

Study program: Integrated Academic Studies in Medicine
Course title: Special Epidemiology of Health Care-Associated Infections (HAIs) and Infection Control
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Course status: elective
ECTS Credits: 3
Condition:
Course aim This course aims to provide students with knowledge and application of epidemiological methods and appropriate measures for the prevention and control of healthcare-associated infections.
Expected outcome of the course: Knowledge Students should become familiar with epidemiological methods, epidemiological characteristics of different types of HAI in the hospital and other health care facilities, and characteristics of patients at risk of HAIs, to apply preventive and control measures. They also need to become familiar with different HAI surveillance methods. Skills The student should acquire the skills of epidemiological surveillance for healthcare-associated or hospital-acquired infections and adopt procedures that mitigate the risk of hospital infections. Additionally, students should be able to apply an epidemiological questionnaire to investigate whether the infection is healthcare-associated or not, determine the route of transmission, and identify the source of infection. What would be the preventive measures for the particular HAI, including levels of disinfection, immunoprophylaxis, and chemoprophylaxis? Additionally, this would involve detecting and reporting hospital outbreaks, interpreting microbiological laboratory results, and collecting data on epidemiologically important microbial pathogens.
Course description <i>Theoretical education</i> <ol style="list-style-type: none"> 1. Subject, definitions, and tasks of the epidemiology of hospital infections, epidemiological methods. Indicators of prevalence of hospital-acquired infections. 2. Unit of epidemiological investigation - definition, significance, characteristics of acute health-care institutions and institutions for long-term care (outpatient), examples. 3. Epidemiological surveillance of hospital infections: continuous/intermittent; comprehensive / targeted. 4. Epidemiological models. Agent, host, and environment. Modes of transmission of nosocomial infections. Epidemiological characteristics of hospital infection outbreaks. 5. Epidemiology of catheter-associated bloodstream infections. 6. Epidemiology of ventilator-associated pneumonia. 7. Epidemiology of surgical site infections. 8. Catheter-associated urinary tract infections. 9. Epidemiology of HAI among ICU patients. 10. Epidemiology of infections in outpatient services. 11. Epidemiology of blood-borne infections. 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). Medical waste management as a preventive measure of HAI. <i>Practical education</i> <ol style="list-style-type: none"> 1. Sources of hospital infections data - importance, legal provision, case definition, reporting techniques, types of application forms, the use of data, and the use of the Internet for data collection. 2. Basic indicators of HAI's incidence - indicators of morbidity, mortality, general, specific, and standardized rates. 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, useful application. 4. Epidemiological surveillance: by implementation time, by HAI type, incidence study of HAI in high-risk units; Bloodstream infection- definition, criteria, significance, surveillance. 5. Epidemiological questionnaire for HAI's - importance of the questionnaire, components, questionnaire design. 6. Outbreak investigation - sources of data for detection of outbreaks, steps in outbreak investigation of HAI, examples of 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 the hospital environment, examples of respiratory infection outbreaks, and investigations. 9. Foodborne and waterborne outbreaks in the 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*, *Enterobacteriales* and others: Preventive measures and protocols for prevention and control.
14. Measures of HAI control and prevention - Immunization of healthcare staff. Isolation measures.
15. Sanitary and hygiene measures to prevent hospital-acquired infections - hand hygiene, disinfection, and cleaning protocol for the hospital environment; sterilization.

Literature

Compulsory

1. Friedman C, Newsom W, eds. IFIC Basic Concepts of Infection Control. 2nd ed. Portadown, N Ireland, UK: International Federation of Infection Control; 2011. Available from: <https://www.theific.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 the previous practical session.

Student activity assessment (maximally 100 points)

Pre-exam activities	points	Final exam	points
Lectures	20	Written	50
Practices	30	Oral	
Colloquium		
Essay			