



Universitat de Lleida

DEGREE CURRICULUM **EMERGING AND RE-EMERGING INFECTIOUS DISEASES**

Coordination: JOVER SAENZ, ALFREDO JULIAN

Academic year 2023-24

Subject's general information

Subject name	EMERGING AND RE-EMERGING INFECTIOUS DISEASES			
Code	100569			
Semester	PRIMER QUADRIMESTRE			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Medicine	5	OPTIONAL	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRAULA		TEORIA
	Number of credits	3		3
	Number of groups	1		1
Coordination	JOVER SAENZ, ALFREDO JULIAN			
Department	MEDICINE AND SURGERY			
Teaching load distribution between lectures and independent student work	Each credit is calculated as 25 hours of work: 10 hours of face-to-face class and 15 hours of autonomous student work.			
Important information on data processing	Consult this link for more information.			
Language	Catalá/Spanish (80%) and English (20%; documentation, videos)			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
BELLES BELLES, ALBA	alba.belles@udl.cat	,1	
CAMON PUEYO, ANA MARIA	anamaria.camon@udl.cat	1,97	
JOVER SAENZ, ALFREDO JULIAN	alfredo.jover@udl.cat	1,97	
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Subject's extra information

In the 21st century, emerging and re-emerging infectious diseases pose a serious challenge for their control. They are infectious pathologies of new description or that appear in areas where they did not exist or in places where they had been eradicated, or that have changed their epidemiological pattern. In 1992, the Institute of Medicine of the United States defined emerging diseases as those that have increased their incidence in the previous two decades or whose incidence threatens to increase in the future. Re-emerging diseases are those that have resurfaced when they had already been practically eradicated or their incidence had greatly decreased. They are infectious diseases that, after not being a health problem, often reappear, taking on epidemic proportions.

Emerging and Re-emerging Diseases is the first subject of the Medicine curriculum in which the student also comes into contact with differentiated infectious entities of high relevance and specialization, such as nosocomial infection and tropical infection. Likewise, it offers a very particular perspective on the infections of the future, in relation to antibiotic resistance and experimental therapeutic alternatives. All this accompanied by promoting a better understanding of antibiotics and their preservation through antibiotic optimization programs (PROA). This course tries to give a comprehensive and coherent view of these ailments. The course is particularly focused on the acquisition of skills and knowledge on the subject.

Learning objectives

The objectives of the subject are:

General objective

1. Update the student in the epidemiological, diagnostic and therapeutic advances in emerging infectious pathology, both community-acquired and nosocomial-acquired, in tropical and imported infectious diseases, as well as infections of the future.

Specific objectives

1. Describe the transmission mechanisms of emerging and re-emerging infectious diseases and, if applicable, their distribution areas.
2. Address the diagnostic and therapeutic management of emerging and re-emerging infectious diseases.

3. Point out the main clinical syndromes of the main emerging and re-emerging infectious diseases.
4. Describe the most frequent pathology in international travelers and the main recommendations regarding vaccination and prophylaxis.
5. Describe the characteristics of the infectious pathology in both community infections and nosocomial acquisition, tropical and imported diseases, and infections in extreme situations.
6. Know the future of infections and their therapies.

Basic skills:

1. Assess the risk of suffering from an emerging or re-emerging infectious disease in any of the areas that have been developed.
2. Evaluate the diagnostic and therapeutic processes to be used in emerging and re-emerging infectious diseases.
3. Indicate prevention and control measures for emerging and re-emerging infectious diseases.
4. Communicate information on these diseases to the competent health authorities.

Competences

The student who passes this subject:

1. You will know the main emerging and re-emerging infectious diseases.
2. Will be able to make a differential diagnosis between various emerging and re-emerging infectious diseases.
3. Will be able to start the diagnostic process of the disease both from the clinical point of view and from the point of view of the Microbiology laboratory.
4. Explain the implications for the control of emerging diseases in any of the study areas.
5. List the characteristics and impact of surveillance and control of emerging and re-emerging diseases.
6. Indicate the main prevention and control measures for emerging and re-emerging diseases.
7. The student will be aware of the hospital environment and the infection associated with health care.
8. You will obtain knowledge in the control approach of an epidemic outbreak and the mandatory isolations to the case.
9. Will maintain approximate notions of future infections. You will learn how new technologies are applied to infections now and in the near future.
10. Will have received training in infections outside normal environmental conditions.
11. You will have acquired the basic knowledge of general antibiotic therapy and the correct principles of use.

Subject contents

MASTER CLASSES (single group)

Hours: 13-14.30h (2023)

Tropical and imported infectious diseases

1. Malaria as an imported disease. Ramírez, MD

2. Imported helminthosis. Ramírez, MD
3. Hemorrhagic fevers. Ramírez, MD
4. Sex tourism. Ramírez, MD
5. Chagas disease. Ramírez, MD
6. Immigrant patient care. Ramírez, MD
7. Traveler's diarrhea. Ramírez, MD

Nosocomial infection

8. Nosocomial infection. Definition and generalities. Jover, MD
9. Surveillance systems. VINCat and Zero projects. Jover, MD
10. Typology of multiresistant microorganisms. Jover, MD
11. Hand hygiene and patient safety. Type of isolates. Mrs Castellana.
12. Antibiotic policy in implementation of antimicrobial stewardships. Jover, MD
13. *Clostridioides difficile* diarrhea. Jover, MD
14. Outbreaks study. Jover, MD

Community Infection

15. SARS-CoV-2 (COVID-19) infection. Camón, MD
16. Vaccination plan and needs. Barbé, MD
17. Sexually transmitted diseases. Camón, MD
18. Multidrug-resistant TB. Camón, MD
19. Legionellosis .Jover, MD
20. Gastric infection by *H. Pylori*. Jover, MD

Infections of the future

21. Future/current HIV. Camón, MD
22. The role of the microbiome in infections. Bellés, MD
23. Phage therapy. The alternate reality. Ramírez, MD
24. Infections in catastrophes. Ramírez, MD
25. Space medicine. Camón, MD
26. Big data and neural networks. Camón, MD
27. Neuroimmunology in infection. Camón, MD

SEMINARS. Full group activity (not exceeding 20 members)

Hours: 14-14.30h (2023)

Outbreak control workshop and resolution of various clinical cases. Dr. Jover and Drs. Ramirez and Camón.

INDIVIDUAL WORK

Design and development of work in bibliographic search on a specific topic of the subject at the discretion of the teaching staff. Extension and format to be defined. Delivery at the end of the course.

Methodology

Master Classes/Seminars

The professor will summarize the main characteristically emerging or re-emerging infectious entities with respect to their forms of presentation, epidemiology, manifestations and symptoms, diagnostic forms, treatments and peculiarities. It is important that the student first reviews the topic that will be discussed in class, to encourage teacher-student interaction and the proper resolution of doubts.

The student will be exposed to how to carry out an interrogation about the main warning signs of the disease. Likewise, it will be sought that the student acquires the basic skills in the study of an epidemic outbreak. On the other hand, the entity will be illustrated with iconography and videos. The student will have to dedicate part of their non-contact hours to study and watch videos related to the syllabus. Bibliography will be provided as support material.

Development plan

See contents

Evaluation

1. Evaluation of the theoretical knowledge acquired in lectures and seminars through an exam with multiple choice questions. It represents about 90% of the note.
2. Evaluation of a research work related to the theme of the subject. It will represent approximately the other 10% of the final grade, as long as a global score of 5 has been obtained in the theoretical exam.

On the first day, the conditions of the evaluation and the specific way of carrying it out will be discussed with the students.

Bibliography

1. Schrag SJ, Wiener P. Emerging infectious disease: what are the relative roles of ecology and evolution?. *Trends Ecol Evol* 1995;10: 319-24.
2. Jones KE, Patel NG, Levy MA, Storeygard A, Balk D, Gittleman JL, Daszak P. Global trends in emerging infectious diseases. *Nature*. 2008 Feb 21;451(7181):990-3.
3. Soto SM. Human migration and infectious diseases. *Clin Microbiol Infect* 2009; 15 Suppl 1: 26-8.
4. Mahan MJ, Kubicek-Sutherland JZ, Heithoff DM. Rise of the microbes. *Virulence*. 2013; 4: 213-22.
5. Berry M, Gamielien J, Fielding BC. Identification of new respiratory viruses in the new millennium. *Viruses* 2015; 7: 996-1019.
6. Roca I, Akova M, Baquero F, Carlet J, et al. The global threat of antimicrobial resistance: science for intervention. *New Microbes New Infect* 2015; 6: 22-9.
7. White MK, Wollebo HS, David Beckham J, Tyler KL, Khalili K. Zika virus: An emergent neuropathological agent. *Ann Neurol* 2016; 80: 479-89.
8. Stentiford GD, Becnel JJ, Weiss LM, et al. Microsporidia - Emergent Pathogens in the Global Food Chain. *Trends Parasitol*. 2016; 32: 336-48.
9. Alonso Saratxaga E, Pérez Esquerdo MR. Conocimientos básicos sobre enfermedades víricas emergentes:

apuntes para la atención primaria (parte 1). FMC 2018; 25: 3-13.

10. Alonso Saratxaga E, Pérez Esquerdo MR. Conocimientos básicos sobre enfermedades víricas emergentes: apuntes para la atención primaria (parte 2). FMC 2018; 25: 72-81.

Web resources:

Emerging Infectious Diseases journal - CDC . <https://wwwnc.cdc.gov/eid/>

National Center for Emerging and Zoonotic Infectious Diseases-CDC. <https://www.cdc.gov/ncezid/>

Boletín Epidemiológico Semanal en Red-Instituto de Salud Carlos III.
<http://www.isciii.es/ISCIII/es/contenidos/fdservicios-cientifico-tecnicos/fd-vigilancias-alertas/fd-boletines/boletin-epidemiologico-semanal-red.shtml>

During the course, documents and digital resources linked to the Virtual Campus website are made available to students.