automated environment disinfection with significant quality assurance as compared with those of manual cleaning and disinfection, which include chloride such as slightly acidic hypochlorous acid water or titanium dioxide. Of them, Bio-Kil (Cargico Group, Taiwan) is a platform nanotechnology with construction of quaternary ammonium compound to create a covalent or ionic bond and embedded into the surfaces of environment, forming a durable copolymer with a physical bactericidal property. A pilot study in intensive care units had shown that the BIO-Kil treatment can inhibit the growth of bacteria and evidently suppress its colonization from 49.62 to 10.38 CFU/10 cm^2. Today we will present further study of its effectiveness on controlling the colonization of MDROs in the hospital settings. Together with hand hygiene campaign and other infection control bundles, there is a new horizon for us to achieve the zero tolerance of HAIs in the 21st century.

SP 20-3

PROACTIVE INFECTION CONTROL MEASURES TO PREVENT NOSOCOMIAL TRANSMISSION OF VRE

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We adopted a multifaceted assertive proactive infection control approach to minimize the nosocomial transmission and outbreak of VRE in a non-endemic area. Active surveillance culture, extensive contact tracing and single room isolation with contact precautions, together with other infection control measures, such as directly observed hand hygiene in conscious patients before receiving meals and medications, stringent hand hygiene during patient care practices, and environmental cleanliness are essential in limiting intra- and inter-hospital transmission. With the implementation of these infection control measures, the incidence of nosocomial acquisition of VRE had significantly decreased from 0.46 per 10,000 patient-days to 0.10 per 10,000 patient-days ($p < 0.001$ under Poisson assumptions).

SYMPOSIUM 21 (SP 21)

ANTIBIOTIC STEWARDSHIP

SP 21-1

BENEFITS OF ANTIMICROBIAL STEWARDSHIP IN HOSPITALS: EVIDENCE FROM A RECENT COCHRANE REVIEW

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Antibiotic stewardship has been around now for several decades but has received renewed focus as a means of slowing the development of antibiotic resistance (AR). Cochrane reviews include only papers of sufficiently robust methodology and at the date of the last review (2006) there were less than 100 published scientific papers so classified on Antibiotic Stewardship. In recent years a greater proportion of published papers have been included but almost all are from USA and Europe. The majority use interrupted time series analysis, with about a quarter being randomised controlled trials. Currently a new review is updating the data basis and I will include data from many of these papers in this talk.
Restrictive interventions such as order forms and expert approval have a more immediate effect than persuasive (educational) interventions such as audit and academic detailing but the effects of both are well maintained over at least 2 years. Most are delivered by multidisciplinary teams, followed by ID/micro and pharmacists.
There is robust evidence that effective stewardship, leading to major reduction (34-42%) in the use of key agents such as quinolones and cephalosporins can reduce *Clostridium difficile* infection, MRSA, VRE and multi resistant Gram negatives by 24-68%. Lessons can be learnt from this data for the control of carbapenemases. Also, improved quality of use can reduce mortality from CAP. No associated increases in mortality, length of stay or infection specific re-admission have been documented.
In summary, antibiotic stewardship has a valuable role to play, alongside hand hygiene and surveillance/cohorting/isolation/suppression/decolonization in the control of Multi-Drug Resistant Organisms (MDROs).

SP 21-2

SCALING UP EVIDENCE-BASED INTERVENTIONS TOWARD SUSTAINABILITY: A CASE STUDY OF ANTIBIOTICS SMART USE PROGRAM IN THAILAND

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Purpose: The ability to scale up health programs after the pilot project or seeding funds ended has gained interest from health professionals, policy makers and funders. Lessons learned from the Antibiotics Smart Use (ASU) program might be useful. ASU aims at reducing antibiotic use in upper respiratory infection, acute diarrhea and simple wound. Phase I tests interventions (2007-8). Phase II assesses scaling-up feasibility (2008-9). Phase III scales up ASU toward sustainability to achieve new social norms (2010-present). The study aims at investigating ASU diffusion, scaling-up measures and factors contributing to ASU adoption and sustainability.
Methods: ASU diffusion and factors regarding ASU adoption was assessed by a mailed, self-administered survey for all hospitals. Scaling-up measures and factors contributing to ASU continuity were assessed using previous ASU evaluation research and in-depth interviews of 50 key informants from 15 ASU settings. Data were collected during May—October 2014.
Results: Of 625 hospitals (response rate 52%), 91% were aware of ASU and 72% implemented ASU. The ASU adoption rate was 3% in 2008 and increased to 17%, 25% and 27% during 2010-2012. Scaling up started with a model development and followed by horizontal and vertical scaling-up measures. Horizontal measures included building decentralized networks to promote local ownerships. Vertical measures focused on integrating ASU into national policies. The pay-for-performance policy by the National Health Security Office in 2009 greatly induced scaling-up. Factors involving ASU adoption included to solve irrational use of medicines, to do the right thing, and to improve quality of care. ASU continuity required ASU prime mover(s), management in hospitals, and external factors especially national policies.
Conclusion: ASU scaling-up starts with a model development and follows by horizontal and vertical scaling-up measures. Despite limited resources, ASU continues scaling up but its sustainability remains challenging as it needs strong, long-term support from relevant national policies.

SP 21-3

HOSPITAL INITIATIVES

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No abstract.

SP 21-4

AN INTERNATIONAL APPROACH TO ANTIMICROBIAL STEWARDSHIP: EXAMPLE FROM VIETNAM

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Antimicrobial resistance is a major global health threat. In the European Union an estimated 25,000 deaths occur annually secondary to multi-drug-resistant infections. No reliable estimates for developing countries exist, but figures are likely to be higher. Strategies to contain antimicrobial resistance were comprehensively set forth by the World Health Organization (WHO) in 2001. However, implementation in low- and middle-income countries, where the need for effective antimicrobials is greatest, has thus far proved problematic [3],[4].
In Viet Nam, where resistance rates are among the highest in Asia, the challenge is urgent and great. A large population, high infectious disease burden, and unrestricted access to antimicrobials make Viet Nam a hotspot for the emergence of drug resistance. Adequate legislation to tackle antimicrobial resistance in Viet Nam already exists, but a lack of resources prevents effective policy enforcement.