

Evaluation questionnaire

XI Updating Course of Antimicrobials and Infectious Diseases 2021

- 1. Regarding the genomic surveillance of antibiotic resistance, point out the false statement:**
 - a) It provides a great capacity to improve the study of outbreaks and the surveillance of multidrug-resistant microorganisms.
 - b) It improves the understanding of bacterial evolution and dissemination.
 - c) It is already fully incorporated into the surveillance of most pathogenic microorganisms.
 - d) The ECDC enhances the integration of genomic typing in surveillance through a strategic framework.
- 2. ¿Which of the following is not an objective of the Laboratory Network for Antibiotic Resistance Surveillance (RedlabRA):**
 - a) Obtain a complete and quality microbiological diagnosis in cases of infection and/or colonization by resistant microorganisms under surveillance.
 - b) Genomic characterization of all antibiotic resistant bacteria.
 - c) Standardize procedures for detection and characterization of resistance mechanisms.
 - d) Establish mechanisms for the exchange of information among the laboratories of the network according to the priorities to be established.
- 3. The coordination of RedlabRA:**
 - a) It is performed by the Ministry of Health.
 - b) It is exclusively in the hands of clinical microbiologists.
 - c) It is multidisciplinary and directed by the National Antibiotic Resistance Plan.
 - d) It is multidisciplinary and directed from the National Center of Microbiology.
- 4. Mark the correct answer regarding bioinformatics applied to the study of antimicrobial resistance.**
 - a) It is unique to genomic studies
 - b) Allows a perfect correlation between the genome and the antimicrobial susceptibility profile.
 - c) Does not allow analysis of resistance mechanisms by MALDI-TOF.
 - d) None of the above is true
- 5. Which of the following would not apply to the monitoring and follow-up of carbapenemase-producing *Enterobacteriaceae* (CPE)?:**
 - a) Massive sequencing or ultrasequencing (WGS or NGS)
 - b) MLST
 - c) Analysis of outer membrane protein profiles (OMP)
 - d) Bacterial proteome study
- 6. Indicate the correct answer regarding bacterial genome databases:**
 - a) It is a tool with little utility in a clinical microbiology laboratory.
 - b) Allows identification and tracing of the mobility of specific pathogens.
 - c) There is no national or international initiative in this regard due to the high cost and specialization required.
 - d) No plasmid information can be stored
- 7. Of the following statements, indicate the correct one:**
 - a) The stability at room temperature of all antibiotics for parenteral use is known with accuracy.
 - b) There is no experience with continuous infusion administration of antibiotics in patients cared for at home.
 - c) There are studies showing that self-administration of parenteral antibiotics on an outpatient basis is a safe practice.
 - d) Multidrug-resistant microorganisms should not be treated in hospitalization at home due to the risk of infecting cohabitants.
- 8. According to data from the TADE Registry, which of the following statements is false in relation to the resistance of microorganisms causing infections that are treated in hospitalization at home:**
 - a) The percentage cure rate of improvement of *Escherichia coli* resistant to ceftriaxone is 94%.
 - b) The percentage of *Staphylococcus aureus* resistant to cloxacillin is less than 10%.
 - c) Up to 25% of *Pseudomonas aeruginosa* is resistant to imipenem.
 - d) *Klebsiella pneumoniae* shows resistance rates to amoxicillin-clavulanic acid close to 50%.

9. In relation to the use of antimicrobials for the treatment of infections in hospitalization at home, it is true that:

- a) The antibiotic with the broadest spectrum of activity should always be used to ensure that there is no therapeutic failure.
- b) Whenever possible, a once-daily antibiotic should be chosen to facilitate hospital discharge, regardless of its spectrum of activity
- c) PK/PD ratios should be taken into account.
- d) Antibiotics cannot be administered every 8 hours if they are not stable at room temperature.

10. All of the following statements about serology for SARS-CoV-2 in COVID-19 are correct EXCEPT:

- a) It is useful in Acute Infection
- b) It is useful in past infection
- c) It is useful in Seroprevalence Studies.
- d) Anti-S (Spike) titers correlate with neutralizing activity.

11. The main target of the neutralizing antibodies in COVID-19 is:

- a) N protein (nucleoprotein)
- b) E protein (envelope)
- c) RBD region of protein S (spike)
- d) Viral RNA

12. Vaccination against COVID-19 (mRNA vaccines or Spike expressing Adenoviruses) induces all of the following EXCEPT:

- a) Anti-S antibodies
- b) Anti-N antibodies
- c) Anti-S specific CD4 response
- d) Anti-S specific CD8 response

13. Indicate the true answer about SARS-CoV-2 detection:

- a) PCR is more sensitive than TMA.
- b) Antigen detection tests are useful after 5 days of symptoms.
- c) Antigen detection tests are usually positive when the cycling threshold (CT) of PCR is low
- d) Antigen detection tests are more useful in asymptomatic patients than in those who are asymptomatic.

14. What has been demonstrated in case of reinfections?

- a) Infectivity is lower if antibodies persist.
- b) Reinfections are not possible in the presence of antibodies.
- c) No mutations causing escape from humoral immunity have been described.
- d) The presence of antibodies is associated with more severe reinfections.

15. ¿ What condition allows isolation to be lifted in a patient with a first positive PCR?

- a) Determination of low cycling threshold (CT)
- b) Negative Ag test
- c) Positive IgG
- d) Absence of symptom

16. Regarding the significance of Ct in the molecular detection of SARS-CoV-2 indicate the correct answer.

- a) An elevated Ct value (> 30) should be used as a criterion for de-isolation as it rules out the patient being infective.
- b) Ct is an objective value, easily measurable and interpretable.
- c) Ct value depends on sample quality, amplified region and assay used.
- d) All molecular techniques report the Ct value.

17. Indicate the correct answer regarding the molecular detection of SARS-CoV-2

- a) Rapid rRT-PCR (15 minutes) is the technique of choice for population screening.
- b) Transcription-mediated amplification (TMA) is not recommended for the diagnosis of SARS-CoV-2 as it is not considered a PCR technique.
- c) Multiple rRT-PCR allows the detection of the different variants of epidemiological interest.
- d) Mass sequencing is the technique of choice for epidemiological surveillance.

18. Regarding the use of rRT-PCR as a tool to control SARS-CoV-2 infection, which statement is correct?

- a) rRT-PCR is not a good follow-up technique.
- b) To de-isolate a patient it is necessary that the rRT-PCR is negative.
- c) A post-diagnostic control should always be performed 10 days after diagnosis.
- d) It is necessary to perform rRT-PCR screening systematically to social-health personnel to avoid nosocomial outbreaks.

19. In relation to the tools for pandemic management, point out the false answer

- a) In low prevalence settings or when there is little suspicion of SC2 infection, rapid antigen tests are associated with a high negative predictive value, thus reliably ruling out infection.
- b) Perimetral containment is performed by basic health zone (BHZ). Sometimes not all municipalities or districts of the BHZ are confined.
- c) Antigen tests better detect patients with higher Ct.
- d) SARS-CoV-2 viral concentration in wastewater is 48-72 hours ahead of changes in incidence density.

20. Which of the following microorganisms is not sensitive to ceftaroline?

- a) Methicillin-resistant *Staphylococcus aureus*
- b) Penicillin-resistant *Streptococcus pneumoniae*
- c) Coagulase-negative *staphylococcus* resistant to oxacillin
- d) Extended-spectrum beta-lactamase-producing *Escherichia coli*

21. In patients with community-acquired pneumonia ceftaroline has demonstrated:

- a) Similar clinical efficacy to ceftriaxone.
- b) A higher rate of adverse effects than ceftriaxone
- c) A higher clinical cure rate than ceftriaxone
- d) A higher mortality rate than ceftriaxone

22. What is the spectrum of ceftobiprole?

- a) Gram + cocci including methicillin-resistant *Staphylococcus aureus* and *Enterococcus faecalis*
- b) Non BLEE-producing *Enterobacteriaceae*
- c) *Pseudomonas aeruginosa*, although between 60 and 70% in our environment.
- d) All of the above are true

23. For what indications is ceftobiprole approved in Spain?

- a) Skin and soft tissue infections
- b) Community pneumonia
- c) Nosocomial pneumonia excluding that associated with mechanical ventilation
- d) b and c are true answers.

24. In relation to the in vitro activity and sensitivity studies of Tedizolid against the following microorganisms, we can treat the clinical infections they cause, except for one of them:

- a) *Mycobacterium* spp.
- b) *Staphylococci* resistant to linezolid due to mutations in 23S rRNA.
- c) *Corynebacterium* spp.
- d) *Listeria monocytogenes*

25. In a recent retrospective multicenter study of real-life uses of tedizolid lasting more than 6 days in 81 patients, the following facts have been observed:

- a) Frequent off-label indications (osteoarticular, respiratory infection).
- b) Important use of linezolid to avoid toxicities or pharmacological interactions.
- c) Lower rates of serious adverse effects (gastrointestinal, myelotoxicity) than with linezolid.
- d) All of the above

26. Which of the following answers about dalbavancin is true?

- a) It is a glycopeptide
- b) It is a lipopeptide
- c) It is a lipo-glycopeptide
- d) It is eliminated mainly by the hepatic route.

27. Which of the following properties about dalbavancin is false?

- a) Its spectrum is limited to gram-positive cocci
- b) It is a broad-spectrum antibiotic that includes gram-positive and gram-negative bacteria.
- c) It is the antistaphylococcal with the highest intrinsic activity.
- d) Methicillin resistance does not affect it.

28. Which of the following answers about dalbavancin is false?

- a) It has a very long elimination half-life that allows weekly administration.
- b) It is a very appropriate antibiotic for sequential therapy in severe infections that require prolonged treatment once stabilized.
- c) It allows shortening hospital stay and reducing costs.
- d) It is a nephrotoxic antibiotic.

29. Which of the following statements regarding ceftazidime-avibactam is false?

- a) The elimination half-life of avibactam is longer than that of tazobactam.
- b) More than 95% of enterobacteria isolated from clinical samples are sensitive to ceftazidime-avibactam.
- c) *Pseudomonas aeruginosa* is often resistant to ceftazidime-avibactam.
- d) The association of ceftazidime-avibactam with meropenem can be synergistic.

30. Which of the following statements regarding ceftazidime-avibactam is false?

- a) It is a good alternative for the empirical treatment of gram-negative bacilli infections.
- b) It is active against anaerobic microorganisms.
- c) It can reduce the presence of carbapenemase-producing enterobacteria in the intestinal microbiota.
- d) It is not active against methicillin-resistant *Staphylococcus aureus*.

31. What is the mechanism used by cefiderocol to penetrate inside the bacteria to its pharmacological site of action?

- a) It binds to the Angiotensin Converting Enzyme type 2 (ACE-2) receptor of the bacterial wall.
- b) It acts as a siderophore.
- c) It binds to the cell receptor containing sialic acid through a radical of its molecular structure called hemagglutinin.
- d) It acts by binding to the teichoic acids of the outermost part of the peptidoglycan layer of the bacterial wall.

32. Point out the incorrect answer about cefiderocol:

- a) It is not indicated in Gram-positive bacteria infection.
- b) It presents activity against multiresistant Gram-negative bacteria that produce cAMP, BLEE and carbapenemase.
- c) It is not indicated for use in upper urinary tract infections.
- d) The recommended dose is 2 grams every 8 hours in a 3-hour infusion.

33. Regarding the isothermal amplification techniques (LAMP) for microbiological diagnosis, it is true that:

- a) It is not possible to perform them directly on clinical samples.
- b) The time required in the laboratory is longer than that of PCRs.
- c) They can be used for the detection of *Pneumocystis jirovecii*
- d) Inhibition is more frequent with these techniques than with PCR.

34. Immunochromatography tests performed on saliva samples have proven to be useful for the diagnosis of:

- a) Hepatitis A
- b) Hepatitis B
- c) Hepatitis C
- d) None of the above is true

- 35. With regard to the activity of beta-lactams against *Streptococcus pyogenes*:**
- In Spain, the resistance of *S. pyogenes* to beta-lactams is 2-4%.
 - Decreased sensitivity to beta-lactams has been described due to mutations in the *pbp2x* gene.
 - Resistance is due to beta-lactamase production.
 - Currently, no *Streptococcus pyogenes* strains with decreased sensitivity to beta-lactams have been described in the world.
- 36. In the ASPEIN study on *Aspergillus* in Spain, in the samples analyzed from 30 hospitals and the Spanish reference center, which antifungal drug had the highest sensitivity (no resistance was detected) against *Aspergillus fumigatus sensu stricto* (excluding cryptic species)?**
- Posaconazole
 - Isavuconazole
 - Amphotericin B
 - Voriconazole
- 37. In patients undergoing CAR-T (chimeric antigen receptor CD19 T-lymphocyte antigen) therapy, all of the following opportunistic infections are important, but which is the most common to monitor early?**
- Bacteremia due to gram-positive pathogens
 - Herpes simplex type 1 infection
 - Aspergillus fumigatus* infection
 - Diarrhea by *Clostridium difficile*
- 38. Indicate which of the following statements regarding the treatment of methicillin-resistant *S. aureus* bacteremia is true:**
- The combination of daptomycin and fosfomicin is more eradicated and with fewer adverse effects than daptomycin alone.
 - Associating cloxacillin with vancomycin or daptomycin prevents relapses or treatment failures.
 - Intermittent therapy with vancomycin is safer and easily reaches the target concentration than continuous therapy.
 - The best PK/PD parameter to maximize clinical efficacy and minimize toxicity of vancomycin is the 24-hour area under the curve concentration.
- 39. Which of the following conditions a worse prognosis a priori in a patient affected by COVID?**
- Lymphopenia
 - Age > 65 years
 - Fibrinogen elevation
 - C-reactive protein elevation.
- 40. Which of the following statements is not true?**
- COVID pneumonia has a higher mortality rate than community-acquired pneumonia
 - The decision to discharge from COVID pneumonia cannot be based solely on PSI.
 - COVID pneumonia is an absolute criterion for hospital admission
 - COVID pneumonia usually has a bilateral interstitial pattern.
- 41. The "Predicovid" prediction model for risk stratifying SARS-CoV-2 infected patients includes all but one of the following parameters. Point it out:**
- Lymphopenia
 - C-reactive protein
 - Renal clearance
 - Dementia
- 42. Regarding treatment with corticoids in COVID-19, indicate the false answer:**
- Dexamethasone at a dose of 6 mg/day for 10 days vs. placebo decreases mortality in hospitalized patients requiring oxygen therapy.
 - CT findings with ground glass lesions and postmortem anatomopathologic pulmonary studies compatible with diffuse alveolar damage and acute fibrinous organizing pneumonia support that response to corticosteroids improves the prognosis.
 - Methylprednisolone is able, through its binding to glucocorticoid receptor alpha (GC-GR-), to decrease the activity of NF-kappaB in the production of mediators of inflammation, coagulation and fibroproliferation.
 - Corticoids in invasively ventilated patients decrease the days of mechanical ventilation but increase mortality at 6 months.

43. If you have to mechanically ventilate invasively a patient with severe respiratory failure due to SARS-Cov-2 pneumonia/SDRA who arrives at the ED on the tenth day of evolution, indicate the best therapeutic decision in February 2021:

- a) I will start 100 mg/day of hydrocortisone
- b) I will start dexamethasone at a dose of 6 mg/day
- c) Given the high possibility of reactivating the virus, I will not initiate steroids.
- d) I will initiate dexamethasone 6 mg/day if the patient is younger than 60 years old

44. In a 50-year-old male patient, with no medical history, with SARS-Cov-2 pneumonia and baseline SatpO2 < 88% on arrival at the emergency department, who maintains a good level of consciousness, indicate the best therapeutic decision:

- a) I will initiate oxygen therapy with ventimask and if I do not achieve a SatpO2 >90% I will switch to noninvasive mechanical ventilation.
- b) I will start oxygen therapy with ventimask and if I do not achieve a SatpO2 >90% I will switch to high-flow nasal cannulas, placing him in an isolation room and instructing the nurse not to visit him more than once per shift to avoid contagion.
- c) He requires early invasive mechanical ventilation to avoid self-induced lung injury.
- d) I will start oxygen therapy with ventimask and if I do not achieve a SatpO2 >90% I will switch to high flow nasal cannulas monitoring his clinical situation and IROX.

45. Which of the following is not a criterion for the administration of remdesivir?

- a) Need for mechanical ventilation.
- b) Administration in the first 10 days of the infection.
- c) Need for low-flow oxygen therapy.
- d) Respiratory rate of 24 rpm and SpO2 94% in room air.

46. Which of the following immunomodulators is accepted to be effective in reducing mortality in patients with COVID-19?

- a) Corticosteroids
- b) Intravenous immunoglobulin
- c) JAK inhibitors (baricitinib)
- d) IL-6 inhibitors (tocilizumab)

47. One of the following antiviral drugs is under evaluation for the treatment of COVID-19:

- a) Lopinavir/ritonavir
- b) Ribavirin
- c) Oseltamivir
- d) Favipiravir

48. Herd immunity depends on:

- a) Natural immunity
- b) Vaccine coverage and efficacy
- c) On the transmission force of the corresponding infection
- d) All are true

49. Which of the following vaccines uses as vector to induce the immune response the non-replicating adenovirus 26 that carries the S protein of SARS-CoV2?

- a) The BioN Tech-Pfizer vaccine
- b) Moderna's vaccine
- c) J&J/Janssen vaccine
- d) The Oxford/Astra Zeneca vaccine

50. Which of the following vaccines uses mRNA encoding protein S encapsulated in lipid nanoparticles to induce the immune response?

- a) BioN Tech-Pfizer vaccine
- b) The Moderna vaccine
- c) The Curevac vaccine
- d) All of the above

51. Which of the following vaccines uses as vector to induce the immune response the non-replicating chimpanzee adenovirus that carries the S protein of SARS-CoV2?

- a) The BioN Tech-Pfizer vaccine
- b) Moderna's vaccine
- c) J&J/Janssen vaccine
- d) The Oxford/Astra Zeneca vaccine

52. Indicate the true answer concerning antimicrobial prescribing in the hospital setting during the first peak of the pandemic

- a) There was an overall increase
- b) There was an overall decrease
- c) There was no significant change in prescribing
- d) It has not been possible to perform an analysis of prescribing.

53. Indicate the true answer regarding antimicrobial prescribing in the out-of-hospital setting during the first peak of the pandemic

- a) There was an overall increase
- b) There was an overall decrease
- c) There was no significant change in prescribing
- d) It has not been possible to perform an analysis of prescribing.

54. The COVID-19 pandemic and the use of antimicrobials in the hospital setting

- a) Has not had an impact on nosocomial infection
- b) It has been correlated in some centers with outbreaks of multidrug-resistant bacteria.
- c) has had an impact on the increase in the spread of resistance mechanisms to new antimicrobials
- d) b and c are true

55. The phenomenon of viral interference refers to:

- a) The potentiation of the virulence of two viruses when they simultaneously infect a patient
- b) The phenomena of suppression and exclusion of the superinfection of two viruses when they simultaneously infect a patient.
- c) Interference caused by co-infection of two viruses in diagnostic molecular tests.
- d) The modification of the epidemiology of a disease when coinfection by two viruses occurs.

56. What is the most frequent etiology of post-covid pneumonia in our environment?

- a) Another virus
- b) A filamentous fungus
- c) A bacterium
- d) A yeast

57. Which of the following factors has NOT been associated with an increased risk of respiratory co-infection in the covid19 patient?

- a) A lymphopenia below 700
- b) A PaO₂/FiO₂ above 200
- c) An ICU admission less than 48h after hospital admission
- d) All of them have been associated with an increased risk of respiratory co-infection in the covid19 patient.

58. Aspergillosis in COVID patients....

- a) Is diagnosed mainly in elderly patients
- b) It is diagnosed in critically ill patients admitted to the ward or ICU
- c) It is mainly diagnosed in intubated patients, who have received corticosteroids and have previous pulmonary diseases.
- d) It usually affects any patient profile.

59. The diagnosis of CAPA (COVID-19 associated pulmonary aspergilosis) is mainly made by....

- a) Cultures
- b) Beta-glucan
- c) galactomannan
- d) PCR

60. The treatment of CAPA (COVID-19 associated pulmonary aspergilosis) ...

- a) Should be early
- b) Should be initiated upon suspicion of IFI
- c) Isavuconazole is a reasonable therapeutic option
- d) All are correct

61. One of the following statements is incorrect regarding ceftolozane tazobactam

- a) It is active against multidrug-resistant *Pseudomonas aeruginosa*
- b) It is synergistic with colistin.
- c) It can be used in complicated intra-abdominal infection.
- d) It is not active against BLEE enterobacteria.

62. One of the following statements is not correct regarding ceftolozane tazobactam

- a) It is indicated in infections by enterobacteria BLEE
- b) The dose in pneumonia is 1 g / 8h.
- c) It can be used in complicated urinary tract infection.
- d) Mutations in the amp-C gene confer resistance.

Correct answer sheet

XI Updating Course of Antimicrobials and Infectious Diseases 2021. Correct answers

	a	b	c	d
1			X	
2		X		
3				X
4				X
5			X	
6		X		
7			X	
8		X		
9			X	
10	X			
11			X	
12		X		
13			X	
14	X			
15			X	
16			X	
17				X
18	X			
19			X	
20				X
21			X	
22				X
23				X
24		X		
25				X
26			X	
27		X		
28				X
29			X	
30		X		
31		X		
32			X	
33			X	
34				X
35		X		
36			X	
37	X			
38				X
39		X		
40			X	
41	X			
42				X
43		X		
44				X
45	X			
46	X			
47				X
48				X
49			X	
50				X
51				X
52	X			
53		X		
54				X
55		X		
56			X	
57		X		
58			X	
59	X			
60				X
61				X
62		X		