PREVENTION OF CATHETER ASSOCIATED URINARY TRACT INFECTION (CAUTI) THROUGH BUNDLE OF CARE APPROACH
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Health care—associated catheter associated urinary tract infection (CAUTI) is an important cause of morbidity and excess health care costs in hospitals. A “bundle” approach is implementing a set of evidence-based practices generally meant to be implemented together would result in significant improvement in healthcare setting. The CAUTI bundle includes “insertion bundle” and “maintenance bundle”. Elements in “insertion bundle” are: use aseptic technique for insertion, avoid unnecessary catheterization. The “maintenance bundle” includes: maintain a closed drainage system, maintain hygiene, keep bag below level of bladder, maintain unobstructed flow, remove catheter when no longer needed and secure catheter. Bundle approach is proven to be effectively reducing the CAUTI rate though adopting the quality improvement approach with multidisciplinary team approach. The program should also include accurate process measures of hand hygiene compliance and bundle compliance as well as outcome measures of CAUTI rate and appropriate indication of catheter use. Feedback to staff on the performance measure also would increase the awareness in CAUTI prevention; encourage staff to pursue for best practice and patient safety.

SYMPOSIUM 23 (SP 23)
REDDING THE RISK OF TUBERCULOSIS TRANSMISSION

THE PREVALENCE AND INCIDENCE OF LATENT TUBERCULOSIS INFECTION AND ITS ASSOCIATED FACTORS AMONG VILLAGE DOCTORS IN CHINA
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Background: China is a high tuberculosis (TB) burden country. More than half of acute TB cases first seek medical care in village doctors’ clinics or community health centers. Despite being responsible for patient referral and management, village doctors are not systematically evaluated for TB infection or disease. We assessed prevalence and incidence of latent TB infection (LTBI) among acute TB cases first seek medical care in village doctors’ clinics or community health centers.

Methods and Findings: A longitudinal study was conducted in Inner Mongolia Autonomous Region. We administered a questionnaire on demographics and risk factors for TB exposure and disease; Tuberculin skin testing (TST) and QuantIFERON®-TB Gold in-tube assay (QFT-GIT) was conducted at baseline and repeated 12 months later. We used a logistic regression model to calculate adjusted odds ratios (ORs) for risk factors for TST and QFT-GIT prevalence and incidence. At the time of follow up, 19.5% of the 880 participating village doctors had a positive TST and 46.0% had a positive QFT-GIT result. Factors associated with TST prevalence included having a BCG scar (OR = 1.45, 95% CI: 1.03–2.04) and smoking (OR = 1.69, 95% CI: 1.17–2.44). Risk factors associated with QFT-GIT prevalence included being male (OR = 2.17, 95% CI: 1.63–2.89), below college education (OR = 1.42, 95% CI: 1.01–1.97), and working for >25 years as a village doctor (OR = 1.64, 95% CI: 1.12–2.39). The annual incidence of LTBI was 11.4% by both regions, the proportion of MDR-TB patients in the 2010 cohort who successfully completed treatment was <50%, while about 30% of cases were reported as lost to follow-up or had no outcome information. Intensified regional and national efforts to detect cases of MDR-TB and to improve treatment outcomes are urgently required. Stringent infection control to prevent transmission of MDR-TB in health care facilities must be implemented.

SP 22-4
PREVENTION OF CATHETER ASSOCIATED URINARY TRACT INFECTION (CAUTI) THROUGH BUNDLE OF CARE APPROACH
Patricia Ching, Principal Nurse. WHO Collaborating Centre on Infectious Disease Epidemiology and Control, The University of Hong Kong, Hong Kong Special Administrative Region, China

In health care settings, tuberculosis outbreaks are notorious both in communities with low and high TB prevalence. For those with high prevalence of TB, TB outbreaks in health care settings could lead to mortality among health care workers, like the tragedy happened in multidrug resistance TB (MDR-TB) outbreak in Church of Scotland Hospital, Tugela Ferry, KwaZulu-Natal Province, South Africa back to 2006. For those with low prevalence of TB, TB outbreaks in health care settings could be controlled to the smaller extent with the strategy of contact investigation and preventive therapy, etc. However, zero is still a target, not the reality, if without effective vaccine to prevent infections breaking into active diseases.

A matured and well-organized TB control program should always include a comprehensive contact investigation protocol for every contagious TB index patient. Health care settings should definitely not to be excluded. However, contact investigation itself is time and resource consuming, which leads to unsatisfactory condition of public health control measure among health care workers, when he/she become a TB contact. Here we will provide some examples for audience to understand how the investigations are carried on in health care settings at frontline. We’ll also share the obstacles for infection control we observe and how we face the challenges to support occupational health among healthcare workers in Taiwan.

Without doubt, health care workers are persistently facing higher risk of TB compared to the age-stratified general populations. How we could improve the occupational health with busy daily medical practice? How we could deliver the concept that the protection of employee’s health leads to better patient safety and more efficient utilization of human resources? That would be a very important part of post-2015 global TB control strategies.

SP 23-1
THE PREVALENCE AND INCIDENCE OF LATENT TUBERCULOSIS INFECTION AND ITS ASSOCIATED FACTORS AMONG VILLAGE DOCTORS IN CHINA
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Methods and Findings: A longitudinal study was conducted in Inner Mongolia Autonomous Region. We administered a questionnaire on demographics and risk factors for TB exposure and disease; Tuberculin skin testing (TST) and QuantIFERON®-TB Gold in-tube assay (QFT-GIT) was conducted at baseline and repeated 12 months later. We used a logistic regression model to calculate adjusted odds ratios (ORs) for risk factors for TST and QFT-GIT prevalence and incidence. At the time of follow up, 19.5% of the 880 participating village doctors had a positive TST and 46.0% had a positive QFT-GIT result. Factors associated with TST prevalence included having a BCG scar (OR = 1.45, 95% CI: 1.03–2.04) and smoking (OR = 1.69, 95% CI: 1.17–2.44). Risk factors associated with QFT-GIT prevalence included being male (OR = 2.17, 95% CI: 1.63–2.89), below college education (OR = 1.42, 95% CI: 1.01–1.97), and working for >25 years as a village doctor (OR = 1.64, 95% CI: 1.12–2.39). The annual incidence of LTBI was 11.4% by both regions, the proportion of MDR-TB patients in the 2010 cohort who successfully completed treatment was <50%, while about 30% of cases were reported as lost to follow-up or had no outcome information. Intensified regional and national efforts to detect cases of MDR-TB and to improve treatment outcomes are urgently required. Stringent infection control to prevent transmission of MDR-TB in health care facilities must be implemented.

TP 23-2
TUBERCULOSIS CONTACT INVESTIGATIONS AMONG HEALTHCARE WORKERS
Pei-Chun Chan, Cynthia Bin-Eng Chee, TB Control Unit, Tan Tock Seng Hospital, Singapore

The Global TB Strategy after 2015 (“The End TB Strategy”) endorsed by the World Health Assembly in May 2014 sets an ambitious target of 90% reduction
**SYMPOSIUM 24 (SP 24)**

**CONTROL OF MDRO IN THE HOSPITALS**

**SP 24-1**

**EPIDEMIOLOGY: ASIA VS. EUROPE**

Giuseppe Cornaglia *, Alda Bazaj. Department of Pathology and Diagnostics, University of Verona, Italy

Multi-drug-resistant organisms (MDRO) are still on the surge in virtually all geographical areas, in spite of curbing antibiotic consumptions and of the partial success of containment campaigns. Emergence of new resistance determinants, with special reference to beta-lactamases, genetic association of different resistance mechanisms, and spread of MDR clones all account for this enduring threat to Public Health. Although antimicrobial resistance is generally very high, prevalence of various MDRO is different between Europe and Asia, as for both absolute figures and resistance determinants. A good example is given by the prevalence of VRE continued to rise. Further interventions were introduced in late-2012 / early-2013 to effectively create a VRE Bundle. This bundle comprised a number of efforts including 2 specific technologic innovations, hydrogen peroxide terminal cleaning and an automated electronic alert system to identify known VRE carriers at the time of admission. In addition manual cleaning audits were enhanced, precautions signage modified, and the manual cleaning solution changed. A ‘breakpoint’ regression model was fitted to the monthly number of VRE cases from January 2008 to January 2014 to evaluate potentially differing trends before and after each intervention.

A total of 341 cases were reported over this 73 month period. Sixty-five percent of cases were identified after 48 hours of hospitalization, suggesting hospital transmission. Sixty-three percent of cases were clinical cultures, 22% were from contact tracing, and 15% from active surveillance. The best estimate for the breakpoint corresponds to early February 2013 (95% confidence interval, CI: August 2012—June 2013), when the bundle was implemented. The peak incidence was 9.2 cases per month (95% CI: 6.0—13.2) in March 2013 and reduced to 2.4 case per month (95% CI: 1.1—4.7) by January 2014.

**Conclusions:** The bundle of interventions was associated with a significant change in the incidence of VRE at our hospital. Confidence intervals around the breakpoint suggested that all elements of the bundle (apart from the change in bleach cleaning solution) could have played a role in the reduction of VRE.

**SP 24-3**

**CONTROLLING THE HEALTHCARE-ASSOCIATED SPREAD OF CARBAPENEM-RESISTANT ENTEROBACTERIACEAE**

David K. Henderson. NIH Clinical Center, United States

This presentation addresses the burgeoning problem of antimicrobial resistance, first attempting to place the current situation in historical perspective, secondly underscoring the fact that we are faced currently with several specific multiply-resistant pathogens, including Methicillin-resistant Staphylococcus aureus, Vancomycin-resistant enterococci, and Clostridium difficile, among others. The discussion will then focus on the specific problems relating to the control of Carbapenem-Resistant Enterobacteriaceae (CRE) in healthcare. The presentation next discusses prevention interventions in historical perspective, noting the challenges associated with the “Semmelweis Effect” and attempts to induce cultural change. The presentation next focuses on specific MDRO outbreaks that have occurred at the Clinical Center at the National Institutes of Health, emphasizing the interventions employed and discussing the practical application of whole genome sequencing to issues of relevance to healthcare epidemiology.

**SP 24-4**

**STEWARDSHIP STRATEGIES TO CONTROL MDRO**

Ursula Theuretzbacher. Center for Anti-Infective Agents, Vienna, Austria

Antimicrobial stewardship (AMS) programs aim at ensuring appropriate and responsible use of antimicrobial drugs in order to provide optimized treatment outcome including a reduced risk of adverse effects and minimized risk of emergence of resistance while promoting cost-effectiveness. In addition to the immediate effects on individual patients and health care systems the aspect of preserving the power of antimicrobial drugs as vital resources for future generations gains momentum. AMS is recognized as a key component in addressing the global challenge of increasing antimicrobial resistance. Global strategies are needed to define “responsible use” of antibiotics and create a global framework for AMS strategies to control the selection pressure on pathogens. International initiatives such as DRIVE-AB and stewardship strategies are discussed to preserve the activities of antibiotics in an era of limited supply of new drugs.