

ReAct SPOTLIGHT

Focus on Asia

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(Links to articles and web pages via headlines)

A Snapshot of ReAct in Southeast Asia

Over the past five years ReAct has been engaged with several stakeholders in Southeast Asia (SEA) to respond in an integrated manner to the problem of antibiotic resistance (ABR) in the ASEAN region. Since 2007, ReAct has established a ReAct-in-SEA network of professionals, from various public-teaching hospitals; private and community health centres; civil society organisations (CSOs); media organisations; medical and pharmacy schools from national universities; representatives of various health ministry and municipality agencies in the region; and representatives of WHO-SEARO and WPRO, with the long term goal to develop national and regional policy platforms on ABR. The ReAct-in-SEA network currently comprises some 50 professionals from Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand and Vietnam.

ReAct-in-SEA has been convening annual regional meetings of the network, since 2007, to expand the network, identify the key ABR issues and challenges, strengthen national initiatives and develop regional projects. ReAct has also supported country projects as well as cross-learning exchanges such as a SEA undergraduate medical-pharmacy curriculum survey, the Antibiotic Smart Use programme in Thailand, the Antimicrobial Stewardship Program in Singapore, the Smart Use of Antibiotics project in Indonesia, the Twin City Project on ABR collaboration and various media-related projects.

During the period 2012-2014, ReAct SEA is focused on developing, strengthening and extending community-based health promotion networks to reach parents, children and youth to foster positive health behaviour including the themes of ABR and the appropriate use of antibiotics. A key project will be implemented in three SEA countries, three Latin American countries and two African countries. The project is aimed at strengthening and expanding existing health networks as well as enable a process of regional cross-learning, cross-fertilisation and cross-capacity-building among existing local-level community health-promotion good practices, including the themes of ABR and ASU in health promotion activities.

Another project of note, currently being developed by ReAct-in-SEA network partners, in Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam, with assistance from WHO-WPRO, is a research project on the health outcomes and costing of hospital acquired bacterial infections in relation to ABR.

For more information, or if you are interested in collaborating with ReAct-in-SEA, please contact Michael Chai at chai.mikael@gmail.com.

Irrational Use of Antibiotics and Role of the Pharmacist: an Insight from a Qualitative Study in New Delhi, India

Aug 23, 2011 | J Clin. Pharm. Ther.

Abstract: What is known and Objective: The overall volume of antibiotic consumption in the community is one of the foremost causes of antimicrobial resistance. In developing countries like India, pharmacists often dispense 'prescription-only' drugs, like antibiotics, to patients who do not have a prescription. Not much data is available regarding detailed information on behaviour of antibiotic use by community pharmacists which is of particular significance to develop a suitable and sustainable intervention programme to promote rational use of antibiotics. A qualitative study was conducted to understand the dispensing practices and behaviour of community pharmacists to develop policy interventions that would improve the use of antibiotics at the community level. Methods: Focus group discussions (FGDs) were held for five municipal wards of Delhi with retail pharmacists, public sector pharmacists and the office bearers of pharmacists' associations. Data on antibiotic use and resistance were collected earlier from these five wards. FGDs (n = 3 with 40 pharmacists) were analysed through grounded theory. Results and Discussion: Four broad themes identified were as follows: prescribing and dispensing behaviour; commercial interests; advisory role; and intervention strategies for rational use of antibiotics. FGDs with pharmacists working in the public sector revealed that, besides the factors listed above, overstock and near-expiry, and under-supply of antibiotics promoted antibiotic misuse. Suggestions for interventions from pharmacists were the following: (i) education to increase awareness of rational use and resistance to antibiotics; (ii) involving pharmacists as partners for creating awareness among communities for rational use and resistance to antibiotics; (iii) developing an easy return policy for near-expiry antibiotics in public sector facilities; and (iv) motivating and showing appreciation for community pharmacists who participate in intervention programmes. What is new and Conclusions: Inappropriate antibiotic dispensing and use owing to commercial interests and lack of knowledge about the rational use of antibiotics and antibiotic resistance were the main findings of this in-depth qualitative study. Community pharmacists were willing to participate in educational programme aimed at improving use of antibiotics. Such programmes should be initiated within a multidisciplinary framework including doctors, pharmacists, social scientists, government agencies and non-profit organizations.

Comment by Ingrid Trolin, ReAct:

Pharmacists and their role in rational use of antibiotics. A study from New Delhi

Irrational use of antibiotics is a major cause of antibiotic resistance. In many countries drug retailers not only provide access to medicines but also give advice and prescribe medicines, especially to poor people who cannot afford to pay for a visit to a doctor. Now, results from an in-depth study regarding the knowledge and attitudes among pharmacists in an area in New Delhi have been published. An earlier phase of the study had identified high use of antibiotics, especially newer ones, and a high level of resistance in the study area.

In the present phase of the study, qualitative focus group discussions were undertaken with participants from public and private pharmacies as well as from the associations for pharmacists.

Four themes were identified: prescribing and dispensing behavior; commercial interests; advisory role; intervention strategies for rational use.

Among important issues that were brought up was irregularity in supply in the public sector, which could lead to both over- and underuse. Surplus stock with expiry date nearing could not be returned but was usually cleared by increased prescribing. When too little medicine was available, poor customers usually could not afford to buy the missing doses at a private pharmacy and thus took a too short course.

Doctors often prescribe newer medicines due to promotions from the pharmaceutical industry and their habits spread to the pharmacies in the neighborhood. Pharmacists say they refrain from making remarks on prescriptions even if inappropriate but thought that doctors should change their prescription habits. Poor prescribing habits among pharmacists were attributed to their own lack of knowledge about rational use of antibiotics and resistance but also to patient pressure and economic reasons. However they were ready to learn about rational use of antibiotics and enforced that regulatory actions are needed.

This study illustrates the challenges faced by many countries in the world and in particular LMICs with weak health/regulatory systems and strong market drivers. It thus highlights an important need to target the public with information campaigns to increase awareness and in that way influence consumer demand in the longer perspective.

Teaching Medical Students to use Antibiotics Rationally in a Medical School in Nepal

Oct 17, 2011 | Webmedcentral.com

Antibiotic resistance is becoming a major problem all over the world. Inappropriate use by health professionals is a major factor contributing to resistance. A variety of factors influence use of antibiotics and other medicines by doctors. Problem-based learning of pharmacotherapy has been recommended as key intervention to improve the use of medicines. At KIST Medical College, the department of pharmacology teaches students to use essential medicines rationally. The department has identified ten main learning areas in pharmacology. These areas are learning to use essential medicines rationally, the Personal or P-drug selection process, Understanding social issues in use of medicines, Understanding and responding to pharmaceutical promotion, Using independent sources of medicine information, Using antibiotics rationally, Analyzing prescribing using World Health Organization (WHO)/International Network for the Rational Use of Drugs (INRUD) indicators, Communicating with a simulated patient, Reporting adverse drug reactions (ADRs) and carrying out simple calculations in pharmacology. In this manuscript the authors describe how rational use of antibiotics is covered throughout the module and is linked with the different learning objectives.

Implementation and outcomes of a hospital-wide computerised antimicrobial stewardship programme in a large medical centre in Taiwan

Oct 5, 2011 | Int. J. Antimicrob. Agents

Antibiotic stewardship is important to address the problem of antimicrobial resistance, but a practical and sustainable strategy to provide stewardship in a large hospital setting is lacking. We developed a hospital-wide computerised antimicrobial approval system (HCAAS) to guide the use of antimicrobial agents in late 2004 in a 3500-bed medical centre in Taiwan. The objective of this study was to evaluate the impacts of HCAAS on the hospital from 2003 to 2009. Following HCAAS deployment, the gradients of consumption over time during the study period of third- and fourth-generation cephalosporins, fluoroquinolones and glycopeptides fell significantly, whilst that of carbapenems increased. The amount and expenditure of antimicrobial use did not increase with the overall healthcare-associated infection rate, and inpatient mortality rate remained stable with a slight decreasing trend. The rate of methicillin-resistant *Staphylococcus aureus* started to decline in 2002 and continued after HCAAS deployment. There was an increasing isolation of extended-spectrum β -lactamase-producing *Escherichia coli* and *Klebsiella pneumoniae*, presumably leading to the increased use of carbapenems. The isolation rate of *Clostridium difficile* from patients who developed diarrhoea after antimicrobial therapy did not change over the years, with a mean annual rate of 10.0% after the implementation of HCAAS. HCAAS along with strict infection control measures is necessary to reduce the spread of resistant organisms within the hospital. HCAAS is a sustainable system for providing antibiotic stewardship and exerts a positive impact on the hospital by reducing antimicrobial consumption and expenditure whilst not compromising healthcare quality.

High incidence of multidrug-resistant gram-negative bacteria recovered from Afghan patients at a deployed US military hospital

Sep, 2011 | Infect. Control Hosp. Epidemiol.

OBJECTIVE: To investigate potential sources and risks associated with multidrug-resistant (MDR) bacteria in a deployed US military hospital.

DESIGN: Retrospective analysis of factors associated with recovery of MDR bacteria, supplemented by environmental sampling.

SETTING: The largest US military hospital in Afghanistan.

PATIENTS: US and Afghan patients with positive bacterial culture results, from September 2007 through August 2008.

METHODS: Microbiologic, demographic, and clinical data were analyzed. Potential risk factors included admission diagnosis or mechanism of injury, length of stay, gender, age, and nationality (US or Afghan). Environmental sampling of selected hospital high-touch surfaces and equipment was performed to help elucidate whether environmental MDR bacteria were contributing to nosocomial spread.

RESULTS: A total of 266 patients had 411 bacterial isolates that were identified during the study period, including 211 MDR bacteria (51%). Gram-negative bacteria were common among Afghan patients (241 [76%] of 319), and 70% of these were classified as MDR. This included 58% of bacteria recovered from Afghan patients within 48 hours of hospital admission. The most common gram-negative bacteria were *Escherichia coli* (53% were MDR), *Acinetobacter* (90% were MDR), and *Klebsiella* (63% were MDR). Almost one-half of potential extended-spectrum β -lactamase (ESBL) producers were community acquired. Of 100 environmental swab samples, 18 yielded MDR bacteria, including 10 that were *Acinetobacter*, but no potential ESBL-producing bacteria.

CONCLUSIONS: Gram-negative bacteria from Afghan patients had high rates of antimicrobial resistance. Patients experiencing complex trauma and prolonged hospital stays likely contribute to the presence of MDR bacteria in this facility. However, many of these patients had community-acquired cases, which implies high rates of colonization prior to hospital admission.

Rising bacterial resistance to common antibiotics in Al Ain, United Arab Emirates

Jun, 2011 | East Mediterr. Health J.

There is a dearth of local information in Al Ain, United Arab Emirates about antibiotic resistance patterns. In this retrospective study in a tertiary referral hospital, antibiotic susceptibility results were analysed over the 5-year period 2004-08 and compared with a previous study in the same hospital during 1999-2002. *Staphylococcus aureus* showed a significant decrease in sensitivity to oxacillin from 95.0% in the period 1999-2002 to 84.4% in 2008. Sensitivity of *Acinetobacter* spp. to imipenem dropped from 99.0% in 2004 to only 32.5% in 2008. During the same period, almost half of *Escherichia coli* isolates developed resistance to cefotaxime. Significant reductions in sensitivity to *Pseudomonas aeruginosa* between 1999 and 2008 were found for almost all the antibiotics tested. *Klebsiella* spp. did not show any significant change in resistance to any of the tested antibiotics. Serious efforts are needed to reduce the risk of the spread of resistant strains of bacteria.

Antibiotics nonadherence and knowledge in a community with the world's leading prevalence of antibiotics resistance: Implications for public health intervention

Jul 6, 2011 | Am. J. Infect. Control.

BACKGROUND: Community determinants of antibiotics nonadherence, an important contributor of antibiotics resistance, remained unclear.

OBJECTIVES: Our objective was to investigate whether deficient antibiotics knowledge could contribute to nonadherence in a community with high prevalence of antibiotics resistance.

METHODS: We recruited 465 people by random sampling from 5 urban areas in Hong Kong. A structured questionnaire was used to assess antibiotics knowledge and adherence. Adherence was defined as completing the most recent course of antibiotics entirely according to physicians' instructions. An antibiotics knowledge score ranging from 0 to 3 (highest) was composed based on the number of correctly answered questions.

RESULTS: Of the 465 participants interviewed, 96.3% had heard of the term "antibiotics," and 80.6% recalled having previously received antibiotics prescription. Among the eligible 369 subjects, 32.9% showed nonadherence. Percentages of participants with antibiotics knowledge scores of 0, 1, 2, and 3 were 11%, 27%, 33%, and 29%, respectively. There was a higher prevalence of nonadherence among people with lower antibiotics knowledge score ($P < .001$). Furthermore, people with nonadherence had a significantly lower mean antibiotics knowledge score (1.3 ± 1.0 versus 2.0 ± 0.9 , $P < .001$), with no interaction with education ($P < .05$). Adjusted for potential confounders, antibiotics knowledge scores of 2, 1, and 0 independently predicted increased risk of nonadherence by 1-fold (odds ratio [OR], 2.00; 95% confidence interval [CI]: 1.01-3.94; $P = .047$), 4-fold (OR, 4.77; 95% CI: 2.30-9.92; $P < .001$), and 17-fold (OR, 18.41; 95% CI: 6.92-48.97; $P < .001$) respectively, compared with the maximum score of 3.

CONCLUSION: Lack of antibiotics knowledge is a critical determinant of nonadherence independent of education in the community.

Etiology of diarrhea in young children and patterns of antibiotic resistance in Cambodia

Apr, 2011 | *Pediatr. Infect. Dis. J.*

BACKGROUND: Little is known about diarrhea etiology and antibiotic resistance in developing countries where diarrhea is a major public health problem.

METHODS: To describe diarrhea etiology and antibiotic resistance patterns in Cambodia, 600 children aged 3 months to 5 years with acute diarrhea (cases) and 578 children without diarrhea (controls) were enrolled from a hospital in Phnom Penh. Stool samples were collected, and pathogens and antibiotic resistance patterns were described.

RESULTS: The most frequently isolated pathogens in these cases were enteroaggregative *Escherichia coli* (20%) and rotavirus (26%). Enterotoxigenic *E. coli*, enteroaggregative *E. coli*, Shigella, Aeromonas, rotavirus, and adenovirus were statistically significantly associated with diarrhea. Among cases, vomiting was associated with viral infections, whereas bloody stool was associated with Shigella. Enterotoxigenic *E. coli* isolates were highly resistant to ampicillin, sulfonamides, and tetracycline. Approximately 50% of *Campylobacter coli* and 30% of *Campylobacter jejuni* isolates were resistant to nalidixic acid and ciprofloxacin. Over 33% of Salmonella isolates were resistant to ampicillin and tetracycline, and almost 100% of Shigella isolates were resistant to trimethoprim/sulfamethoxazole.

CONCLUSIONS: These data on the etiology of diarrhea and antibiotic resistance patterns in Cambodia will have significant effect on local public health policies and on local resource prioritization practices.

The effect of a whole-system approach in an antimicrobial stewardship programme at the Singapore General Hospital

Sep 10, 2011 | *Eur. J. Clin. Microbiol. Infect. Dis.*

Inappropriate antibiotic use contributes to antimicrobial resistance. Multi-faceted antimicrobial stewardship programmes (ASPs) are recommended for sustainable changes in prescribing practices. A multi-disciplinary ASP was established in October 2008 and piloted in the Departments of General Surgery, Renal Medicine and Endocrinology sequentially. To improve the quality of patient care via optimising the (1) choice, (2) dose, (3) route and (4) duration of antibiotics, a "whole-system" approach incorporating prospective review with immediate concurrent feedback (ICF), prescriber education (public or individualised), de-escalation of therapy, dose optimisation and parenteral-to-oral conversion, while recognising the autonomy of primary prescribers, was adopted. The audited department received a quarterly outcomes report and any common unaccepted practices would be addressed. Outcomes were analysed for 12 months post-ASP implementation. A total of 1,535 antibiotic prescriptions were reviewed. Antimicrobial use in 376 (24.5%) prescriptions was inappropriate. Of 596 interventions made, 70.2% were accepted. A reduction in audited antibiotics consumption resulted in acquisition cost savings of S\$198,575 for the hospital. Patients' cost-savings attributable to ASP-initiated interventions were \$91,194. The overall all-cause mortality rate and median monthly inpatient-days pre- and post-intervention remained stable. A "whole-system" ASP was effective in optimising antibiotic use in our hospital, without compromising clinical outcomes.