ReAct SPOTLIGHT

Focus on surveillance efforts

26 April, 2011 | ReAct

ReAct Action on Antibiotic Resistance

A framework for global surveillance of antibiotic resistance

Apr 7, 2011 | Drug Resist. Updat.

The foreseen decline in antibiotic effectiveness explains the needs for data to inform the global public health agenda about the magnitude and evolution of antibiotic resistance as a serious threat to human health and development. Opportunistic bacterial pathogens are the cause of the majority of community and hospital-acquired infections worldwide. We provide an inventory of pre-existing regional surveillance programs in the six WHO regions which should form the underpinning for the consolidation of a global network infrastructure and we outline the structural components such as an international network of reference laboratories that need to be put in place to address the void of these crucial data.

In addition we suggest to make use of existing Health and Demographic Surveillance Sites (HDSS) to obtain crucial information from communities in resource limited settings at household level in low- and middle-income countries in Asia and Africa. For optimising the use of surveillance data for public health action i.e. priority setting for new drug development, comparative quantification of antibiotic effectiveness at local, national, regional and global level and identification of the action gaps can be helpful.

First Map of Clusters of Antibiotic Resistance

Apr 6, 2011 | IPS

Scientists in Brazil have created the first map of clusters of antibiotic resistance in Brazil, linking the phenomenon to abuse of the drug and opening doors to guide public policies for antibiotic prescription and sales.

The "map of probability of risk of resistance to the ciprofloxacin antibiotic in Escherichia coli" was produced by the EUREQA (the acronym for "epidemiology of use and bacterial resistance to chemotherapy and antibiotics in the population") project in São Paulo. Out of 4,372 cases of urinary tract infection caused by the E. coli bacterium, registered in 2002 in two outpatient clinics of the capital of the southern state of São Paulo, the study found that 723 were resistant to treatment with ciprofloxacin.

Each case was geocoded on a digital map, based on the patient's home address. Using this data, combined with the areas of influence of each point where the antibiotic is sold, the researchers determined the density of consumption of the medicine.

A statistical model and the geographic information system showed a link between resistance to the antibiotic and usage density, with the researchers identifying clusters of higher levels of risk to resistance to the medicine.

A link to the scientific article can be found here.

Escherichia coli and Staphylococcus aureus: bad news and good news from the European Antimicrobial Resistance Surveillance Network (EARS-Net), 2002 to 2009

Mar 17, 2011 | Eurosurveillance

Antimicrobial susceptibility results from 198 laboratories in 22 European countries reporting continuously on these two microorganisms during the entire study period were included in the analysis.

The number of bloodstream infections caused by *E. coli* increased remarkably by 71% during the study period, while bloodstream infections caused by *S. aureus* increased by 34%. At the same time, an alarming increase of antimicrobial resistance in *E. coli* was observed, whereas for *S. aureus* the proportion of meticillin resistant isolates decreased. The observed trend suggests an increasing burden of disease caused by *E. coli*. The reduction in the proportion of meticillin-resistant *S. aureus* and the lesser increase in *S. aureus* infections, compared with *E. coli*, may reflect the success of infection control measures at hospital level in several European countries.

Government drafts new action plan for antibiotic use

Apr 14, 2011 | Today's Zaman

Alarmed by what it terms the inappropriate public consumption of antibiotics, the Ministry of health has released a draft action plan that suggests the sale of over-the-counter antibiotics be subject to stringent restrictions in order to counter the resistance to antibiotics the body develops as a reaction to excessive use of the drugs. The sale of antibiotics will be tightly controlled. Audits will be conducted via the drug tracking system (ITS). Penalties will be imposed on pharmacies found to sell over-the-counter antibiotics.

The Turkish Statistics Institute (TurkStat) has selected hospitals from 12 provinces, equally distributed across Turkey for National Antimicrobial Resistance Surveillance. As such, the rates of antimicrobial resistance of 79 hospitals will be collected and the situation at a national level will be assessed. The analysis and reporting of data are expected to be completed this year.

ResistanceMap

Apr 12, 2011 | CDDEP

The online tool **ResistanceMap** has released a new video that shows the spread of a deadly microbe able to survive treatment with the newest and most potent antibiotics in the current arsenal. That microorganism, called carbapenem-resistant *Klebsiella pneumoniae* (CRKP), can cause potentially fatal pneumonia, bloodstream, or wound infections among elderly hospital patients. The featured video offers a first-of-its kind geographic retrospective of the pathogen's emergence using nationally-representative data.

ResistanceMap is developed by *Extending the Cure* – a nonprofit project sponsored by the Robert Wood Johnson Foundation's Pioneer Portfolio that researches policy solutions to prolong the useful life of antibiotics. This online tool, which visualizes changes in resistance levels across regions of the U.S. from 2000 – 2009, summarizes data from microbiological labs across the country that measure bacterial drug resistance.

Quinolone resistance in Escherichia coli from Accra, Ghana

Feb 27, 2011 | BMC Microbiol.

Antimicrobial resistance is under-documented and commensal *Escherichia coli* can be used as indicator organisms to study the resistance in the community. We sought to determine the prevalence of resistance to broad-spectrum antimicrobials with particular focus on the quinolones, which have recently been introduced in parts of Africa, including Ghana.

Forty (13.7%) of 293 *E. coli* isolates evaluated were nalidixic acid-resistant. Thirteen (52%) of 2006 and 2007 isolates and 10 (66.7%) of 2008 isolates were also resistant to ciprofloxacin. All but one of the quinolone-resistant isolates were resistant to three or more other antimicrobial classes.

Quinolone-resistant *E. coli* are commonly present in the faecal flora of Accra residents. The isolates have evolved resistance through multiple mechanisms and belong to very few lineages, suggesting clonal expansion. Containment strategies to limit the spread of quinolone-resistant *E. coli* need to be deployed to conserve quinolone effectiveness and promote alternatives to their use.

Antimicrobial susceptibility of 15,644 pathogens from Canadian hospitals: results of the CANWARD 2007-2009 study

March, 2011 | Diagn Microbiol Infect Dis

The CANWARD study (Canadian Ward Surveillance Study) assessed the antimicrobial susceptibility of a variety of available agents against 15 644 pathogens isolated from patients in Canadian hospitals between 2007 and 2009.

- The most active (based on MIC data) agents against methicillin-resistant Staphylococcus aureus (MRSA) and vancomycin-resistant enterococci were daptomycin, linezolid, tigecycline, and vancomycin.
- The most active agents against extended-spectrum β-lactamase-producing Escherichia coli were colistin (polymyxin E), doripenem, ertapenem, meropenem, and tigecycline.
- The most active agents against Pseudomonas aeruginosa were amikacin, cefepime, ceftazidime, colistin, doripenem, meropenem, and piperacillin-tazobactam.

Antibiotic resistance patterns of intestinal Escherichia coli isolates from Nicaraguan children

February, 2011 | J. Med. Microbiol.

In developing countries, diarrhoeal diseases are one of the major causes of death in children under 5 years of age. It is known that diarrhoeagenic *Escherichia coli* (DEC) is an important aetiological agent of infantile diarrhoea in Nicaragua. However, there are no recent studies on antimicrobial resistance among intestinal E. coli isolates in Nicaraguan children. The aim of the present study was to determine the antimicrobial resistance pattern in a collection of 727 intestinal *E. coli* isolates from the faeces of children in León, Nicaragua, between March 2005 and September 2006.

In general, antimicrobial resistance among the 727 intestinal *E. coli* isolates was high for ampicillin (60 %), trimethoprim-sulfamethoxazole (64 %) and chloramphenicol (11 %). Resistance to ceftazidime and/or ceftriaxone and a pattern of multi-resistance was related to CTX-M-5- or CTX-M-15-producing *E. coli* isolates. The results suggest that *E. coli* isolates from Nicaraguan children have not reached the high levels of resistance to the most common antibiotics used for diarrhoea treatment as in other countries.

Nationwide surveillance of bacterial respiratory pathogens conducted by the Japanese Society of Chemotherapy in 2008: general view of the pathogens' antibacterial susceptibility

Mar 17, 2011 | J. Infect. Chemother.

A total of 1,097 strains were collected from clinical specimens obtained from well-diagnosed adult patients with respiratory tract infections. Susceptibility testing was evaluable with 987 strains. A total of 44 antibacterial agents were used for the study.

The incidence of MRSA was as high as 59.8%, and those of penicillin-intermediate and penicillin-resistant *S. pneumoniae* were 35.5 and 11.8%, respectively. Among *H. influenzae,* 13.9% of them were found to be β-lactamase-non-producing ampicillin (ABPC)-intermediately resistant, 26.7% to be β-lactamase-non-producing ABPC-resistant, and 5.3% to be β-lactamase-producing ABPC-resistant strains. A high frequency (76.5%) of β-lactamase-producing strains was suspected in *Moraxella catarrhalis* isolates. Four (3.2%) extended-spectrum β-lactamase-producing *K. pneumoniae* were found among 126 strains. Four isolates (2.5%) of *P. aeruginosa* were found to be metallo β-lactamase-producing strains, including three (1.9%) suspected multidrug-resistant strains showing resistance to imipenem, amikacin, and ciprofloxacin.

Nosocomial bloodstream infections in Brazilian Hospitals: Analysis of 2,563 cases from a prospective nationwide surveillance study

Mar 16, 2011 | J Clin Microbiol.

Nosocomial bloodstream infections (nBSIs) are an important cause of morbidity and mortality. Data from a nationwide, concurrent surveillance study, Brazilian SCOPE (Surveillance and Control of Pathogens of Epidemiological Importance), were used to examine the epidemiology and microbiology of nBSIs at 16 Brazilian hospitals. In our study 2,563 patients with nBSIs were included from June 12, 2007 to March 31, 2010. Gram-negative organisms caused 58.5% of these BSIs, gram-positive organisms caused 35.4%, and fungi caused 6.1%. Methicillin resistance was detected in 157 *S. aureus* isolates (43.7%). Of the *Klebsiella* species isolates, 54.9% were resistant to third-generation cephalosporins. Of the *Acinetobacter* species and *P. aeruginosa* isolates, 55.9% and 36.8% were resistant to imipenem, respectively. **Conclusion:** In our multicenter study, we found a high crude mortality and a high proportion of nBSIs due to antibiotic-resistant organisms.