Industry and Communications, Director of the Department of Agricultural and Food Standards, Director of the International Cooperation Department. He is the Director of Public Health and Quarantine Supervision Department of AQSIQ.

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PREVALENCE OF TOXOPLASMA GONDII INFECTION IN SLAUGHTERED CATTLE FROM JAHROM, FARS PROVINCE, SOUTHERN IRAN

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Toxoplasma gondii **is widely prevalent in most warm-blooded animals worldwide. *Toxoplasma gondii* is an important zoonotic and opportunistic parasite especially in the immunocompromised hosts that can cause significant morbidity and mortality. Humans mainly get infected by eating undercooked or raw meat of livestock as well as contaminated food and drink water. Since cattle play an important role in the human food chain in Iran, this study was designed to investigate the infection of slaughtered cattle with *Toxoplasma gondii* in Jahrom, Southern Iran. Briefly, a total of 375 tissue samples consisting of heart, diaphragm, and tongue were collected from 125 slaughtered cattle in Jahrom abattoir located in Fars province from June to August 2017. *Toxoplasma gondii* DNA was extracted from 1 g of the homogenized tissues. A nested-PCR assay was performed to detect *Toxoplasma gondii* using the SAG2 gene as a target. The total prevalence of toxoplasma infection among cattle was found to be 96%. The highest infected tissue was diaphragm (84%) followed by heart (70.4%) and tongue (65.6%). Co infection of diaphragm, heart and tongue was detected in 56, heart and diaphragm in 17, diaphragm and tongue in 13, and heart and tongue in 12 cattle. This study demonstrated a high level of toxoplasma infection in slaughtered cattle in Jahrom and these should be considered as one of the main sources of infection for human in the region that requires attention and suggest that some hygienic planning should be taken to control and prevent this disease.**

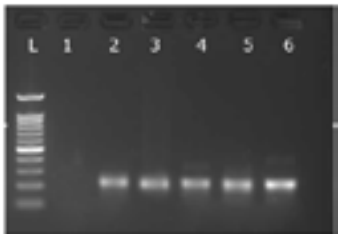

Figure 1: PCR amplification products of Toxoplasma gondi SAG2 gene among cattle's tissue sample Lane L, molecular marker (GeneRuler TM 100 bp Plus DNA Ladder, Fermentas UAB, Vilnius, Lithuania); 1, Negative control (DNA of Toxoplasma gondi); lane 3-6(221 bp), positive samples.

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Biography

Hassan Rezanezhad has completed his PhD degree from the University of Camerino, Italy. His doctoral dissertation was focused on the study of cellular-molecular apoptosis-like cell death in *Plasmodium*. He is interested in studying protozoa. He also has experiences in the fields of isolation and identification of *Leishmania* and *toxoplasma* from patients by different techniques. His job experiences include working in the medical laboratory for more than ten years.

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POTENTIAL INFECTION OF ZIKA VIRUS IN THE TRAVELERS DETECTED AT THE POINT OF ENTRY CHINA BY A RETROSPECTIVE STUDY

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Introduction: Zika virus (ZIKV) isn't arousing public attention until the outbreak on Yap Island of Micronesia since 2007 and the largest known outbreak before Brazil. In South America (SA) and Southeast of Asia (SEA), ZIKV has been circulating for a long time except for China. ZIKV isn't in the routine test list in the febrile sera collected at China Point of Entry (PoE) before 2016, we deduced that there might be existed ZIKV neglected or misdiagnosed.

Methodology: A total of 264 sera collected from the febrile travelers came from SEA and SA in 2014 that stocked at the Biobank of China PoE population were eligible for the study. The sera molecular and serological methods were carried out to detect the ZIKV, respectively. The ZIKV RNA was amplified using a real-time RT-PCR assay. Anti-ZIKV IgG was tested by indirect immunofluorescence assay (IFA). To further exclude the cross-reactivity with other flavivirus, conventional CPE-based micro neutralization (MN) test were used to determine the ZIKV specific antibody.

Results: The results showed although no ZIKV RNA found in the stocked sera, however, 5.3% of the samples were positive for anti-ZIKV IgG. The epidemiologic study showed ZIKV infection was related with age and gender significantly ($p<0.05$), affecting the relatively young and female population. The travelers who infected ZIKV were consistent with the reported endemic areas.

Conclusion: It's deduced that the international travelers might be as a sentinel for surveillance the ZIKV international transmission.

Recent Publications

1. Xiao Lili, Guo Hui, Sun Fujun, et al. (2006). Exploration on Establishment of Surveillance System for Adverse Events Following Immunization of Inspection and Quarantine.Chinese Frontier Health Quaratine,29(B08):124-125
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4. Zhu Hong, Li Hanping, Guo Hui, et al. (2004). Study on subtype and sequence of partial env gene of HIV-1 in people entering and exiting national frontiers 10(4):250-252.
5. Li Linping, Liu Chunyan, Guo Hui, et al. (2001). An analysis if physical examination results of foreign stduents in Beijing area in 2000. Science of travel medicine 7(4):15-16.

Biography

Guo Hui has his expertise in Travel Medicine. He served as Director of the Port of Hong Kong Port of the State Health Inspection and Quarantine Bureau; Director of the International Travel Health Center of Beijing Entry-Exit Inspection and Quarantine Bureau; Deputy Director of the Ministry of Industry and Communications, Director of the Department of Agricultural and Food Standards, Director of the International Cooperation Department. He is the Director of Public Health and Quarantine Supervision Department of AQSIQ.

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IMPACTS OF HOSPITAL ASSOCIATED INFECTIONS WITH INVASIVE DEVICES IN A TERTIARY CARE HOSPITAL, BANGKOK, THAILAND

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The objectives of this study were to determine impacts of hospital associated infections with invasive devices in a tertiary care hospital, Bangkok, Thailand. This descriptive study to determine impacts of hospital associated infections with invasive devices of ventilator-associated pneumonia (VAP), central line-associated bloodstream infection (CLABSI) and catheter-associated urinary tract infection (CAUTI) including mortality rate, case fatality rate, length of hospital stay, and direct cost of VAP, CLABSI and CAUTI treatment of patients undergoing insertion invasive devices who were admitted into 6 ICUs and 36 general wards during October 2016 to September 2017. VAP, CLABSI and CAUTI occurrence were collected by the researcher using definition of the Centers for Disease Control and Prevention (CDC) and followed daily until discharge from hospital or death. Data were analyzed using descriptive statistics. Mortality rate of VAP cases was 7.4 per 100 mechanically ventilated patients. Case fatality rate was 42.6 percent. Range of length of hospital stay was 5-246 days (Mode = 6 days). Eighty-nine percent of VAP cases developed VAP after 6 days of receiving mechanical ventilation (late onset). Total attributable cost of VAP was 103,285.56 USD. Mortality rate of CLABSI cases was 8.6 per 100 central lines patients. Case fatality rate was 51.9 percent. Range of length of hospital stay was 7-182 days (Mode = 8 days). Total attributable cost of CLABSI was 26,879.94 USD. Mortality rate of CAUTI cases was 1.7 per 100 catheter patients. Case fatality rate was 19.8 percent. Range of length of hospital stay was 4-297 days. Total attributable cost of CAUTI was 96,577.32 USD. The results revealed that impacts of VAP, CLABSI and CAUTI to patients and hospitals. Hospital personnel who take care of inserted invasive devices patients need to realize the impacts of VAP, CLABSI, CAUTI and strictly follow infection prevention activities.

Recent Publications

1. Al-Mousa H H, Omar A A, Rosenthal V D, Salama M F, Aly N Y, Noweir M E D and George S M (2016) Device-associated infection rates, bacterial resistance, length of stay, and mortality in Kuwait: international nosocomial infection consortium findings. American Journal of Infection Control 44(4):444-449.
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Biography

Jinjutha Kaewmak is a Professional Nurse. She works in the operating theater, specializing in Ophthalmic Surgery and expertise in Nursing Care of Patients with Infectious Diseases and Infection Control. Her present research is in Epidemiology and impacts of hospital-associated infections on older patients in tertiary care hospitals and has participated in the 28th Annual Academic Meeting Rajavithi Hospital, Bangkok, Thailand. In 2017, she was responsible and participated and she took part in project about effect of using collaborative quality improvement of infection prevention in her hospital.

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ECOLOGICAL AND EPIDEMIOLOGICAL STUDY OF FRANCISELLA TULARENSIS IN GUSAR AND KHACHMAZ REGIONS IN THE NORTHERN PART OF AZERBAIJAN

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[1]Republican Anti-Plague Station, Azerbaijan
[2]Khachmaz Regional Anti-Plague Division

Introduction: *Francisella tularensis* is a highly virulent bacterium for humans and rodents. In some countries, endemic regions with frequent outbreaks are bordering with the regions with no history of tularemia. In Azerbaijan, there are natural foci of this infection. The main goal of this study is to define the prevalence and distribution of *F. tularensis* pathogen in Khachmaz and Gusar regions of Azerbaijan.

Methods: In total, 13 trips were made to Khachmaz region for six months (April-September) during spring, summer and autumn where arthropod specimens (ticks) were collected. Each of these monthly (2-3 times a month) trips lasted nine days. Collected ticks were identified through microscopy, and they were grouped and tested by RT-PCR.

Result: 8216 ticks that were collected are distributed as follows: *Dermacentormarginatus* (3650) 44 %, *Rhipicephalussanguineus* (2932) 35%, *Rhipicephalusturanicus* (1421)17%, *Ixodesricinus* (118) 1.5%, *Hyalommaplumbeum* (52) 0.6%, *Hyalommaasiaticum* (41) 0.4 %, *Haemaphysalispunctata* (1) 0.01%. 1269 tick pool (8216 ticks) samples were tested by RT-PCR. 12 samples were positive for tularemia. The following ticks were identified in the given samples: *Dermacentormarginatus, Hyalommaplumbeum*, *Rhipicephalusturanicus* and *Rhipicephalussanguineus*.

Conclusion: Results of the study conducted in the Northern part of Azerbaijan show that the prevalence of tularemia was high. There was no confirmed human case of tularemia in this region for the last ten years. These results will further contribute to public health and veterinary services as part of one health program.

Recent Publications

1. Kracalik I T, Abdullayev R, Asadov K, Ismayilova R, Baghirova M, Ustun N, Shikhiyev M, Talibzade A and Blackburn J K (2015) Human brucellosis trends: re-emergence and prospects for control using a one health approach in Azerbaijan (1983-2009). Zoonoses Public Health 63(4):294-302.
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Biography

Rita İsmayilova has completed her PhD from Azerbaijan Medical University and Post-doctoral studies from Republican Anti-plague Station School of Epidemiology. She is the Deputy Director of Republican Anti-plague Station. She has published more than 40 papers in reputed journals and has been member of EIDSS administration committee.

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A CLUSTER OF ZIKA VIRUS INFECTION AMONG TRAVELERS RETURNING TO CHINA FROM SAMOA: A CASE TRACING STUDY

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[2]Yiwu Entry-Exit Inspection and Quarantine Bureau, China
[3]State Key Laboratory of Emerging Infectious Diseases – HKU, China

Background: A febrile man, who returned to China after a nine-day travel in Fiji and Samoa, was detected to be infected with Zika virus (ZIKV) at the port by Shenzhen Entry-Exit Inspection and Quarantine Bureau on Feb 14, 2016.

Methods: The patient and his 32 travelling companions were traced for ZIKV infection. A standardized questionnaire was used to obtain the information on demographics, clinical manifestations and exposure history. Their samples were tested for ZIKV by quantitative reverse transcriptase polymerase-chain-reaction (qRT-PCR). The positive samples were subjected to viral culture and genome sequencing.

Findings: Four of the 33 travelers were confirmed to be infected by ZIKV through qRT-PCR and viral culture, with an overall infection rate of 12%. Interestingly, one case (patient 3) had high viremia levels and was tested four days prior to symptoms. In addition, a 7-year-old girl was identified to have ZIKV infection on Feb 17, but never had any manifestation. ZIKV was isolated from the four imported cases. Phylogenetic analysis based on whole genome sequences revealed that these isolates were similar to each other and close to the strain causing the French Polynesia outbreak in 2013.

Interpretation: The travelers should be informed of the high risk for ZIKV infection during their stay in areas with active transmission, and measures to prevent mosquito-bites.

Biography

Runzi Qi is a Medical Doctor (MD), Deputy Director of Health Quarantine, Former Zhejiang Entry-Exit Inspection and Quarantine Bureau until May 2018. Now Deputy Director of Health Quarantine, Hangzhou Customs District People's Republic of China.

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ISOLATION OF BACILLUS ANTHRACIS FROM SOIL IN SELECTED HIGH-RISK AREAS OF AZERBAIJAN IN 2017

Sheyda Shikhaliyeva, Rita Ismayilova, Gulxar Jahanova, Sabina Ibrahimova and **Rakif Abdullayev**

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The problem of anthrax spread remains very serious for Azerbaijan. There are some permanent high-risk areas with multiple pockets of anthrax infection in the soil, which persist for a long time. This unresolved problem can potentially lead to new epizootics, the possibility of spreading the pathogen outside the epizootic area with infected livestock products, and human diseases. In the Republican Anti-Plague Station (RAPS) we have carried out an investigation of the soils from these high-risk points, in particular from the cattle burial sites, for the presence of anthrax spores. The choice of sites for soil collection was determined on the basis of the archival data from RAPS. All regions of the republic have been divided between the five Anti Plague Divisions (APDs) namely Mingachevir, Imishli, Khachmaz, Shamkir and Lenkoran. Samples of soils were collected by APDs and sent to RAPS for the analysis. Each APD collected 20 soil samples, thus the total number of samples equalled 100. Laboratory diagnostics was carried out in the Biosafety Level 2 (BSL 2) laboratory of RAPS by the bacteriological method, and confirmed by PCR. From the 100 samples, four cultures of *Bacillus anthracis* have been isolated. Two cultures were isolated from the soils collected by the Mingachevir APD at the cattle burial sites in the Gakh district (one of them from the village of Chalair and other from the site at Ingloy village). Two cultures were isolated by the Shamkir APD in the Shamkir district (one of them from the village of Seifeli and other from the village of Sabirkend). Considering active livestock development in these areas we recognize the necessity of carrying out continuous monitoring activities there. When anthrax spores are discovered in soils, we recommend large-scale soil disinfection and additional vaccination of animals.

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Biography

Sheyda Shikhaliyeva has completed her Biology Department of Azerbaijan State University (1993). She has completed her PhD from Azerbaijan State Post-Graduate Institute for Doctors named after A.Aliyev. She is the Deputy Director of Azerbaijan Republican Anti-Plague Station. She has published more than 30 papers in reputed journals and has been a Secretary of the Azerbaijan National Technical Group of Experts on Immunization (NTGEI).

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DEVELOPMENT OF RECOMBINASE POLYMERASE AMPLIFICATION ASSAYS FOR DETECTION OF COXIELLA BURNETII

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To develop recombinase polymerase amplification assays for detection of *Coxiella burnetii*, this is the causative agent of highly fatal Q fever. Because the clinical symptom of Q fever is not typical, the disease can be easily missed and misdiagnosed. Sensitive, specific and rapid diagnostic tests for the detection of *Coxiella burnetii* are necessary to accurately and promptly diagnose patients and ensure that they receive proper treatment. Recombinase polymerase amplification (RPA) assays using a lateral flow test (RPA-nfo) were developed targeting the 23SrRNA gene of *Coxiella burnetii*. A group of specific primers and probes with high amplification efficiency at 37°C was screened successfully, and the concentration of reverse primer and the probe was 5 μM, respectively. Furthermore, the RPA-nfo reaction was completed in 20 minutes at 37°C followed by 3-5 minutes incubation at room temperature for development of an immunochromatographic strip. All the results showed that the constructed RPA detection system has good specificity for detection of *Coxiella burnetii* without cross-reaction with other viruses, and can detect *Coxiella burnetii* at levels comparable to that of the quantitative PCR method. The constructed RPA detection system showed superior detection performance, which could provide technical support for *Coxiella burnetii* in site detection.

Biography

Li Yuexi has his expertise in development of diagnostic reagent and vaccine of infectious diseases. He has developed more than 100 diagnostic reagents and got 87 licenses from CFDA, including ELISA, gold-labeled immunochromatographic strip, qPCR, LAMP, RPA, and DNA chip. He is also developing several infectious diseases vaccines, such as herpes simplex virus, mycoplasma pneumoniae, etc.

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IMPORTANCE OF EVALUATION OF THE QUALITY OF EIDSS' DATA AND MAINTAINING A HIGH LEVEL OF ELECTRONIC REPORTING IN AZERBAIJAN

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Introduction: Electronic reporting was officially implemented in Azerbaijan in 2010 through electronic integrated disease surveillance system (EIDSS), which allows storage and tracking of surveillance data for 67 notifiable diseases. The aim of this work was to explain the importance of maintaining a high level of electronic reporting in the country.

Methods: A chi-square trend test was conducted by using of Epi-Info software to assess significant changes in data quality indicators for brucellosis: timeliness of data entry and completeness of laboratory and epidemiological data over the period 2010-2017.

Results: A total of 2824 cases of human brucellosis were reported to the EIDSS during the study period. Timeliness of data entry into EIDSS significantly increased from 25.7% (2010) up to 92.6% (2017) ($p<0.001$). The proportion of completed fields for sample collection data increased from 88.3% in 2010 to 98.2% in 2017. The laboratory data entry into EIDSS was not completed in 2010, and completeness of laboratory data (conducting of test, test name, test result) has increased since 2013 (84.5%, 84.5% and 82.2% respectively) and have significantly improved by years reaching a maximum value for all indicators – 95.9% in 2017 in average ($p<0.001$). Possible measures for increasing of data quality might be entering of information directly by medical institutions; conducting of remote online trainings on user's workplaces; simplification of laboratory module's interface and continued implementation of data quality indicators, developed by Ministry of Health and ongoing monitoring by EIDSS working group.

Conclusion: Timeliness of data entry, completeness of laboratory and epidemiological data for brucellosis has significantly improved over the years after introducing of EIDSS. Ongoing evaluation of EIDSS data quality indicators for all notifiable diseases should be conducted in order to ensure data quality and timely identification of data reporting issues.

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Biography

Z Rasulzade works as a Data Manager in Republican Anti-Plague Station since 2012. Currently, she is a member of EIDSS administrative working group at the Ministry of Health. She worked as a Scientist in National Research Institute of Medical Prophylaxis (Baku, Azerbaijan) during 1997-2006. She defended her PhD from Azerbaijan National Academy of Sciences on Microbiology and Hygiene in 2011. She successfully graduated from South Caucasus Field Epidemiology and Laboratory training two-year program (SC/FELTP) in 2014. Since 2017, she is a Member of Azerbaijan Science Diplomacy Support Center's working group. She is an author of 11 published articles.

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EFFECT OF USING COLLABORATIVE QUALITY IMPROVEMENT OF INFECTION PREVENTION IN TERTIARY CARE HOSPITAL, BANGKOK, THAILAND

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Hospital-associated infection (HAIs) has an impact on patients, personnel and the hospital. This interrupted time series design study aimed to assess the effect of using collaborative quality improvement (CQI) of infection prevention in tertiary care hospital. The samples were selected by purposive sampling from the patients, who were HAIs and admitted into 6 intensive care units (ICUs) and 36 general wards. Data were collected from May, 2017 to January, 2018. The study instruments were a surveillance form of HAI and impacts of HAI form developed by research. Data were analyzed using descriptive and multiple linear regression statistics. The results revealed that reduction in HAIs, from 35.7% (1,219/3,417 patients) before implementing CQI to 27.6% (994/3,608 patients) after implementing CQI at a 0.05 statistically significant levels. Indicated the highest infection rate was from ventilator-associated pneumonia (VAP) 5.6 per 1,000 ventilator-days, followed by catheter-associated urinary tract infection (CAUTI) 3.1 per 1,000 catheter-days and central line-associated bloodstream infection (CLABSI) 1.9 per 1,000 catheter-days. Case fatality rate from VAP, CLABSI and CAUTI were 38.4%, 31.7% and 17.3%. Cost of antibiotic treatment for VAP, CAUTI and CLABSI were 91,153.45 USD, 74,342.72 USD and 20,114.27 USD, respectively. These finding imply that the concept of CQI could be applied to reduce incidence and preventive of HAIs. However, it is interesting to see if the results are sustainable and hospital still proceed with their work.

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Biography

Kampong Kamnon is an infection control nurse, expertise of infection and prevention control. She currently works at Rajavithi hospital, Bangkok Thailand. She have experience in supervising, doing the project, consulting and research. Research and presentations include: 2013- Presented research "Effects of using video media on knowledge and health beliefs in prevention of tuberculosis transmission of newly diagnosed pulmonary tuberculosis." presented in the session "oral presentation of scholarship awardees papers" 13th International congress of the international federation of infection control. Buenos Aires, Argentina. 2016- Presented research "Development of clinical nursing practice guidelines for sepsis patients, tertiary care hospital, Bangkok, Thailand." presented in the session "poster presentation papers" International sepsis forum. Sepsis 2016 Paris, France. 2017- Presented research "Effects of using clinical nursing practice guidelines for sepsis patients, tertiary care hospital, Bangkok, Thailand." poster presentation papers" TNMC & WANS International Nursing Research Conference 2017 "Culture, co-creation, and collaboration for global health, Bangkok, Thailand.

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EVALUATION OF INTERFERON GAMMA RELEASE ASSAY AS A CLINICAL TOOL FOR MONITORING AND EVALUATION OF ANTI-TUBERCULOSIS CHEMOTHERAPY

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Introduction: Tuberculosis (TB) is a leading cause of death and became one of the biggest threats to the world. Improvement of its treatment strategies and possibly to reduce drug resistance monitoring and evaluations (M&E) of chemotherapeutic responses are necessary.

Objective: To evaluate interferon gamma release assay (IGRA) as a tool for M&E of the efficacy of chemotherapeutic intervention of active TB.

Methods: Institutional based prospective longitudinal cohort study design was used. Patients positive for acid fast bacilli stain (AFB), culture and/or GeneXpert MTB/RIF assay were recruited for the study. IGRA was used to evaluate IFN- response to treatment.

Results: The recruited 21 patients had the mean age of 35.5, median 33 and range was 23-56 years. All patients were cured after the treatment. The mean of the concentration (IU) of IFN-γ response showed decreasing trends from baseline (mean+SD, 2.09+1.09) to the end of the treatment (mean+SD, 0.23+0.20). The patients' individual baseline IFN-γ concentration had differences and being similar at the end of their treatment. Repeated IFN- responses had been evaluated for associations between each measurements and showed statistical significance only between two pairs (P<0.001). In this study, IFN- response to tuberculosis chemotherapeutic intervention was not affected by any of the socio-demographic factors of the study participants (P>0.05).

Conclusions: The decreasing trend in IFN- response following successful anti-TB may have a value as a tool for M&E of the efficacy of chemotherapeutic intervention for active TB.

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DETECTION OF LYSSAVIRUS ANTIGEN AND ASSESSMENT OF THE LEVELS OF ANTI-RABIES ANTIBODIES IN UNVACCINATED, APPARENTLY HEALTHY AND RABIES-SUSPECT DOGS IN SOUTH EASTERN NIGERIA

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[3]National Veterinary Research Institute, Nigeria
[4]University of Pretoria, South Africa

Rabies is acute and progressive encephalitis caused by members of the genus Lyssavirus (Family: *Rhabdoviridae* order: *Mononegavirales*). An estimated 59,000 human deaths occur annually in Africa and Asia, with the majority of these deaths due to dog bites. In this study, we undertook a cross-sectional survey for the presence of lyssavirus antigen in brain tissues and anti-rabies antibodies in sera of unvaccinated, apparently healthy and rabies-suspect dogs slaughtered for consumption at local markets in South Eastern Nigeria. Samples (both brain tissues and serum) from 278 dogs were tested for lyssavirus antigen and rabies antibodies, using the direct fluorescent antibody test (DFA) and a commercial enzyme-linked immunosorbent assay (ELISA), respectively. Twenty three brain tissues (8.3%) were shown to contain lyssavirus antigen, whereas 2.5% (n=25) of the serum samples had anti-rabies antibodies. There was an inverse relationship between the presence of lyssavirus antigens and levels of rabies antibodies. The inverse relationship between the presence of lyssavirus antigens and levels of rabies antibodies underscores the notion of immune evasion following lyssavirus infection. The low percentage of anti-rabies antibodies in the dog population studied suggests a dog population susceptible and at very high risk to rabies virus (RABV) infection. These findings indicate a big challenge to local and global rabies elimination efforts considering that most of the dog population in Africa is confined to the rural areas where parenteral dog vaccination is not routinely or adequately undertaken.

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RESISTELL: NANO-MOTION BASED FAST ANTIBIOGRAM

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[2]EPFL, Switzerland

The EPFL spin-off, Resistell, proposes revolutionary alternative to culture based antibiogram, the current gold standard in antibiotic susceptibility testing. The method has been developed by the Laboratory of Physics of Living Matter (LPMV EPFL, Lausanne, Switzerland) led by Prof. Giovanni Dietler and is based on the detection of nano-scaled motion that corresponds to living bacterial cells. Resistell is commercializing this technology and its offering a diagnostic device. The cantilevers, also used in atomic force microscopy, serve as sensors in the Resistell's instrument. Sensor deflection is measured by the laser-based system using photodiodes as detectors. The bacteria are non-specifically attached to the cantilevers, which are subsequently immersed it in the custom-made fluid chamber. The dynamic fluctuations of the sensor in the growth medium and after exposure to the antibiotic are recorded and analyzed using custom-made software. The oscillations of the sensor indicate whether the bacteria in the applied sample are metabolically active. When the antibiotic susceptible strains are exposed to the drug, they become non-viable within minutes and the oscillations of the sensor return to the level of abiotic sample. The variance of the signal acquired in the growth medium and after exposure to antibiotic serves as a marker of susceptibility or resistance. The pre-clinical data for a wide range of fast and slow growing bacteria are available. The MVP of a device is currently undergoing the clinical validation in the Swiss hospital. Resistell allows for the real-time monitoring of bacterial response to a drug, as well as the calculation of minimal inhibitory concentrations (MIC) and minimal bactericidal concentrations (MBC). Compared to the current gold standard antibiogram, Resistell is able to identify the most effective antibiotic in a matter of minutes rather than days. This means effective treatment of the patient can start on day one.

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FACTORS RELATED TO TREATMENT ADHERENCE IN PATIENTS WITH TUBERCULOSIS IN PEREIRA, COLOMBIA, 2012-2013

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Statement of the Problem: The adherence to tuberculosis treatment is the extent to which a patient's medication taking coincides with the prescribed treatment. The sum of cured patients and those who have completed treatment (directly observed therapy strategy, DOTS) are pragmatic indicators of the adherence. The patients who do not complete treatment correspond to non-adherents. In tuberculosis, the problem is especially important because the risk does not cure the disease, the chain of Mycobacterium transmission and the development of multiresistance will be maintained. In this study, the factors related to non-adherence to the treatment of patients with TB in a department of Colombia (SA) are determined.

Methodology & Theoretical Orientation: A cross-sectional study of 174 patient records of the tuberculosis control program and 15 semi-structured interviews to non-adherent patients during the period between June 2012, and June 2013. The relationship between anti-tuberculosis treatment adherence and socio-demographic, economic, clinical, and drug-related objective and subjective factors in patients over 18 years of age a descriptive, was determined.

Findings: Among the causes of non-adherence were established objective and subjective causes. There was a statistically significant relationship between non-adherence to manifestations related to drug intolerance, namely vomiting (p=0.069), dizziness (p=0.040), vertigo (0.008), hearing loss (p=0.006) and tinnitus (p=0.002). Among all causes of non-adherence to treatment, gastric drug intolerance was the main 40% (6/15 patients). Regarding the subjective factors identified in non-adherence, it was found that from the moment the patient was diagnosed with this disease, he was implicated in an important social burden, both in family and work spaces.

Conclusion & Significance: The low and distorted knowledge about the disease and its treatment, as well as the discomfort and sometimes aggravated by poorly attended health personnel, also contributed to a negative attitude towards treatment.

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ADVERSE EVENTS IN PATIENTS WITH MULTI DRUG RESISTANT TUBERCULOSIS: RESULTS OF A PROSPECTIVE COHORT STUDY AT TERTIARY CARE LEVEL

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Introduction: Drug-resistant tuberculosis (DR-TB) is a global public health crisis. According to Global Tuberculosis report 2017, treatment success rates of multi-drug-resistant tuberculosis (MDR-TB) and extensively drug-resistant TB (XDR-TB) patients are 46% and 29%. Henceforth one of the major obstacles in achieving successful treatment outcomes in DR-TB is adverse events affecting the adherence to the both first-line and second-line drugs.

Aim: To evaluate the frequency of adverse events due to the second-line drugs in MDR-TB patients during intensive phase of treatment.

Settings & Design: A prospective cohort study was conducted at DOTS Plus site at AIIMS, New Delhi. 81 consecutive MDR-TB patients were recruited from June 2014 to May 2015 and were given standardized revised national control tuberculosis programme (RNCTP) drug-regimen. Patients were followed-up during intensive phase of treatment and adverse events were primarily recognized with clinical evidence and/or laboratory investigations.

Results: A total of 91 adverse events were reported in 52 (64.1%) patients. Only 1.2% of the patient stopped treatment and 9.8% required removal of the suspected drug(s) from the regimen due to adverse events. The grouped adverse events were most commonly gastrointestinal (70.6%), arthralgia (10.9%), ototoxicity (6.4%), psychiatric (5.5%), and hypothyroidism (2.1%). Nine (11%) patients had serious adverse events requiring discontinuation or substitution of drugs that included psychiatric disturbances in 6(7.4%) followed by hearing loss and tinnitus in 3(3.7%).

Conclusions: In India, programmatic management of drug resistance tuberculosis guidelines (PMDT) provides guidance for management of DR-TB but cure rate are undesirable and one of the major issue to be catered is adherence which can assure for successful treatment outcomes.

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SPATIAL PATTERNS OF CHILDHOOD DIARRHEA IN ETHIOPIA: DATA FROM ETHIOPIAN DEMOGRAPHIC AND HEALTH SURVEYS (2000, 2005, AND 2011)

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[3]Ethiopian Agri Research Institute, Ethiopia

Statement of the Problem: Childhood diarrhea is a major public health problem, especially in developing countries, including Ethiopia. Exploring the spatial pattern of childhood diarrhea is important to monitor and design effective intervention programs. Therefore, this study aimed to explore the spatial patterns of childhood diarrhea in Ethiopia over the past one decade.

Methods: A total of 29,358 under-five children were retrieved from three consecutive Ethiopian demographic and health surveys (2000, 2005, and 2011) and included into the study. Spatial cluster and autocorrelation analysis was done to explore the patterns of childhood diarrhea.

Findings: Childhood diarrhea clustered spatially at a national level in all survey periods (Moran's I: 0.3830–1.3296, p< 0.05). Significant spatial clusters were found in different survey periods across the regions. The most likely spatial clusters were found in Southern Nations Nationalities and people, West Oromia, Gambella, Benshangul-Gumuz, and Somali regions. Childhood diarrhea also clustered at the border areas of Southern Nations Nationalities and People from Tigray, Central Somali and Western Oromia, Gambella and Amhara (West Gojam, Awi, Oromia, and Wag Himra) regions. In 2000, the most likely clusters were found in Southern Nations Nationalities and People, West Oromia, and Gambella regions (LLR = 55.37, p<0.001); in 2005, at Southern Nations Nationalities and People (LLR: 45.69, p< 0.001); and in 2011, at Gambella, West Southern Nations Nationalities and People and Oromia, and Benshangul-Gumuz regions (LLR: 51.09, p< 0.001).

Conclusion: In this study, childhood diarrhea remains public health problem and had a spatial variation across the regions. Identifying the risk areas would help in designing effective interventions to reduce childhood diarrhea in these areas.

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BACTERIOLOGICAL INVESTIGATION OF POSTOPERATIVE WOUND INFECTION AND STUDIES THEIR RESISTANT PROFILE

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Postoperative wound infection or surgical site infection is a severe problem in the surgical specialties, which can cause mortality, morbidity and economic burden. In this study postoperative wound swabs were collected from patients of Dinajpur Medical College. This study included 15 surgery patients with signs and symptoms indicative of wound infections and was evaluated for the study. Samples were taken from the patients during the period of surgical wound dressing before the wound was cleaned with antiseptic solution. The swab was inoculated onto plates of nutrient agar and 5% sheep blood agar by rolling the swab over the agar and streaked. These plates were incubated at 37°C for 24-48 hours in aerobic and anaerobic condition. Out of 15 postoperative wound infection samples, 10 (66.67%) samples were culture positive. A high predominance of aerobic bacteria was observed but no agent was identified in anaerobic condition. The single etiologic agent was identified in 8 (80%) patients, mixed agents were found in 2 (20%) patients. The commonly isolated bacte¬rial pathogens were *Staphylococcus aureus* (40%), *Pseudomonas aeruginosa* (20%), and Escherichia coli (20%). Antibiotic sensitivity test showed that the isolates were sensitive to two antibiotics such as ciprofloxacin and chloramphenicol while the most resistant drug was ceftriaxone, cephradine, cefixime, penicillin, clindamycin and sulphamethoxazole. The culture sensitivity tests showed that numerous and multi drug resistant bacteria are involved in postoperative wounds infection.

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OCCURRENCE OF YERSINIA ENTEROCOLITICA IN DIARRHOEIC PIGS AND HUMANS IN SELECTED FARMS AND HOSPITALS IN OGUN STATE, SOUTHWESTERN NIGERIA

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Yersinia enterocolitica is a food-borne enterotoxigenic microorganism associated with human gastroenteritis and septicemia especially among children. Pigs constitute a major source of infection for man. The increase in pig farms and pork consumption in Southwestern Nigeria necessitated investigation into the occurrence of *Yersinia enterocolitica* in diarrhoeic pigs and humans in selected farms and hospitals in Ogun State, Nigeria. Seven hundred diarrhoeic samples were collected, 300 from pigs raised in three selected farms, 120 from children aged 1-7 years and 280 adults (22-50 years) in medical wards of two selected hospitals located in the study areas. *Yersinia enterocolitica* was isolated from faecal samples and identified biochemically by standard bacteriological methods. Antisera were raised in rabbits to serotype the *Yersinia enterocolitica* isolates into groups A, B, C and D using slide agglutination technique. The serotypes were further identified with commercial latex agglutination kit (CLAK). Susceptibility of *Yersinia enterocolitica* to antibiotics was determined by disc diffusion method. Minimum inhibitory concentrations of some antibiotics were determined for the resistant isolates. Plasmid transfer of R-determinants to E. coli 356 k12 resistant to 200 µg/mL streptomycin was performed. The kinetics of phenotypic expression of ampicillin, chloramphenicol, tetracycline and amoxicillin were determined. Heat-stable enterotoxin of *Yersinia enterocolitica* isolates was assayed using rabbit ileal loop test. Sereny test for invasiveness of isolates was performed by instilling 2.0x1010 cfu/mL/ animal in to the right eyes of guinea pigs while 1.0 mL sterile tryptone-soy broth was instilled into the left eyes as control. Histopathology of the eyes was carried out. Data were analyzed using descriptive statistics and ANOVA at $p<0.05$. Ninety *Yersinia enterocolitica* isolates comprising 30 from humans: 16 and 14 from the two selected hospitals and 60 from pigs: 20, 16 and 24 from the three selected farms were identified. There was significant difference between the occurrence of human and pig isolates. Slide agglutination technique yielded serotype occurrence of *Yersinia enterocolitica* as A(5), B(63), C(8) and D(14), while CLAK gave serotypes A(0:3), B(0:5), C(0:8) and 2 of the 14 D isolates were serotype 0:9. *Yersinia enterocolitica* isolates were identified as biotypes 1A (77), 2(8), 4(5), serotypes 0:3, 0:5, 0:8 and 0:9 while 12(E) were non-typable. Eleven and 13 antibiotic resistant patterns were observed in humans and pig isolates, respectively. R-determinants were transferred to the recipient en bloc. However, few segregations were observed indicating chromosomal transfer. Ampicillin and chloramphenicol had the highest kinetics of phenotypic expression for the transconjugants for human and pig isolates respectively. The isolates induced accumulation of fluid in ileal loops of rabbits, corneal oedema and haemorrhagic keratoconjuctivitis in guinea pigs. Invasive, enterotoxigenic and multi-resistant *Yersinia enterocolitica* that harboured transferable R-plasmid were isolated in humans and pigs. These organisms may constitute great public health hazard, hence proper piggery hygiene and disposal of waste is advocated to prevent contamination of water and food of humans. Legislation on misuse and abuse of antibiotics should be enforced to prevent drug resistance.

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RAPID DIAGNOSTIC TESTS – THE TROUBLING ONLINE MARKET FOR UNVALIDATED TESTS

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Statement of the Problem: Rapid diagnostic tests (RDTs) are useful tools to diagnose a variety of infections. RDTs generally use a dipstick or cassette format, and results are usually given in 10 minutes. They are particularly advantageous in resource limited settings where they can be implemented easily at the point of care and provide results quickly. However the appeal of RDTs has led to an explosion of products on the market. Most are neither WHO prequalified nor registered with a stringent authority such as the US Food and Drugs Administration meaning their quality and efficacy cannot be assured. In order to quantify this problem, a search was performed of available RDTs for purchase for two common infectious diseases.

Methodology: A web based search on leading search engines, using the following search terms: Dengue Rapid Diagnostic Kit, Dengue Test Kit, HIV Rapid Diagnostic Test Kit and HIV Test Kit. Selecting the first page of the search, I then checked them against the WHO prequalified list. Variables of interest were: whether WHO prequalified or not, pharmaceutical supplier and country, validation data on website, validation data either on PubMed or Google scholar. Data was extracted in a standard format into a database.

Findings: For dengue, 76 test kits were found, 1 appeared to be WHO prequalified. 37 test kits were found for HIV, 1 appeared to be WHO prequalified.

Conclusion & Significance: These results show not only the availability but also the ease of purchasing RDTs that may have not been adequately tested. As a result, potentially less effective tests may be in use. In addition to causing patient harm through potential misdiagnosis, the purchase of tests that do not work properly are a waste of resources. Recommendations are made for greater awareness, research and centralized testing systems to address this important issue.

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FIGHTING MALARIA USING PARATRANSGENIC VECTORS USING ENGINEERED ENTEROBACTER CLOACAE EXPRESSING DEFENSIN

Mohammad Ali Oshaghi, Hossein Dehghan and **Seyed Hassan Moosa Kazemi**
Tehran University of Medical Sciences, Iran

Enterobacter cloacae **bacterium is a known symbiont of most *Anopheles* gut microflora and nominated as a proper candidate for paratransgenic control of malaria. Here, we describe a strategy that uses symbiotic bacteria to deliver anti-malaria effector molecule to the midgut lumen, thus rendering host mosquitoes refractory to malaria infection. *Enterobacter cloacae* was engineered to secret defensin, a natural plant anti-Plasmodium effector protein. The engineered *E. cloacae* inhibited oocyst formation of the rodent malaria parasite *Plasmodium berghei* by up to 92.8% in *Anopheles* stephensi. Significantly, the proportion of mosquitoes carrying parasites (prevalence) decreased by up to 75%. Interestingly, the wild strain of E.cloacae could inhibit oocyst formation by up to 72%. These findings provide the foundation for the use of either wild or genetically modified *E.cloacae* bacteria as a powerful tool to combat malaria.**

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DEVELOPMENT AND PATTERN OF ANTIBIOTIC RESISTANT: A COMPARATIVE STUDY FROM PAKISTAN

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Statement of the Problem: Bacterial resistant is increasing rapidly. Antibiotic resistance is a global public health problem, more dominant in the developing countries. This study was conducted to analyze the annual increase in the antibiotic resistant.

Methodology& Theoretical Orientation: In this comparative study, the antibiotic susceptibility reports of hospital located in Karachi was analyzed. The data is openly available. Two antibiogram of June-Nov 2011 and June-Nov 2012 were analyzed. The annual increment in bacterial resistant against three strains i.e *Escherichia Coli, Klebsiella* and *Enterobacter* species was determined.

Findings: Escherichia Coli developed additional resistant against amikacin (13%), amoxicillin/clavulanic acid and ceftriaxone (2% each), aztreonam (5%), piperacillin/tazobactam (3%), ceftazidime (14%), co-trimoxazole and gentamicin (7% each) and cefoperazone/sulbactam (17%) in one year. Similarly ceftriaxone, ceftazidime, cefepime, co-trimoxazole and gentamycin (44% each), aztreonam and amikacin (41% each), ampicillin (34%) amoxicillin/clavulanic acid (31%), piperacillin/tazobactum (29%) and cefoperazone/sulbactam (24%) lost its potency against Klebsiella species. Similarly Enterobacter species became more resistant to ampicillin (40%), amoxicillin/clavulanic acid and ceftazidime (36% each), cefepime (34%), aztreonam and ceftriaxone (32% each), ciprofloxacin (28%) and gentamycin (27%). While all three strains have developed a least resistant against polymyxin-B.

Conclusion & Significance: The annual increment in bacterial resistant shows a pan drug resistant in Pakistan. This study recommends a conscious use of antibiotics.

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KNOWLEDGE, ATTITUDE, PRACTICE TOWARDS PROVIDING SEXUAL AND REPRODUCTIVE HEALTH SERVICES TO HIV-POSITIVE WOMEN AND ASSOCIATED FACTORS AMONG HEALTHCARE PROVIDERS IN JIMMA ZONE

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Background: It is essential that providing sexual and reproductive health (SRH) services have the knowledge and skills to address the particular concerns and problems of women living with HIV. So this makes important to undertake this study. This study seeks to assess knowledge, attitude and practice of health care providers towards providing sexual and reproductive health services to HIV-positive women in Jimma zone.

Materials & Theoretical Orientation: A facility based cross sectional study was conducted using quantitative methods of data collection among a sample of 271 health care providers from October 1–30, 2013. Bivariate analysis to look for association at <25% significance level and multivariate logistic regression to identify independent predictors at P-value of 0.05 was done.

Findings: The overall knowledge score was 109 (42.6%) of health care providers had poor knowledge. More than half (52.7%) of the respondents had favorable attitude towards provision of sexual and reproductive health services, the overall practice score showed that 184 (71.9%) of respondents had poor practice regarding the service provision. Predictors of knowledge include: sex (AOR: 2.43, CI: 1.39, 4.20), year of experience (AOR: 3.24, CI: 1.56, 6.72), supervision (AOR: 0.54, CI: 0.31, 0.95) and payment for extra workload (AOR: 0.44, CI: 0.25, 0.76). None of independent variables were associated with attitude.

Conclusions & Significance: More than half of health care providers have favorable attitude towards provision of SRH services to HIV positive women, but a significant proportion of them have poor knowledge. Besides, most of the health care providers have poor practice scores.

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THE GLOBAL POLIO ERADICATION INITIATIVE (GPEI) IN PAKISTAN

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The global polio eradication initiative (GPEI) has significantly reduced the worldwide incidence of poliomyelitis. However, polio remains endemic in Pakistan which poses a threat to the success of the GPEI. Issues faced by Pakistan relate to politics, terrorism and war, natural disasters, funding constraints, misconceptions and inadequate infrastructure. These contribute in hampering the aims of the GPEI and allow the deadly poliovirus to maintain its reservoir in Pakistan. Until polio is completely eradicated, all countries remain at risk of its re-emergence and this is of grave concern as potentially it could reverse the polio-free certified status of a whole World Health Organization (WHO) region. With the increase in global travel and international migration, even the smallest potential risk should not be taken lightly. Recommendations are made to help to improve the state of polio in Pakistan to make full use of the GPEI investment and move towards a polio-free world.

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Tehran University of Medical Sciences, Iran

Enterobacter cloacae **bacterium is a known symbiont of most *Anopheles* gut microflora and nominated as a proper candidate for paratransgenic control of malaria. Here, we describe a strategy that uses symbiotic bacteria to deliver anti-malaria effector molecule to the midgut lumen, thus rendering host mosquitoes refractory to malaria infection. *Enterobacter cloacae* was engineered to secret defensin, a natural plant anti-Plasmodium effector protein. The engineered *E. cloacae* inhibited oocyst formation of the rodent malaria parasite *Plasmodium berghei* by up to 92.8% in *Anopheles stephensi*. Significantly, the proportion of mosquitoes carrying parasites (prevalence) decreased by up to 75%. Interestingly, the wild strain of E.cloacae could inhibit oocyst formation by up to 72%. These findings provide the foundation for the use of either wild or genetically modified *E.cloacae* bacteria as a powerful tool to combat malaria.**

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TUBERCULOSIS OUTCOMES AT KING ABDULAZIZ MEDICAL CITY HOSPITAL

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Statement of the Problem: Infectious diseases are the most significant public health challenges in Saudi Arabia. The concern over such diseases has played a significant role in setting up research funding priorities of pivotal institutions such as King Abdulaziz City for Science and Technology (KACST). Tuberculosis (TB) is one of the primary challenges the Saudi healthcare system faces and continues to be a public health challenge in Saudi Arabia. The trends and outcomes of TB and multi-drug-resistant tuberculosis (MDR-TB) in King Abdulaziz Medical City hospital remain unaddressed. The purpose of this study is to estimate mortality rate among TB cases and to identifying factors associated with mortality.

Methodology & Theoretical Orientation: This is a retrospective cohort study of 713 new TB cases at King Abdulaziz Medical City, Riyadh diagnosed between January 1, 2000 and December 31, 2016. Patient charts, microbiology and virology lab databases were used to identify TB cases. We retrieved data on demographic, diagnosis, comorbidity, and mortality.

Findings: Of the 713 TB patients included in this study 110 died giving an average mortality rate of 22 per 1000 person-years (95% CI: 18.2-26.4), elderly (≥ 60 years) had higher mortality rate of 36.5 per 1000 person-years (95% CI: 28.9-45.5). The adjusted hazard of death was higher among males (adjusted hazard ratio (aHR): 1.901 [95% CI: 1.075-3.362, P = 0.027]), older patients (aHR: 1.019 [95% CI: 1.003-1.035, P = 0.021]), patients with lung disease (aHR: 3.853 [95% CI: 1.702-8.722, P = 0.001]), heart disease (aHR: 2.026 [95% CI: 1.089-3.772, P = 0.026]), cancer (aHR: 4.268 [95% CI: 2.268-8.032, P = 0.001]) and renal disease (aHR: 2.758 [95% CI: 1.529-4.976, P = 0.001]).

Conclusion & Significance: TB was associated with high mortality rate, especially among males, elderly, and patients with comorbidities, including: lung disease, heart disease, cancer, and renal disease.

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HBV CARRIAGE IN CHILDREN BORN FROM HIV-SEROPOSITIVE MOTHERS IN SENEGAL: THE NEED OF BIRTH-DOSE HBV VACCINATION

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Background: Hepatitis B is a major public health problem in Senegal, a country with high prevalence and a transmission occurring mainly during infancy. Only, one 6–8 weeks vaccination campaign was initiated in 2005 and it was part of the expanded program of immunization.

Aim: The aim of this study was to determine the prevalence of HBsAg in children born from HIV-seropositive mothers by using dried blood specimens.

Methods: Specimens were collected between July 2007 and November 2012 from children aged 2–48 weeks in Dakar and decentralized sites working on HIV mother-to-child transmission prevention. HBsAg detection was performed using Architect HBsAg Qualitative II kit (Abbott Diagnostics, Ireland) and for all reactive samples confirmation was done using Architect HBsAg Qualitative II Confirmatory kit (Abbott Diagnostics, Ireland).

Results: Nine hundred thirty samples were collected throughout the country with 66% out of Dakar, the capital city. The median age was 20 weeks and 88% of children were less than one year of age with a sex ratio of 1.27 in favor of boys. HBsAg was detected in 28 cases giving a global prevalence of 3%. According to age, HBsAg prevalences were 5.1% for children less than six weeks, 4.1% and 4.6%, respectively, for those aged 12–18 weeks and 18–24 weeks of age. The HIV prevalence was 2.6% with no HIV/HBV co-infection.

Conclusion: This study showed a high rate of HBV infection in children less than 24 months, and highlighted the need to promote birth-dose HBV vaccination as recommended by WHO.

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DRUG DELIVERY BY TATTOOING TO TREAT CUTANEOUS LEISHMANIASIS

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Introduction: Leishmaniasis is a vector-borne disease that is caused by obligate intra-macrophage protozoa of the *Leishmania* species. Leishmaniasis can cause different clinical syndromes, including cutaneous leishmaniasis (CL), in which the patient generally presents with one or several ulcer(s) or nodule(s) on the skin, resulting from the infection of phagocytic cells located in the dermis. It often results into severe scar tissue in the skin. Most of the twelve million people infected with *Leishmania* worldwide are CL cases, a 1.5 million new cases occur annually.

Objective: WHO has a program to develop new treatments for cutaneous leishmaniasis. This study establishes a proof-of-concept that a tattoo device can target intra-dermal drug delivery against cutaneous leishmaniasis (CL).

Methods: The selected drug is oleylphosphocholine (OlPC) formulated as liposomes, particles known to be prone to macrophage ingestion. First is shown that treatment of cultured Leishmania-infected macrophages with OlPC-liposomes results in a direct dose-dependent killing of intracellular parasites. Based on this, *in vivo* efficacy is demonstrated using a 10-day tattooing-mediated treatment in mice infected with *L. major* and *L. mexicana*. In both models this regimen results in rapid clinical recovery with complete regression of skin lesions by day 28. Parasite counts and histopathology examination confirm high treatment efficacy at the parasitic level. Low amount of drug required for tattooing combined with fast clinical recovery may have a positive impact on CL patient management.

Results: This first example of tattoo-mediated drug delivery could open to new therapeutic interventions in the treatment of skin diseases. This study demonstrates that the use of a tattoo instrument for drug delivery is possible in the treatment of cutaneous leishmaniasis, and that this method can successfully eliminate intracellular parasites at the site of infection. After showing that the selected drug oleylphosphocholine (OlPC) formulated as liposomes could efficiently reach intracellular parasites when in contact with infected macrophages, the activity of the drug was compared *in vivo* in mouse models of old (L. major) and new world (*L. mexicana*) leishmaniasis. Three routes of administrations of the same drug formulation were investigated: systemic (IP) administration, topical administration as a drop, and administration *via* the tattoo instrument. Evaluation parameters included clinical (lesion sizes) and parasitological parameters (burdens) using quantitative and qualitative methods. In all experiments, the tattooing delivery procedure was the most efficacious at both the clinical and parasitological levels.

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SYSTEMATIC REVIEW AND META-ANALYSIS, ON THE EFFICACY OF CEFIXIME FOR TREATING GONOCOCCAL INFECTIONS

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Background: Acute bacterial skin and skin structure (ABSSSI) infections can cause a significant amount of morbidity and mortality in hospitalized patients and outpatients as well. Emerging resistance of gram-positive pathogens to different drugs has narrowed down our options for treating skin infections. Newer antimicrobials such as delafloxacin might prove to be a useful alternative to treat skin infections caused by resistant gram-positive pathogens.

Objective: The objective of this review is to assess all the available evidence on delafloxacin in literature and compare its efficacy with drugs routinely used to treat skin infections.

Methodology: An extensive literature search was conducted using different databases. By using PubMed, EMBASE and Cochrane central register of controlled trials 86 abstracts were screened for eligibility. A total of six studies were finally included in the narrative review and meta-analysis. The primary outcome in this review was to assess the microbiological cure at the end of the follow up period. Secondary outcome was clinical response and absence of the signs and symptoms at the end of the follow up period.

Results: A total of 86 abstracts were screened for review, out of the 86 abstracts, 25 studies were further screened for eligibility, and only six studies were finally included in the narrative review and meta-analysis. By using RevMan software risk ratio (RR) random effects model was used with 95% confidence interval. The pooled efficacy of delafloxacin was at 80% 95 CI 1.01 (0.97, 1.06) =0.51. No statistically significant difference was found between intravenous (IV delafloxacin) and comparator drugs.

Conclusion: Despite having a pooled cure rate of 80%, the efficacy of delafloxacin was found to be non-inferior to tigecycline and linezolid. Pooled cure rate and efficacy of delafloxacin was also found to be superior to vancomycin. Therefore, it can be ascertained that delafloxacin might prove as a useful alternative for treating resistant gram-positive infections. However, more high quality randomized controlled trials need to be conducted in future in order to develop clinical guidelines.

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LYSSAVIRUS SURVEILLANCE IN DOGS IN SOUTH-EAST NIGERIA: APPLICATION OF MOLECULAR AND IMMUNOLOGICAL ASSAYS

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The direct fluorescent antibody test (DFA) is the standard test for the diagnosis of both animal and human rabies. This test detects lyssavirus antigen on brain-infected tissues and central nervous tissues including salivary glands. In this study, we used the molecular quantitative real-time reverse transcription polymerase chain reaction (RT-qPCR) and immunologic direct rapid immunohistochemical test (dRIT) as alternatives to DFA. A total of 278 specimens were initially subjected to DFA. The specimens were brought in two batches: the first batch consisting of 260 brain and salivary gland tissue specimens collected from dog markets in South East Nigeria from October 2015 to July 2016, and the other comprising 18 brain specimens from rabies-suspect dogs from both veterinary hospitals and dog markets. From the first batch, 10 brain and 7 salivary gland samples were DFA positive. Thereafter, the 10 DFA positive brain samples and the 10 salivary gland samples from the DFA positive brain tissues and the 18 samples from rabies-suspect dogs (n=28) were subjected to DFA, dRIT and RT-qPCR. Using DFA, dRIT and RT-qPCR, 82.1% (n=23), 100% (n=28) and 96.4% (n=27) were positive for lyssavirus antigen, respectively. Then, of the 10 salivary gland samples tested, 70% (n=7), 90% (n=9) and 20% (n=2) were positive for DFA, dRIT and RT-qPCR, respectively. In this study, dRIT gave similar result (100%) with the molecular RT-qPCR. This shows that dRIT is a highly sensitive diagnostic test for rabies diagnosis and was superior to the DFA. The RT-qPCR is highly sensitive as it was able to detect very low lyssavirus concentration in brain tissues. The discordance of the DFA and dRIT results underscore that rabies is under-reported in Africa considering that many laboratories do not have the capability to undertake molecular analysis.

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CONTROLLED POLYMER SURFACE PLASMA MODIFICATION FOR IMPROVED DRUG ADHESION AND PREVENTION OF MEDICAL DEVICE RELATED BIOFILM INFECTION

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The success of an organism as a pathogen relies on its ability to adhere to the surface and remain there under the protective covering of the extracellular material, which forms the biofilm. The inclination for bacteria to become surface bound is so ubiquitous in diverse ecosystem that it suggests a strong survival and selective advantage for surface dwellers over their free ranging counterparts. Biofilm formation and persistence has profound implications for the patient, because microorganisms growing as biofilm are significantly less susceptible to antibiotics and host defenses than their planktonic forms. Surface modification and wettability of polymer treated at variable RF source power is investigated to study the effect of RF plasma power on extent of surface modification. Plasma treatment was used to modify the implant surface to facilitate the adhesion of antimicrobial drug. Surface topography of the implanted material is one key issue in medical implant infection as bacterial adhesion is a prerequisite condition for biofilm formation. RISUG® (reversible inhibition of sperm under guidance), a copolymer of styrene maleic acid, is a potent male contraceptive currently undergoing extended phase III clinical trials in India. In previous studies, RISUG® was evaluated for its antibacterial properties against both gram-positive and gram-negative strains of bacteria. The drug has proven to have effective antimicrobial properties. Therefore the drug RISUG® is proposed for coating over implanted polymer surface to overcome initial infection.

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A NOVEL INSTANT SCREENING TEST TO DISTINGUISH BACTERIAL RESPIRATORY INFECTION

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Background: In patients with clinical symptoms of respiratory infection, rapid identification of cases requiring antibiotic therapy is crucial to avoid development of multiple resistant bacteria. Neutrophils are important members of innate immunity and neutrophil extracellular traps (NETs) are released by neutrophils to control microbial infection. Here we have developed an affordable, stable, feasible, and accurate diagnostic tool detecting negatively charged substances (e.g. oligonucleotides), in sputum from patients with pneumonia, that showed high and instant reaction to aniline dyes. We evaluated the ability of this novel test to detect bacterial infection in cases of pneumonia.

Methods: A colorimetric test was developed. Leftover sputum samples (n=467) from patients with suspected pneumonia were blindly tested using the index test. These results were compared to the ultimate outcomes that were determined through independent clinical and laboratory assessments performed by the patient's physician. The sputum samples were further analyzed using ELISA, surface plasmon resonance, SDS-PAGE and ultraviolet-visible spectrophotometry.

Results: The test distinguished pneumonia with high accuracy (community-acquired and nosocomial pneumonia, n=73 and controls n=192 without infection, sensitivity 97.2% specificity 78.2%, negative predictive value 96.4% and positive predictive value 82.6). The results were highly correlated to presence of hepatocyte growth factor in samples (R=81%) The positive test result was present even after ultrafiltration of samples in <50 kDa filters. The UV-vis spectrum in samples with positive test result showed a peak at approximately 265 nm that significantly differed from the controls.

Conclusions: The presence of proteins and nucleic acids at the site of bacterial infection might indicate NETs release from neutrophils. The novel screening test has the potential to diagnose pneumonia at an early stage and thereby reduce mortality and morbidity, to guide antibiotic prescription, to monitor the therapy and to reduce the cost which is especially vital in poorly equipped centers and rural areas.

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