

Conference Antibiotic Resistance and Infection Control (ARIC)
17th November 2011, Kaunas Lithuania

Conclusions and recommendations

The Issues

Lithuania needs a new approach to infection control, because current efforts are not effective enough. It is necessary to prevent the non-motivated use of antibiotics, which have already reached ominous heights. This is due not only to the excessive use of antibiotics, irrational antibiotic therapy, food processing with antimicrobial agents but also to current diagnostic technologies when agents are identified too slow, consequently, enabling "blind" use of the broad-spectrum antibiotics and development of antibiotic-resistant strains of micro organisms.

The treatment of antibiotic-resistant bacterial infections each year costs the EU 1.5 billion Euros. Outbreaks of diseases cause alarming social and economic losses. Infections caused by antibiotic-resistant bacteria prolong ineffective antibiotic therapy and hospitalization time, increase morbidity and mortality. For example, only the drug-resistant tuberculosis costs for Lithuanian taxpayers about 10 million Litas per year.

Without effective antibiotics, modern methods of treatment such as surgery, chemotherapy and intensive care become impossible.

For rational use of antibiotics it is necessary to launch the nosocomial infection control programs in the hospitals to perform surveillance of the developing microbial resistance in real time and to interfere with development of microbial resistance.

There is also a need for new and reliable rapid diagnostic technology including rapid identification of the resistant strains among both the patients entering the hospital and medical professionals to halt the spread of resistant micro organisms.

Laboratories should be equipped with new, reliable and fast diagnostic technologies that increase the effectiveness of infection control and allow reduction of treatment costs. This should be a priority objective of the National Health Program.

Participants of the conference pinpoint:

importance of infection control in introducing new technologies

Lithuanian laboratories should be equipped with new sound and rapid diagnostic technologies that significantly increase the effectiveness of infection control and would reduce treatment costs. Introduction of the new technologies should not be a problem for

individual hospitals but priority goal of the Lithuanian Health Program 2012 - 2020 meeting the health needs of entire Lithuanian population. It is important to establish laboratories for confirmatory testing in the University Hospital Laboratories to not only rapidly ensure the early detection of infectious diseases but also to accumulate the banks of antibiotic-resistant pathogens, to develop research of the genes responsible for antibiotic resistance.

The most qualified specialists in the University Hospitals could use the accumulated data in preparing recommendations for treatment because due to the different prevalence of resistant strains algorithms of the other countries are not directly applicable.

Importance of nosocomial infection control

European Centre for Disease Prevention and Control (ECDC) has assessed the threats of CPE (carbapenemase-producing Enterobacteriaceae bacteria) spread due to patients' movement between medical institutions, especially when travelling to the medical institutions abroad. This risk factor is associated with bacterial resistance to the newest antibiotics.

Resistance to such "last resort" antibiotics like carbapenems increases among Enterobacteriaceae, *Pseudomonas aeruginosa*, *Acinetobacter* bacteria. For example, carbapenemase-producing Enterobacteriaceae bacteria (CPE) are the New Delhi metallo-beta-lactamase (NDM) producing Enterobacteriaceae. These epidemic bacteria are resistant to the newest carbapenem group antibiotics. Europe faces a risk of NDM human transmission.

It is necessary to control the spread of resistant microbes from the public by identification of MRSA and VRE carriers already in the Emergency Department of medical institution. It is necessary to control the spread of resistant microbes from the hospital personnel-carriers by application of the rapid molecular MRSA and VRE tests in nasopharynx and by treatment of the found infection. Effective sterilization and disinfection technologies (e.g., dry fog or microwave technology) and measures to significantly increase the effectiveness of infection control and reduce the cost of sterilization and disinfection should be introduced .

Importance of the rational antibiotic therapy and effective epidemiological surveillance management

In case of suspected infection in a patient with clinically serious condition, the broad spectrum antibiotics are generally administered in hospitals to fight any potential pathogens. This increases the selection of antibiotic-resistant strains and treatment costs. With development of new antibiotic-resistant strains, even the broad spectrum antibiotics might not assure effective treatment. Antibiotics should be used only for treatment of bacterial infection to affect a potential pathogen in the possibly narrowest spectrum.

To present the testing result to the doctor maximally fast.

To pay special attention to early etymological diagnostics of sepsis and other infections and to introduce rapid molecular diagnostics from blood (sepsis differentiation algorithms in the intensive care units).

To introduce information systems for surveillance and warning of the development of resistant strains.

To administer antibiotics strictly according to the laboratory results.

To develop algorithms for general practitioners who would settle procedure of antibiotic treatment.

The National Antibiotic Policy Strategy should provide guidelines for rational therapy and epidemiological surveillance control and prepare a national platform for educational campaign on the wise use of antibiotics designed to inform the public about the wise use of antibiotics.