



EVALUATION OF INTERVENTIONS IMPROVING THE PRESCRIPTION OF ANTIMICROBIALS IN HOSPITALS

Supervisor of the assessment: dr. Jolanta Miciulevičienė

Specialists performing assessment: Ieva Radzevičiūtė, Rūta Markevičė

Consultant: dr. Rolanta Valintėlienė

Type of the assessment: full systematic review

Timeframe of the assessment: February 2015 – September 2016

Background. Antimicrobials prescription in Lithuanian hospitals is one of the largest in the European Union. Little is known about the evidence-based interventions to improve antimicrobials prescribing practices in hospitals. Also it is not known, which of evidence-based interventions could be implemented in Lithuanian hospitals.

Aim of the assessment - to evaluate the effectiveness of interventions improving the prescription of antimicrobials and those applicable in Lithuanian hospitals.

Tasks addressed in the assessment: 1) to evaluate the effectiveness of interventions improving the prescription of antimicrobials in hospitals; 2) to evaluate the applicability of interventions improving the prescription of antimicrobials from the experts' point of view.

Methods. In order to evaluate the effectiveness of interventions improving the prescription of antimicrobials in hospitals Cochrane systematic review "Interventions to improve antibiotic prescribing practices for hospital inpatients" was updated. Articles were identified by searching PubMed, Cochrane, Clinical Key, Web of Science databases. Randomized controlled trials, controlled before-after and interrupted time series studies published 2007-2015 in English were included in systematic review. The quality of included studies was assessed using Cochrane risk of bias tool. Data from studies were analysed using narrative synthesis and meta-analysis.

To evaluate the applicability of interventions improving the prescription of antimicrobials in Lithuanian hospitals, expert survey was carried out. Hospitals' consulting specialists, physicians and authorities of the hospitals' participated in this survey. Experts applied a five-point Likert scale to assess the applicability of interventions in Lithuanian hospitals.

Results. 38 studies, which evaluated the effectiveness of persuasive and structural interventions, were included in this review. Persuasive interventions involved antimicrobial therapy guidelines, education and consultation to physicians, reminders, audit and feedback. Due to persuasive interventions antimicrobials are prescribed more rationally – treatment duration decreases 40.9%; antimicrobials consumption (DDD) decreases 48.0%; antimicrobial treatment is switched from intravenous to oral on time.

Structural interventions involved inflammatory markers (procalcitonin test), rapid microbiology reporting and computerized decision support. Overall, structural interventions promote more rational antimicrobials therapy – 17.3% less patients are prescribed antimicrobials; treatment duration decreases 22.1%; antimicrobials consumption (DDD) decreases 17.15%. Among structural interventions only for procalcitonin test was enough evidence of effectiveness. There are limited data about the effectiveness of rapid microbiology reporting and computerized decision support.

Cochrane systematic review results show that restrictive interventions reduce antimicrobials prescription in hospitals. Restrictive interventions involved restrictive antimicrobials list,

compulsory order forms, expert approval, removal by restriction, review and make change, restriction of antimicrobials treatment duration. We did not find studies evaluating restrictive interventions, which can update Cochrane systematic review.

25 experts participated in survey about interventions' applicability in Lithuanian hospitals. Results show that some of persuasive interventions can be implemented in Lithuania's hospitals – antimicrobial therapy guidelines, education to physicians, audit and feedback. All restrictive interventions would be easily implemented into hospitals' practice. Also, structural interventions also would be could be easily implemented into practice – procalcitonin test to prevent initiation of antimicrobials, procalcitonin test to monitor treatment effectiveness and procalcitonin test to stop antimicrobials early.

For more information please contact Ieva Radzevičiūtė, Chief Specialist at Unit of Technology Assessment of Public Health Technology Centre of the Institute of Hygiene, by phone +370 5261 6681 or email ieva.radzeviciute@hi.lt.