

<b>Study program:</b> Integrated Academic Studies in Medicine
<b>Course title:</b> Special Epidemiology of Hospital Acquired Infection (HAI) and Infection Control
<b>Teacher:</b> Gorana S. Dragovac, Jelena N. Đekić Malbaša, Smiljana Đ. Rajković
<b>Course status:</b> elective
<b>ECTS Credits:</b> 3
<b>Condition:</b>
<p><b>Course aim</b> The aim of this course is to provide students with knowledge and application of epidemiological methods and appropriate measures for the prevention and control of health care associated infections.</p>
<p><b>Expected outcome of the course:</b></p> <p><i>Knowledge</i> Student should become familiar with epidemiological methods, epidemiological characteristics of different types of HAI's in the hospital and other health care facilities, characteristics of patients in risk of HAIs, in order to apply preventive and control measures. They also need to become familiar with different HAIs surveillance methods.</p> <p><i>Skills</i> The student should adopt the skills of epidemiological surveillance of health care associated or hospital acquired infections and adopt the procedures that carry the risk of hospital infections. Also, students should be able to apply epidemiological questionnaire in order to investigate whether the infection is health care associated or not, what should be the route of transmission and the source of infection. What would be the preventive measures in the particular HAI, levels of disinfection, immunoprophylaxis and chemoprophylaxis; Detection and reporting of hospital outbreaks, interpretation of microbiological laboratory results and data collection of epidemiologically important microbiological pathogens.</p>
<p><b>Course description</b></p> <p><i>Theoretical education</i></p> <ol style="list-style-type: none"> <li>1. Subject, definitions and tasks of the epidemiology of hospital infections, epidemiological methods. Indicators of prevalence of hospital acquired infections.</li> <li>2. Unit of epidemiological investigation - definition, significance, characteristics of acute health-care institutions and institutions for long-term care (outpatient), examples.</li> <li>3. Epidemiological surveillance of hospital infections: continuous / intermittent; comprehensive / targeted.</li> <li>4. Epidemiological models. Agent, host and environment. Modes of transmission of nosocomial infections. Epidemiological characteristics of hospital infection outbreaks.</li> <li>5. Epidemiology of catheter-associated bloodstream infections.</li> <li>6. Epidemiology of ventilator associated pneumonia.</li> <li>7. Epidemiology of surgical site infections.</li> <li>8. Catheter associated urinary tract infections.</li> <li>9. Epidemiology of HAI among ICU patients.</li> <li>10. Epidemiology of infections in outpatient services.</li> <li>11. Epidemiology of blood-borne infections.</li> <li>12. Measures of HAI control and prevention - Immune prophylaxis, Sera prophylaxis and chemoprophylaxis of patients and medical staff. Protection of healthcare workers. Procedure for sharp injuries (accidental) injuries. Medical waste management as preventive measure of HAI.</li> </ol> <p><i>Practical education</i></p> <ol style="list-style-type: none"> <li>1. Sources of hospital infections data - importance, legal provision, case definition, reporting techniques, types of application forms, the use of data, use the Internet for data collection.</li> <li>2. Basic indicators of HAI's incidence - indicators of morbidity, mortality, general, specific and standardized rates.</li> <li>3. Application of epidemiological methods in research and investigation of hospital acquired infections - cohort studies, principles, significance, practical application, incidence study of specific anatomic localization (bloodstream infections, pneumonia, surgical site infection); incidence study of HAI associated with specific medical procedures (surgery, endoscopy, hemodialysis, mechanical ventilation) principles, significance, the practical application; case-control study, practical application; cross-sectional (prevalence) study (occasional and repeated), principles, significance, practical application.</li> <li>4. Epidemiological surveillance: by implementation time, by HAI type, incidence study of HAI in high-risk units; Bloodstream infection- definition, criteria, significance, surveillance.</li> <li>5. Epidemiological questionnaire for HAI's - importance of the questionnaire, components, questionnaire design.</li> <li>6. Outbreak investigation - sources of data for detection of outbreak, steps in outbreak investigation of HAI, examples of</li> </ol>

- hospital outbreaks. Application of molecular biology in outbreak investigation.
7. Contact transmitted outbreaks- characteristics, examples of infections transmitted by contact, steps in outbreak investigation; examples of contact transmitted outbreaks associated with medical procedures.
  8. Respiratory infection outbreaks - characteristics of respiratory outbreaks in hospital environment, examples of respiratory infection outbreaks, investigations.
  9. Foodborne and waterborne outbreaks in hospital environment, examples.
  10. Surgical site infections- preventive measures, bundle approach.
  11. Ventilator associated pneumonia – prevention, bundle approach
  12. Urinary tract infections - prevention, precautions, bundles.
  13. Infections caused by multidrug-resistant bacteria-*Staphylococcus aureus*, *Clostridium difficile*, *Enterococcus faecalis et faecium*,
  14. *Enterobacteriales* and others -preventive measures, protocols for prevention and control.
  15. Measures of HAI control and prevention - Immunization of healthcare staff. Isolation measures.
  16. Sanitary and hygiene measures to prevent hospital acquired infections - hand hygiene, disinfection and cleaning protocol for hospital environment; sterilization.

**Literature**

*Compulsory*

1. Friedman C, Newsom W, eds. IFIC Basic Concepts of Infection Control. 2<sup>nd</sup> ed. Portadown, N Ireland, UK: International Federation of Infection Control; 2011. Available from: <https://www.theifc.org/wp-content/uploads/2014/08/intro.pdf>
2. Damani N. Manual of Infection Prevention and Control. Fourth edition. Oxford University Press, 2019. (Damani N. Manual of Infection Control Procedures. Second edition. Cambridge University Press, 2003)

**Number of active classes**

**Theoretical classes: 15**

**Practical classes: 30**

**Teaching methods**

Ex-cathedra theoretical lectures, practical sessions with active participation of previously prepared students, with appropriate literature announced during previous practical session

**Student activity assessment (maximally 100 points)**

<b>Pre-exam activities</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
Lectures	20	Written	50
Practices	30	Oral	
Colloquium		.....	
Essay			