4th World Congress on

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Scientific Tracks & Abstracts

Day 1

Stephanie Fresnay et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Importance of *Salmonella* Typhi-specific CD8+ T cells in typhoid fever immunity in a human challenge model

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Salmonella enterica serovar Typhi (*S.* Typhi) is a human restricted pathogen which causes significant morbidity and mortality, particularly in developing countries. A better understanding of the immune responses which result in protection from *S.* Typhi infection is imperative for the development of improved attenuated vaccines. Recently, a controlled human infection model was re-established in which participants received ~10^4 cfu wild-type *S.* Typhi (Quailes strain) orally. 20 participants were evaluated for their cell-mediated immune (CMI) responses. *Ex vivo* PBMC isolated before and up to 28 days after challenge were exposed to 3 *S.* Typhi-infected targets, i.e., autologous B lymphoblastoid cell-lines (B-LCL), autologous blasts and HLA-E restricted AEH B-LCL cells. CMI responses were evaluated using 14-color multiparametric flow cytometry to detect simultaneously 5 intracellular cytokines/chemokines (i.e., IL-17A, IL-2, IFN-γ, TNF-α and MIP-1β) and a marker of degranulation/cytotoxic activity (CD107a) in distinct T cell memory subsets. Pre-challenge production of IFN-γ, TNF-α and MIP-1β by *S.* Typhi-specific CD8+ multifunctional T effector memory (T_{EM}) following exposure to *S.* Typhi-infected targets were higher in most participants who develop infection. Early decreases were observed in both *S.* Typhi-specific integrin α4β7-and integrin α4β7+CD8+ TEM cells after challenge, suggesting a potential for these cells to home to mucosal, as well as to extra-intestinal sites. Higher baseline *S.* Typhi-specific CD8+ T_{EM} responses also correlated with delayed typhoid diagnosis. No changes in these responses were found in NoTD participants after challenge. These studies demonstrate that *S.* Typhi-specific CD8+ baseline responses correlate with clinical outcome in humans challenged with wild-type *S.* Typhi, and provide novel insights into the protective immune responses against typhoid disease that will aid in the selection and development of new vaccine candidates.

Biography

Stephanie Fresnay is a Postdoctoral Fellow in the Cellular Immunology Section of the Center for Vaccine Development at the University of Maryland, USA. She is a Co-Investigator for the clinical trial entitled "Understanding Typhoid Disease: Development of a *Salmonella* Typhi Challenge Model in Healthy Adults" and has published in the *Journal of Translational Medicine*. She is also the co-author of several papers investigating regulatory T cells and antigen presenting cells function after challenge with wild-type *S.* Typhi as well as the co-author of a study characterizing *S.* Typhi, *S.* Paratyphi A and *S.* Paratyphi B cross-reactive CD4+ T cell responses elicited following vaccination.

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Notes:

G Tellez et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Novel technologies and innovations for prevention and treatment of infectious diseases

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Bacterial antimicrobial resistance in both the medical and agricultural fields has become a serious problem worldwide. During the last 15 years, our laboratories have worked toward the identification of probiotic candidates for poultry which can actually displace *Salmonella* and other enteric pathogens which have colonized the gastrointestinal tract of chicks and turkeys, indicating that selection of therapeutically efficacious probiotic cultures with marked performance benefits in poultry is possible and that defined cultures can sometimes provide an attractive alternative to conventional antimicrobial therapy. Our studies have been focused on specific pathogen reduction, performance under commercial conditions and effects on both idiopathic and defined enteritis. We have also confirmed that selected heat-resistant spore-forming *Bacillus* species can markedly reduce *Salmonella* and *Clostridium* when administered in very high numbers and we have developed a novel and simple technique for obtaining cultured *Bacillus* spore counts, providing a cost-effective feed-stable inclusion in commercial poultry diets. In order to select even more effective isolates, we are still currently focused on the mechanistic action of the *Lactobacillus* probiotic previously developed as well as new *Bacillus* candidates. Current indications are that mechanism of action involves rapid activation of innate host immune mechanisms, providing an exciting possibility for identification of vastly superior and more potent probiotics. In this presentation, we summarize the safety and efficacy of individual monocultures for prophylactic and/or therapeutic efficacy against *Salmonella* infections under both laboratory and field conditions as well as the development of a novel, cost-effective, feed-stable direct fed microbials (DFM) with potential for widespread utilization and improved production, delivery and clinical efficacy for animal use.

Biography

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Notes:

Alaa Badawi et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Prevalence of comorbidities in the *Middle East respiratory syndrome coronavirus* (MERS-CoV): A systematic review and meta-analysis

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Middle East respiratory syndrome coronavirus (MERS-CoV) is associated with life threatening severe illnesses and a mortality rate of ~35%, particularly in patients with underlying comorbidities. Systematic analysis of 637 MERS-CoV cases suggests that diabetes and hypertension are equally prevalent in ~50% of the patients. Cardiac diseases and obesity are present, respectively in 30% and 16% of the cases. These conditions down-regulate the synthesis of pro-inflammatory cytokines and impair the host's innate and humoral immune systems. In conclusion, the protection against MERS-CoV and other respiratory infections can be improved if public health vaccination strategies are tailored to target persons with chronic disorders.

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Notes:

John Gammon, J Infect Dis Ther 2016, 4:8 (Suppl)
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The curse of wet hands! The significance of hand drying and efficacy of different methods

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Wet hands are an infection risk, increasing the potential for cross infection as well as the harm to the skin condition of healthcare practitioners. This presentation examines the infection risk associated with wet hands, efficacy research of different drying and the impact on the safe clinical care. Current research and practice recommendations concentrate on hand washing, compliance rates and the efficacy of different interventions to improve hand washing. However, there is a noticeable neglect of hand drying practice which fails to recognize its importance in the prevention and control of infection. There is recognition that hand drying is of equal importance to hand washing, that there is a lack of compliance amongst practitioners and that the efficacy of different methods varies. This presentation argues that the effectiveness of the drying technique and method is neglected area of practice and research; however it has grown in importance in more recent years with a number of studies recently being published. The presentation examines a number of published international studies, which evaluate the efficacy of different methods in clinical areas. The presentation notes that despite this evidence, research needs to focus and evaluate the efficacy the methods and extent of drying by practitioners within the clinical environment. We need to give greater emphasis to the equal importance of hand drying when we consider hand hygiene in the clinical context. We must accept that patient safety is put at risk when we fail to dry our hands.

Biography

John Gammon is the Deputy Head of the College of Human and Health Sciences at Swansea University and trained as a Nurse at Westminster Hospital London. He is a Non-Executive Director of a Local NHS Health Board. His expertise is in infection prevention and control, working in practice as a Specialist Nurse for many years. His PhD examined coping strategies and mediating factors for individuals in source isolation. His research interests include isolation strategies and the psychological effects, hand hygiene and behavioral theory to improve infection prevention compliance.

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Lucy J Bock et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Investigating the mechanisms of resistance to cationic biocides in clinically relevant Gram negative organisms

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Control of multi-drug resistant (MDR) organisms relies increasingly on the use of biocides to limit the risk of infection. Clinical strains of Gram negative MDR organisms have been shown to adapt to increased levels of biocides. We aim to define the stable mechanisms of resistance that allow these strains to adapt to commonly use cationic biocides (e.g., chlorhexidine). Using established adaptation protocols, whole genome sequencing, gene expression analysis and efflux assays, we investigate the mechanisms of resistance in clinical isolates. Resistance of *Klebsiella pneumoniae* isolates to chlorhexidine formulations varies vastly depending on the strain and formulation, some strains not being killed by 50% working concentration of chlorhexidine formulations. *K. pneumoniae* strains adapted to chlorhexidine show increased resistance to formulations, though this can be reduced by additional ingredients in the formulation. Cross resistance to the last resort antibiotic colistin was found in five out of six adapted strains. Stable mutations in the two component regulator *phoPQ* and/or a putative tet repressor gene (*smvR*), adjacent to the MFS family efflux pump *smvA*, were found in all adapted *K. pneumoniae* strains. Currently data on adaptation to further cationic compounds in Gram negative MDR pathogens is being generated, showing that some resistance mechanisms are conserved between species, whereas others are unique. Resistance mechanisms vary depending on the compound, but several overlap with many of them associated with efflux pumps and/or membrane modification pathways. To avoid potential breakdown of infection control due to emergence of resistance mechanisms, the careful use of biocides in the healthcare environment is therefore required.

Biography

Lucy J Bock has completed her BSc in Biology at the University of Newcastle, UK in 2004 and her PhD in Molecular Medicine in 2010 at the European Institute of Oncology and the University of Milan, Italy. Since then she has worked for Public Health England publishing on projects ranging from automatic washer-disinfector and hydrogen peroxide room-decontamination indicators to biocide resistance of Gram negative pathogens. Her current interest is in the cross resistance of Gram negative bacteria to cationic biocides and antibiotics.

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Mona Schousboe et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Antibiotic stewardship approach to long term urinary catheterized patients in a Spinal Injury Unit (SIU) in New Zealand: Measurement of success regarding antibiotic resistance

Mona Schousboe and **P J Aspell**
Canterbury District Health Board, New Zealand

Introduction: Antimicrobial stewardship, a concept developed due to increasing antibiotic resistance, involves issuing guidelines, assistance from microbiology laboratories in limiting reporting and policing by pharmacy on the use of antibiotics. The success of antimicrobial stewardship is difficult to measure. Presented here is the management of antibiotic use, prevention of urinary sepsis and organisms' resistance in a Spinal Injury Unit (SIU) in New Zealand. A half hour weekly meeting is held between medical, nursing, pharmacy and IC&P staff with the aim of preventing urinary sepsis as a consequence of planned urological interventions. Urine samples are collected weekly and cultured with identification of all bacteria and antibiotic susceptibilities carried out monthly or as new strains are identified.

Aim: To research the benefit of preventative urine management by comparing susceptibilities in the SIU over a 10 year period with those of the District Health Boards (DHB) Annual Antibiotic Susceptibilities.

Methods & Material: Compare antibiotic susceptibilities from laboratory records reported on SIU catheterized patient's urine isolates for six out of ten years between 2005 and 2015 with annual summaries of all DHB's hospital bacterial susceptibilities over the same periods.

Results: The annual susceptibilities of routine urinary antibiotics to most of the urinary pathogens in the SIU patients were equal to or only slightly lower than the Annual Antibiotic Susceptibilities for all the DHB's bacterial isolates with exception of *P. aeruginosa*.

Conclusion: The effect of antimicrobial stewardship can be demonstrated and measured in catheterized patients with the help of regular detailed urine results and a preventative approach to management and thus avoid the use of empiric antibiotic treatment. The focus was to render the bladder free of bacteria during interventions which increase the intravesical pressure. Nitrofurantoin was the most frequently urinary antiseptic used.

Biography

Mona Schousboe is employed by Canterbury District Health Board (DHB), one of the largest DHB in New Zealand. She is a qualified Medical Microbiologist (FRCPA) and work in this capacity in the DHB's laboratory, Canterbury Health Laboratories. She is also a Clinical Director of the CDHB Infection Prevention and Control Service. She has obtained Master of Public Health with a Thesis "Governance, Management and Professional Influences on Infection Control in Canterbury Public Hospitals 1978-2008". She has special interest in management of urinary catheterized patients with spinal injuries.

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Aaron Lawson, J Infect Dis Ther 2016, 4:8 (Suppl)
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Public awareness of hand hygiene as a simple measure in the prevention of the spread of communicable diseases: A systematic literature review

Aaron Lawson
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Hygiene-related communicable diseases result in millions of deaths each year across the globe. Good hand hygiene practice is recognized as one of the most effective methods in preventing the spread of hygiene-related communicable diseases from person to person. Most of the studies carried out on hand hygiene practice and compliance has focused on the healthcare sector and has found that compliance is often poor. Few studies have looked at the public's knowledge and awareness of good hand hygiene as a simple measure in the prevention of the spread of communicable diseases. This study is a systematic review of peer-reviewed, published studies that focused on hand hygiene knowledge and compliance by the general public. An online search of the SCOPUS database using the keywords "hand hygiene", "hand washing", "public" and "knowledge" with exclusion criteria keywords "healthcare", "hospital" and "nursing", yielded 270 initial document results ranging from 1981 to 2016. From these 38 were included in the final review. The majority of the studies were carried out in less-developed countries particularly in Africa and the Middle-East. Schools and colleges emerged as the predominant locations used for most of the studies followed by food businesses. The systematic review concludes that there is a gap between knowledge and practice. Good education and tailored interventions were identified as key factors in improving hand hygiene practice and compliance within a target population, however further research is needed to determine the lasting impact.

Biography

Aaron Lawson is a graduate of Ulster University with a Bachelor of Science in Environmental Health and the Diploma of Professional Practice with commendation. He has a keen interest and understanding of environmental health, particularly in relation to public health, health and safety in the workplace and creating a better environment for the future. He is currently undertaking PhD in Public Health and Epidemiology at Ulster University.

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Notes:

Carla M A Pinto, J Infect Dis Ther 2016, 4:8 (Suppl)
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Persistence of low levels of plasma viremia and of the latent reservoir in patients under ART: A fractional order approach

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Low levels of viral load are found in HIV infected patients, after many years under successful suppressive anti-retroviral therapy (ART). The factors leading to this persistence are still under debate but it is now more or less accepted that the latent reservoir may be crucial to the maintenance of this residual viremia. In this talk, we focus on the role of the latent reservoir in the persistence of the latent reservoir and of the plasma viremia in a fractional order (FO) model for HIV infection. The proposed model provides new insights on the role of the latent reservoir in the persistence of the latent reservoir and of the plasma virus. To our best knowledge, this is the first FO model that deals with the role of the latent reservoir in the persistence of low levels of viremia and of the latent reservoir.

Biography

Carla M A Pinto is an Adjunct Professor at School of Engineering, Polytechnic of Porto, since December 1997. She is a Researcher at Center for Mathematics of the University of Porto, since 2003. She has completed her PhD degree in Mathematics in 2004. Her current research fields involve the study of epidemiological models for several diseases, namely HIV/AIDS, tuberculosis, malaria, amongst others. She also studies coupled nonlinear dynamical systems, considering fractional and integer derivatives using bifurcation theory and symmetry techniques. She has authored/co-authored a large number of research papers, published in reputed international journals and international conferences. She has been serving as an Editorial Board Member of several journals. She is the Sub-Director of the Department of Mathematics since 2012.

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Jack Ho Wong et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Lactoferrin is a natural killer of *Candida* spp.

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Lactoferrin is an iron-binding protein in milk. It plays an important role in the host defense system as it prevents microbes from growing and forming biofilms. In addition to antimicrobial activity, lactoferrin exhibits some anticancer activities. Lactoferricin (Lfcin) and lactoferrampin (Lfampin), which are peptides derived from lactoferrin, demonstrated antimicrobial activity with promising prospects and are currently one of the research focuses. We investigated the antifungal effect of these two peptides. We found that fungal cells exposed to Lfcin manifested morphological alterations, changes in plasma membrane permeability and mitochondrial membrane potential and ROS accumulation in cells. Lfcin also suppressed superoxide dismutase 3 (SOD3) expression in the fungal cells. Lfampin exerted its antifungal effect mainly through induction of necrosis. It also induced changes in plasma membrane permeability and mitochondrial membrane potential. We also tested the effects of the following combinations (1) Lfcin and Lfampin (2) The Lfcin and Fluconazole and (3) Lfampin and Fluconazole against Candida spp.

Biography

Jack Ho Wong has completed his PhD at the Chinese University of Hong Kong and currently is a Research Associate at the School of Biomedical Sciences. He is working on bioactive peptides emphasized on antimicrobial and anticancer effect. He has published more than 100 papers in reputed journals and has been serving as an Editorial Board Member in the journals *Toxins*, *Frontiers in Microbiology* and *Frontiers in Pharmacology* and he is a manuscript Reviewer for several journals.

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Nasim Mohamad Alsebai et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Management of perforated appendicitis in children and infection prevention

Nasim Mohamad Alsebai and **Abdulrahim Abu Jayyab**
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Perforated appendicitis in children continues to be associated with significant morbidity. In 2012, a treatment algorithm was begun at the author's institution, which included immediate appendectomy, antibiotic irrigation of the peritoneal cavity, trans-peritoneal drainage through the wound and 10-day treatment with intravenous ampicillin, clindamycin and gentamicin. Initial results with this scheme in 27 patients demonstrated a 7.7% incidence of major complications and no deaths. From 2012 through 2016, the authors continued to use this treatment plan in all patients with perforated appendicitis. 73 patients with perforated appendicitis were treated and the rate of major complications was 6.4%. Infectious complications occurred in 18 patients (4.8%) and included intra-abdominal abscesses (2 patients, 1.3%), phlegmon treated with an extended course of antibiotics (2 patients, 1.6%), wound infections (5 patients, 1.3%) and entero-cutaneous fistula requiring further operations (2 patients, 0.5%). There were six cases of small bowel obstruction (1.6%), which required operative intervention. There were no deaths. The average length of stay of all patients was 11.4 days (range, 8 to 66 days). Utilization of trans-peritoneal drainage and choice of antibiotic therapy continue to be sources of controversy in the surgical literature. However, the treatment plan used in the present study resulted in the lowest complication rate reported to date and the authors conclude that this scheme in truly the "gold standard" for treatment of perforated appendicitis. New treatment plans using laparoscopic appendectomy, different or shorter courses of antibiotics or not using drain should have complication rates that are as low as or lower than this one to be considered as useful alternatives.

Biography

Nasim Mohamad Alsebai is a Pediatric Surgeon, Anatomist, Researcher and Lecturer. Nasim has graduated from Faculty of Medicine, Aleppo University and did Pediatric Surgery Residency Training in Syria from Aleppo University Hospital, Faculty of Medicine where Nasim obtained Master's degree in Surgery-Pediatric Surgery followed by Master of Science degree in Human Anatomy from the Anatomy Department, Aleppo University. Nasim is currently working as an Anatomy Lecturer in the College of Medical & Health Sciences in Emirates College of Technology, Abu Dhabi. Nasim is actively involved in clinical research and academic publications.

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Cucunawangsih et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Restricted antimicrobial policy: A positive outcome on Gram-negative bacilli susceptibility pattern from inpatients wards in Indonesia

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Background: The increased prevalence of MDRO following overutilization of broad spectrum antibiotics has become a global emergency. At the end of September 2013, a restricted antimicrobial control program (RACP) was released in our institution. In this study, we evaluated the influence of RACP on susceptibilities of Gram-negative bacilli (GNB) from patients admitted in wards of Siloam Teaching Hospitals, Tangerang, Indonesia.

Materials & Methods: This retrospective study enrolled 1,866 data of GNB from January 2013 to June 2015. The RACP implemented uses a front-end approach which requires authorization of RACP team member based on local antibiotic guideline and prior susceptibility pattern. The team consists of clinician, clinical pharmacist and clinical microbiologist, which functions to restrict the use of carbapenems, fourth generation cephalosporins and tigecycline. Cumulative susceptibility testing was done using an automated method from VITEX-2 Compact® or conventional disk diffusion in accordance with Clinical and Laboratory Standard Institute (CLSI) guideline.

Results: The predominant GNB isolated was *Escherichia coli* (21.7%) followed by *Klebsiella pneumonia* (16.6%), *Pseudomonas aeruginosa* (10.9%) and *Acinetobacter baumanii* (9.5%). There was a significant increase of GNB susceptibility against cefpirome from 57% in 2013 to 73% in 2015. Similarly, the susceptibility thrived from 78-83% against imipenem, 74-75% against tigecycline and 63-64% against cefepime consecutively in 2013 to 2015. The susceptibility against meropenem in 2013 and 2015 was 80%.

Conclusions: The use of RACP yielded a positive effect on antibiotic susceptibility rate of GNB organisms. Furthermore, RACP is an effective program in lowering antibiotics utilization in our institution.

Biography

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Scientific Tracks & Abstracts

Day 2

Infection Control 2016

Muammer Goncuoglu, J Infect Dis Ther 2016, 4:8 (Suppl)
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Salmonella risk in poultry meat

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Salmonella is one of the most important pathogens and causes important health risks and economic problems throughout the world. This bacterium has a major public health role which can infect people by consumption of different foods. Among all other foods, like vegetables, animal originated foods etc., poultry meat act as one of the most important and risky food for the human health for food-borne salmonellosis. Poultry meat and edible offal could be contaminated with *Salmonella* in different production steps such as slaughterhouses, meat processing etc. However according to the farm to table concept we have to focus on this fact from the breeding to the end of consumption of the poultry meat. The majority of human cases of non-typhoidal salmonellosis are caused by a limited number of serovars, which may vary with different geographic areas and time. Antimicrobial resistance profiles of the serovars of *Salmonella* spp., also has to be considered as one of the major public health risk. As a result, continuous monitoring of *Salmonella* prevalence and resistance in the food supply is necessary, both in national and international level, because of the public health implications of a potential spread of resistant microorganisms.

Biography

Muammer Goncuoglu has received his DVM from Ankara University, Faculty of Veterinary Medicine in 1998 and PhD in Faculty of Veterinary Medicine, Food Hygiene and Technology Department in 2003. He has been working as an Academic Staff in the same department as Associate Professor Doctor. His main research areas are food hygiene, food microbiology, antimicrobial resistance of pathogens and public health.

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Bahar Onaran et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Biocontrol of *E. coli* O157:H7 in RTE salad using lytic bacteriophage

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E. coli O157:H7 is a food-borne pathogen of concern due to the serious clinical outcomes. Options for controlling bacterial pathogens in raw and ready-to-eat foods are limited but one is to use bacteriophages. The use of specific virulent bacteriophages for *E. coli* O157:H7 emerges as an important method in order to reduce *E. coli* O157:H7 load in foods. It is reported that the usage of specific virulent bacteriophages as a biocontrol and decontamination agent in foods, do not cause any side effects on human health, as well. This study was aimed to find out the efficiency of lytic bacteriophage against *E. coli* O157:H7 in ready-to-eat salads. For this purpose, *E. coli* O157:H7 NCTC12900 (EC00) and nalidixic acid resistant *E. coli* O157:H7 ATCC 43895 (naEC95) were used as the model bacterium in decontamination trials of Italian salads which are consumed without any heating process and include beans, carrots, potatoes, pickled cucumbers, salami, and mayonnaise. Phage M8AEC16 which was classified in Myoviridae family previously was used as biocontrol agent. Major reductions of viable *E. coli* O157:H7 counts reached up to 2.7 log cfu/g. In conclusion, results of this study showed that, phage M8AEC16 is an important biocontrol agent in decontamination of *E. coli* O157:H7 in RTE salads.

Biography

Bahar Onaran is a Research Assistant in Ankara University, Faculty of Veterinary Medicine, Department of Food Hygiene and Technology. She is interested especially in food microbiology. She is currently working on her PhD thesis entitled "Presence and antibiotic resistance of vancomycin resistant enterococci in chicken meat".

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Notes:

Angeline Nifiani M Wibowo et al., J Infect Dis Ther 2016, 4:8 (Suppl)
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Outcome of empirical antibiotic treatment and urinary catheter colonization in patients admitted to intensive unit of Siloam Teaching Hospital, Tangerang, Indonesia

Angeline Nifiani M Wibowo and **Cucunawangsih**
University of Pelita Harapan, Indonesia

Background & Aim: Around 12-16% adult patients admitted to hospital, used urine catheter during their hospitalization. Furthermore, the incidence of positive urinary catheter colonization in intensive unit is 20%. The aim of this study is to observe the role of empirical antibiotics usage and urinary catheter colonization in patients admitted to the intensive unit of Siloam Teaching Hospital.

Material & Methods: This cross-sectional study conducted from January 2013 to December 2014. Two hundred and eighteen (218) urine culture data were collected and 49 were eligible for inclusion criteria such as complete medical record and using urine catheter more than 48 hours. Prior empirical antibiotic usage and the outcome of culture were analyzed using chi-square method and the mean difference characteristics of the patients were analyzed using t-test.

Results: Of 49 patients had complete data and used urine catheter, characteristics of patients between patients with positive colonization and no colonization were listed. There were 6/15 (40%) patients with colonization and 26/34 (76.5%) patients with no colonization that were treated with empirical antibiotics. The analysis of chi square shows the significant association of colonization with empirical antibiotics (p value=0.013). Meropenem 1 gm TDS IV (14/49 or 28.6%) and amikacin 1 gm OD IV (10/49 or 20.4%) were the two most used antibiotics in this study.

Conclusions: Usage of empirical antibiotics has a significance difference in urinary catheter colonization in patients admitted to intensive unit.

Biography

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Elmekes Adel, J Infect Dis Ther 2016, 4:8 (Suppl)
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The clinical and epidemiological risk factors of infections due to multi-drug resistant bacteria in an adult intensive care unit of university hospital center in Marrakesh, Morocco

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Introduction: Infections with MDR bacteria is a major public health problem worldwide. These infections are particularly serious in ICU for the fragility of the field and multiple invasive procedures. Thus, early diagnosis is necessary and indispensable for proper management. Bacteriological samples including blood culture samples and devices are key diagnostic examinations infections with MDR bacteria, especially as clinical signs are not specific.

Aim: The aim of our study is to evaluate the epidemiology and the clinical and epidemiological risk factors responsible for infections with MDR bacteria at a tertiary intensive care unit, CHU Mohammed VI, Marrakech.

Materials & Methods: The study lasted 13 months, from March 1st 2015 to March 28th 2016. This prospective study was conducted in a 10-bed clinical-surgical ICU for adults. All analyzes were performed at the medical microbiology laboratory of the hospital. Adult patients with a first clinical episode of infection with Healthcare Acquired Infection (HAI) were included in the study. The samples were sent to the laboratory for diagnostic purposes. The level of antibiotic resistance has been studied by the agar diffusion method. The choice of antibiotic susceptibility testing and interpretation criteria were made as recommended by the Antibiogram the Committee of the French Society of Microbiology and standards of the European Committee on Susceptibility (EUCAST, 2015).

Results: During the study period, 225 bacterial strains were isolated from the samples taken. The antibiotic resistance profile shows that 43% of strains were multidrug resistant. The MRB were represented mostly by *Acinetobacter baumannii* strains resistant to imipenem (ABRI) 72%, followed by beta-lactamases producing Enterobacteriaceae extended spectrum (ESBL) 19% and 6% of *Staphylococcus aureus* resistant to methicillin (MRSA). While only 3% of MRB were characterized as *Pseudomonas aeruginosa* strains resistant to ceftazidime (PARC). We showed also that nosocomial infections due to BMR were dominated by pneumonia (44% of cases), followed by bacteremia, urinary tract infections, infections of catheters and meningitis with frequencies that are respectively of about 26%, 12%, 11% and 4%.

Conclusion: In conclusion, we showed the alarming presence of MDR bacteria and especially ABRI as bacteria responsible for HAI in the ICU basically is related to main risk factors specified by the multivariate analysis. These results illustrate the urgent obligation and need for practical actions in order to strength technical measures with infection control efforts to reduce HAI caused by MRD bacteria and improve patient outcomes by setting a rational and an appropriate antimicrobial use in hospitals but specifically in ICUs levels.

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Nalam Udayakiran, J Infect Dis Ther 2016, 4:8 (Suppl)
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A study of certain sociodemographic factors among patients with dog bite in Mulky CHC, DK District

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Introduction: Rabies an archaic zoonotic disease. Nearly 15 million people are bitten by animals in India every year with dogs being responsible for 96.2% of the bites. The most vulnerable members of society are children and poor or lower socio-economic classes. A majority of the victims had taken a partial course of vaccine.

Methodology: Longitudinal study was conducted in CHC Mulky, among patients registered from November 2015 to April 2016. All the patients receiving anti rabies vaccine in the OPD during study period who are willing to participate in the study were included in the study. After obtaining informed consent, the participants were administered the pre-tested, structured questionnaire at the time of first visit.

Results: The number of study subjects over a period of 6 months was 235 and all of them were bitten by dogs. Majority of them belongs to 21 to 30 age groups (22.9%). Males are more compared to females. 89.7% subjects belongs Hindu religion followed by Muslims. 60% subjects belong to BPL family. Only 34.4% subjects completed the full course of treatment.

Conclusion: This study shows that dog bites affect people of all age groups. Though people are aware of the necessity to approach a health facility following dog bite they are not motivated to complete the full course of vaccination following exposure. There is a need to create awareness regarding adherence to treatment through a strong information education and communication program among the community.

Biography

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Bibi Razieh Hosseini Farash, J Infect Dis Ther 2016, 4:8 (Suppl)
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The first report of visceral leishmaniasis caused by *Leishmania major* in Iran

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Purpose: In Iran, HIV/AIDS is an emerging disease and both Visceral Leishmaniasis (VL) and HIV infections occur sporadically. The known causative agent in Iran for VL is *Leishmania infantum* which is endemic in Ardabil and Fars Provinces. The aim of this study is to report of VL caused by *Leishmania major* in an AIDS patient.

Methods: Direct agglutination test (DAT) was performed on a 53 year old HIV/infected male with chronic intermittent diarrhea who registered in AIDS center of Khorasan Razavi Province to investigate VL/HIV co infection. The mean of CD4+ was 79/mm^3 in this patient. The DAT result was confirmed by bone marrow aspiration and polymerase chain reaction (PCR).

Results: DAT test was positive with titer 1:25,600. The amastigote forms of *Leishmania* sp. were found in bone marrow aspiration materials and *L. major* was identified by nested PCR assay compared to standard pattern.

Conclusions: Based on the DAT and PCR results for VL, it is recommended that a high sensitive serological test should be performed on HIV positive patients, especially in where are endemic for VL. Other *Leishmania* sp. could be causative agents for VL in immunocompromised people; therefore the observed amastigotes in bone marrow aspiration should be examined by molecular methods to identify *Leishmania* sp. VL/HIV co-infection can occur in endemic areas for cutaneous leishmaniasis, so some studies are proposed to investigate VL caused by CL causative agents in HIV patients.

Biography

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Healthcare-associated infections HAI in Cairo University Hospitals: A success story of surveillance in a resource-limited country

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Background & Aim: Healthcare-associated infections are the most frequent adverse event in healthcare delivery worldwide. Limited data are available from low and middle-income countries. Most countries lack surveillance systems for health care-associated infections. We aimed to describe the results of the surveillance system we followed from 1 September 2014 till 31 March 2016 in Cairo University Hospitals (CHU) a 5200 bed-tertiary hospital.

Methods: Standardized surveillance system was conducted in all intensive care units (ICU) of CUH from 1 September 2014 to 31 March 2016. Surveillance was active prospective and focused on ICU patients; a vulnerable patient population at increased risk of HAI and AMR due to severity of illness, high exposure to invasive procedures and devices and high use of broad spectrum antibiotics. HAI definitions used were the same 2008 NHSN case definitions. The involvement and training of IC Team, data entry person, Microbiology laboratory performing full bacterial identification, antimicrobial susceptibility testing and culturing all types of specimens, IPC link nurses in ICUs to monitor and report infections to the IPC team were essential. Data were collected with surveillance officers and analyzed. Device-days were used to calculate incidence of device-associated infections and patient-days to calculate incidence of HAIs that were not device-related. Antimicrobial susceptibility testing was performed using CLSI guidelines.

Results: 38 ICUs including medical, surgical, stroke units, cardiac, cardio-surgical, obstetric, pediatric, neonatal and burn units contributed to 94877 patient-days and 1272 HAIs. Of these 224 (18%) are ICU acquired, 111 (9%) Ward acquired, 808 (63%) Infections present on ICU admission and 129 (10%) SSI. Of the infections BSI represented 43% (with 70% CLABSI), UTI represented 27% (with 97% CAUTI) and pneumonia represented 39% (with VAP 80%). The incidence of HAI were 2.4/1000 patient-days, VAP was 2.5/1000 ventilator days, CLABSI was 1.2/1000 central line days and CAUTI was 1.2/1000 urinary catheter days. Culture of microorganisms showed that Gram negative pathogens constituted 71.4% of the total pathogens, mainly *Klebsiella* spp., constituted (28.6%), *Acinetobacter* spp., (16.6%) and *Pseudomonas* spp., (9.4%). Most of *Acinetobacter* and *E. coli* isolates were multi-drug resistant; 83.7% and 82.7%, respectively.

Conclusion: Implementing a standardized surveillance system in a resource-limited country is possible. Having a continuous and sustainable surveillance system is a success. Surveillance is fundamental to have benchmark of infections, to plan for prevention strategies, to record the antimicrobial resistance pattern and to plan for an antimicrobial stewardship program.

Biography

Jehan Ali El Kholy is a Professor of Anesthesia and Intensive Care who works as a Deputy Director of Cairo University Hospitals since 2013. She is a certified Infection Prevention and Control Specialist and is responsible for preparedness and response to influenza and other infections in a teaching 5000 bed hospital that plays a role model among all Egyptian hospitals, in collaboration with Naval Medical Research Unit, No.3 (NAMRU-3). She was awarded by the Egyptian Minister of Health to be the best leader implementing active surveillance of influenza and healthcare-associated infections in Cairo University Hospitals in year 2014 and 2016.

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Rifabutin: New formulations with improved therapeutic effect against tuberculosis

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Tuberculosis (TB) is the leading cause of death among infectious disease worldwide. Although the development of new antimycobacterial drugs is an obvious and necessary strategy to fight TB the therapeutic improvement of already approved drugs constitutes an alternative strategy. In the present work rifabutin, a first line drug against TB was chosen aiming the maximization of its concentration at infected sites while reducing its toxic effects and treatment duration. For this purpose, liposomes, the most successful lipid system with many liposomal formulations already on the market with proven safety and efficacy was selected. Biodistribution studies of RFB liposomes by intravenous administration allowed a higher accumulation of the antibiotic in liver, spleen and lungs in comparison with the respective free form. In a murine *Mycobacterium tuberculosis* model of infection RFB liposomes were able to reduce in a very high extent the bacterial load in liver, spleen and lungs being these results in agreement with biodistribution studies. Taking into account that in case of TB the lung constitutes the main infected organ, the pulmonary administration was also tested using spray dried microparticles. *In vivo* studies demonstrated that pulmonary delivery of RFB formulations constitutes a valuable approach to fight TB when compared to infected mice receiving RFB in the free form by the oral route. The obtained results clearly evidence the therapeutic improvement of RFB after incorporation in liposomes and in spray dried microparticles for intravenous and pulmonary administration respectively. The same strategy can be applied to other anti-tubercular drugs alone or in combination.

Biography

Maria Manuela Gaspar has completed her PhD in 2005 in Pharmaceutical Technology, University of Lisbon and Postdoctoral studies in the University of Dublin, Trinity College. She is a Researcher in the Research Institute for Medicines, iMed.Ulisboa, University of Lisbon. She is co-author of patents, paper in peer-reviewed journals and book chapters.

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Surgical site infection SSI surveillance at Cairo University Hospitals: A success story lowering the incidence of SSI in a limited-resource country

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Cairo University Hospital, Egypt

Background: CUH is a 5200 bed hospital with 98 operating rooms. SSI represents the most common infection in our hospital. SSI prolongs hospital stays, increases resistance to antimicrobials and represents an additional financial burden for hospitals, patients and their families increasing morbidity and mortality especially in countries with limited resources.

Aim: The objective of this study was to standardize the surveillance of SSI, report the rates of SSI and to lower the incidence of SSI in operations associated with high rates of SSI.

Methods: The study was conducted in CUH from March 2015 till February 2016. Training was provided to Infection Control Team on surveillance methods according to methods of National Healthcare Surveillance Network in USA (NHSN). Surveillance of the following surgeries was done craniotomies (CRAN), Coronary artery bypass grafting (CABG) and exploratory laparotomies (EL). The monitoring and evaluation (M&E) team evaluated the sensitivity and specificity of surveillance.

Results: M&E team identified 83% and 91% sensitivity and specificity of surveillance respectively. The annual incidence of SSI was 3.5 % of 368 operations after CRAN of them 1.1% superficial, 1.9% deep and 0.5% organ/space SSI. *Klebsiella* spp., represented 30.8%, *Acinetobacter* 23.1%, *pseudomonas* spp., 23.1%.The annual incidence of SSI is 2.9% of 590 operations after CABG of them 1.4% superficial and 1.5% deep SSI. *Klebsiella* spp., represented 33.3%, *S. aureus* 33.3%, Coagulase negative 13.3%. The annual incidence of SSI was 26% of 793 after EL of them superficial SSI was 19%, deep SSI was 5.3 and 1.9% organ/space SSI. Of those 97.1% were detected during the inpatient stay and 2.9% at readmission. Microbiological investigations were requested to all patients with SSI, 74.5% reported one organism and 13% reported 2 organisms. Distribution of microorganisms is as follows: *E. coli* 33.3%, *Klebsiella* spp. 30%, *S. aureus* 8.6%. Interventions were conducted to improve adherence with the timing of pre-operative antibiotic prophylaxis, peri-operative glycemic control, improving reporting of surveillance system, ensuring minimum requirements in terms of facilities and dedicated resources available. Interventions lowered the incidence of SSI from 43% in the first half, to 20% in the second half of the year. Risk factors for SSI were high ASA score, uncontrolled diabetes mellitus and emergency operations.

Conclusion: Surveillance of SSI could be successfully implemented and monitored. Results of surveillance were the basis of interventions that lowered the incidence of SSI. Interventions have successfully decreased the incidence of SSI from 42 to 20%.

Biography

Jehan Ali El Kholy is a Professor of Anesthesia and Intensive Care who works as a Deputy Director of Cairo University Hospitals since 2013. She is a certified Infection Prevention and Control Specialist and is responsible for preparedness and response to influenza and other infections in a teaching 5000 bed hospital that plays a role model among all Egyptian hospitals, in collaboration with Naval Medical Research Unit, No.3 (NAMRU-3). She was awarded by the Egyptian Minister of Health to be the best leader implementing active surveillance of influenza and healthcare-associated infections in Cairo University Hospitals in year 2014 and 2016.

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Infection control: The science of a profession

Trees are composed of roots, a trunk and branches. Similarly, in the infection control practice, the roots of the infection control professionals represent the background of these professionals, their values and the studies related to their profession. The crown of a tree is made up of the leaves and branches at the top of that tree. Likewise in the infection control profession this represent the daily activities of an infection control professional i.e., identification of infectious disease process, conducting epidemiological studies, controlling transmission of infectious agents, etc. The trunk of the tree provides its shape and support and holds up the crown. The trunk transports water and nutrients from the soil and sugar from the leaves. In infection control, the trunk represent the link between the theory and in practice, it represents an important element to minimize the theory, practice gap in infection control and has an integral part in holding the workload of an infection control practitioner. Photosynthesis in infection control practice represents the interaction of these professionals with other healthcare workers, coaching them and adding shared values with them to prevent infections. To conclude, a successful infection control professional consists of a mixture between theoretical and practical skills coupled with a trunk that is solid and conducive. This paper summarizes the essential combination of savoir, savoir etre and savoir faire to successfully assume the role of an infection control professional.

Biography

Elias Tannous is an infection control professional with more than 20 years experience in the healthcare setting. He holds degree in Nursing from the French Ministry of Health and from Saint Joseph University in Lebanon, degrees in Business Administrations and Human Resource/Personnel Management from UK and Certified Board in Infection Control, USA since 2008. He has coordinated, co-directed and facilitated loads of IC educational activities and has been heavily involved in major infection control activities, projects and programs for the past 10 years, including commissioning of new facilities, developing surveillance programs and evaluating IC programs.

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Managing bio-threat information under the WHO international health regulations of biosecurity

Sharing security threat information is a challenge for governments and their agencies. Especially in biotechnology and microbiology the agencies do not know how to classify or to disclose collected information on potential bio-threats. There is vague border between man-made and natural biological threats. An example is the several month delay of the publication of research on the transmissibility of H5N1 avian influenza virus in the leading scientific journal Science by researchers of the Erasmus Medical Centre in Rotterdam, The Netherlands. The publication was delayed in 2012 by several months due to the fact that various organizations first wanted to investigate whether the details could be misused by malicious individuals. In the study the researchers show that only a small number of mutations were necessary to change the H5N1 virus so that it can spread through the respiratory system between mammals. This implies that the risk of a H5N1 pandemic cannot be ruled out. On the other hand, this information can be used to develop new therapies and/or vaccines for influenza. It gives also insight into the disease mechanism, which helps in the prevention. The same arguments are valid for therapeutic antibodies, like the antibodies, which are developed to treat anthrax. They have an extreme high affinity for the lethal factors of the bacterium and stop the disease but the same antibodies could be misused to select the most pathogenic strains. Micro-organisms have from nature itself the capacity to reorganize and change their pathogenicity, which could lead to a pandemic spread of a disease. But if the disease is too infectious and too deadly, like some stains of Ebola Virus are, the lethality will be locally limited. But if the incubation time is longer in a certain strain of an Ebola virus, the risks on epidemics and even a pandemic is much higher. The knowledge of these natural mutation mechanisms could be misused to weaponize micro-organisms. It enables the engineering of the lethality like it is done with some anthrax strains. Are these laboratory techniques considered as public science or should it be classified? Academics want to publish and to share information for the progress of science and to find useful applications. The Rotterdam scientists were really annoyed when their research was blocked for publication and feared that other groups would be first in publishing a part of their obtained experimental results. Biosafety is already common practice in microbiology but biosecurity is often still questionable. A 'Code of Conduct', like the Dutch Academy of Science has developed, would help; especially for the so-called insider risk. Educational programs for the identification and assessment of risks and threats to security have to be developed to give scientists bio-threat awareness and for government officials to rationalize the real threat, without damaging the progress of science.

Biography

Stef Stienstra is a strategic and creative Consultant in Biomedical Science with a parallel career as a Commander of the Reserve of the Royal Dutch Navy. For the Dutch Armed Forces he has responsibility for the counter measures in CBNRe threats and (medical) consequence management both in a military and a civilian (terrorism) setting. In his civil career he works internationally as a Consultant or as Scientific Supervisory Board Member for several medical and biotech companies, merely involved in biodefense. He is also a Visiting Professor for Punjab University in Pakistan and Rhein-Waal University in Germany. He has completed his studies in Medicine and in Biochemistry at the University of Groningen in Netherlands and has extensive practical experience in cell biology, immuno-hematology, biodefense and transfusion medicine.

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