

Midterm #2 Review
(Minus Parasites)

- 1) Which of the following is NOT Gram-positive?
 - a) *Listeria monocytogenes*
 - b) *Streptococcus pneumoniae*
 - c) *Staphylococcus saprophyticus*
 - d) *Klebsiella pneumoniae*
 - e) *Streptococcus pyogenes*

- 2) Which of the following is rod shaped?
 - a) *Staphylococcus aureus*
 - b) *Neisseria gonorrhoeae*
 - c) *Bacillus anthracis*
 - d) *Borrelia burgdorferi*
 - e) *Moraxella catarrhalis*

- 3) Which of the following is the best description of *listeria monocytogenes*?
 - a) Gram-negative spirals
 - b) Gram-negative cocci
 - c) Gram-negative rods
 - d) Gram-positive cocci
 - e) Gram-positive rods

- 4) Which of the following Gram-negative rods ferments glucose, is oxidase negative, ferments lactose, and is indole positive (tryptophan metabolizing)?
 - a) *E. coli*
 - b) *Shigella*
 - c) *K. pneumoniae*
 - d) *Salmonella*
 - e) *P. vulgaris*

- 5) A child presents with vomiting and bloody stools. A bacterial culture yields Gram-negative rods that are H₂S negative. Which of the following is most likely?
 - a) *E. coli*
 - b) *Shigella*
 - c) *K. pneumoniae*
 - d) *Salmonella*
 - e) *P. vulgaris*

- 6) Which of the following can swarm on a plate, making it difficult to distinguish colonies?
 - a) *E. coli*
 - b) *Shigella*
 - c) *K. pneumoniae*
 - d) *Salmonella*

e) *P. vulgaris*

7) What is the primary virulence factor for *E. coli*?

- a) Inflammatory response
- b) cAMP inducing toxin
- c) Toxin inhibits protein synthesis
- d) LPS
- e) Superantigen

8) Which of the following would be unsusceptible to penicillin?

- a) *Mycoplasma*
- b) *Borrelia*
- c) *Leptospira*
- d) *Chlamydia*
- e) *Rickettsia*

9) Some G+, but never G-, bacteria form spores. These include members of the genera:

- a) *Bacillus* and *Clostridium*
- b) *Staphylococcus* and *Streptococcus*
- c) *Bacillus* and *Streptococcus*
- d) *Clostridium* and *Staphylococcus*
- e) *Bacillus* and *Staphylococcus*

10) Which of the following is NOT true regarding spores?

- a) They can allow bacteria to exist in suspended animation for centuries
- b) It contains a high concentration of calcium bound to dipicolinic acid
- c) It contains a complete copy of the chromosomes
- d) It contains high concentrations of the essential proteins and ribosomes
- e) It protects the DNA from intense heat, radiation, and attack by most enzymes

11) *Bacillus* are ____ spore formers and *Clostridium* are ____ spore formers.

- a) Aerobic; Anerobic
- b) Aerobic and facultative anaerobic; Anerobic
- c) Aerobic; Facultative anaerobic and anerobic
- d) Anerobic; Aerobic
- e) Anerobic; Aerobic and facultative anaerobic

12) In non-industrial countries, what is the most likely place to find *B. anthracis*?

- a) Skin/fur of carnivores
- b) Skin/fur of herbivores
- c) Fresh water lakes
- d) Desert sand
- e) Rainforest trees

13) Which of the following is NOT a characteristic of *B. anthracis* that makes it a good choice for mass (continental) biological warfare?

- a) Can form resistant spores that can remain viable for very long periods of time
- b) Is very deadly and cannot always be easily recognized and treated in time
- c) It is non-communicable and won't spread beyond a specific target
- d) Spores are easy to isolate worldwide
- e) Spores can easily be prepared from liquid cultures

14) A young man enters the Emergency Room dehydrated, afebrile, and complaining of nausea and vomiting. Since he began vomiting one hour ago, he has been “hugging the toilet” nearly every ten minutes. He remembers eating a dish with fried rice at an Asian restaurant several hours ago. Which of the following is most likely the cause?

- a) *C. tetani*
- b) *C. botulinum*
- c) *C. difficile*
- d) *B. anthracis*
- e) *B. cereus*

15) Which of the following is NOT a useful feature in identifying *Listeria*?

- a) Facultative anaerobe coccobacilli often arranged in pairs
- b) Only Gram-positive bacteria with an endotoxin
- c) Motile at room temperature
- d) γ -hemolytic (non-hemolytic)
- e) Capable of growth in high-salt concentrations

16) A mother brings her 2-month-old infant to the hospital because he exhibits fever, convulsions, irritability, and poor eating. The pediatrician-in-training notes a widespread rash and a stiff neck on physical exam. She orders a spinal tap, which reveals low glucose, increased PMNs, increased proteins, and Gram-positive rods with “tumbling” motility in cultures. Upon further questioning, the pediatrician discovers that the mother does not breast feed and feeds her baby fresh cow milk. Which of the following is the most likely cause?

- a) *C. diphtheriae*
- b) *S. pneumoniae*
- c) *S. aureus*
- d) *L. monocytogenes*
- e) *S. pyogenes*

17) Which of the following groups of people would be the least susceptible to *Listeria*?

- a) AIDS patients
- b) Neonates
- c) Elderly
- d) Pregnant women
- e) Immunocompromised patients

18) Which of the following is caused by early-onset (acquired transplacentally in utero)

Listeria monocytogenes?

- a) Disseminated abscesses and granulomas in multiple organs
- b) Meningitis or meningoencephalitis with septicemia
- c) Painful, pruritic inflammatory skin lesion
- d) Endocarditis
- e) Osteomyelitis

19) Which of the following is caused by late-onset (acquired shortly after birth) *Listeria monocytogenes*?

- a) Disseminated abscesses and granulomas in multiple organs
- b) Meningitis or meningoencephalitis with septicemia
- c) Painful, pruritic inflammatory skin lesion
- d) Endocarditis
- e) Osteomyelitis

20) Which of the following is the natural habitat for mycobacteria? (best answer)

- a) Food
- b) Plants
- c) Infected animals
- d) Water
- e) Soil

21) Which of the following is spread by close person-to-person contact through the inhalation of infectious aerosols and infects a third of the world's population?

- a) *M. leprae*
- b) *M. avium-intracellulare*
- c) *M. tuberculosis*

22) Which of the following describes enteric bacteria?

- a) Gram-positive cocci
- b) Gram-negative cocci
- c) Gram-positive rods
- d) Gram-negative rods
- e) Gram-positive spirals

23) What is the most prevalent *Enterobacteriaceae* found in bloodstream infections?

- a) *Escherichia*
- b) *Klebsiella*
- c) *Salmonella*
- d) *Yersinia*
- e) *Morganella*

24) What is the most prevalent *Enterobacteriaceae* found in gastrointestinal tract infections?

- a) *Escherichia*
- b) *Klebsiella*

- c) *Salmonella*
- d) *Yersinia*
- e) *Morganella*

25) What is the most prevalent *Enterobacteriaceae* found in urinary tract infections?

- a) *Escherichia*
- b) *Klebsiella*
- c) *Salmonella*
- d) *Yersinia*
- e) *Morganella*

26) Which of the following is linked to infant illness from powdered infant formula?

- a) *Helicobacter pylori*
- b) *Pseudomonas cepacia*
- c) *E. sakazakii*
- d) *Campylobacter*

27) Which of the following toxins disrupts protein synthesis causing damage to the intestinal epithelium, and in a small subset of patients causes damage to the glomerular endothelial cells, resulting in renal failure?

- a) *Vibrio cholerae*
- b) EHEC
- c) *Shigella dysenteriae*
- d) ETEC

28) Which of the following produces heat-labile (LT-I and LT-II) and heat-stable (STa and STb) enterotoxins that stimulate hypersecretion of fluids and electrolytes?

- a) *Vibrio cholerae*
- b) EHEC
- c) *Shigella dysenteriae*
- d) ETEC

29) Which of the following is NOT a route of transmission for *Shigella dysenteriae*?

- a) Fingers
- b) Flies
- c) Farms
- d) Food
- e) Feces

30) Which of the following is commonly transmitted by uncooked chicken?

- a) *Salmonella typhi*
- b) *Salmonella enteritidis*
- c) *Shigella dysenteriae*
- d) *Yersinia enterocolitica*
- e) *Yersinia pestis*

Match the following descriptions with the term:

a) Gastroenteritis b) Septicemia c) Enteric fever

31) Gradually increasing fever 10-14 days from ingestion with nonspecific complaints such as headache, myalgias, malaise, and anorexia.

32) Nausea, vomiting, and non-bloody diarrhea 6-48 hours after consumption.

33) From *Salmonella* and risk is higher in pediatric, geriatric, and AIDS patients

34) Which of the following is most likely caused by *Legionella*?

a) Bloody diarrhea

b) Fever lasting less than 24 hours

c) Atypical pneumonia

d) UTI

e) Meningitis

35) Which of the following is the most likely location to find *Legionella pneumophila*?

a) Water

b) Soil

c) Food

d) Plants

e) Desert

36) Which of the following is NOT true (in general) for *Clostridium*?

a) Gram-negative

b) Bacilli shaped

c) Spore-forming

d) Obligate anaerobes

e) Unable to reduce sulfate to sulfite

37) A teenage girl enters the emergency room suffering painful muscle spasms. Throughout her examination, she sustains a facial sneer, a stiff arched back, and clamped palms. Her father is anxious about the fact that she has also experienced difficulty eating, probably due to a stiff jaw. The father affirms that her daughter is usually quite active and boasts how, a week ago, she continued a soccer game even after falling on a nail in the field. Which of the following is the most likely cause?

a) *C. difficile*

b) *C. perfringens*

c) *C. septicum*

d) *C. botulinum*

e) *C. tetani*

38) A woman straggles into the emergency room with a marked paralysis of her upper body. She describes the paralysis as a weakness that began in her neck and spread to her arms. She also complains of blurred double vision and requests water to soothe her dry throat. Though she has no fever, she appears quite dizzy and her eyelids are drooping. The day before, she returned from a camping trip where she insists she maintained good

hygiene, limiting her diet to canned food only. Which of the following is the most likely cause?

- a) *C. difficile*
- b) *C. perfringens*
- c) *C. septicum*
- d) *C. botulinum*
- e) *C. tetani*

39) An old woman comes to the doctor with a fever and loose bowels. Her diarrhea occurs in tremendous volumes, she complains, though she doesn't remember seeing blood. She has an unremarkable recent past medical history, except for an infection a few weeks earlier that was treated with clindamycin. Sigmoidoscopy of her colon reveals yellow-white plaques which the doctor predicted after analyzing her stools for toxins. Which of the following is the most likely cause?

- a) *C. difficile*
- b) *C. perfringens*
- c) *C. septicum*
- d) *C. botulinum*
- e) *C. tetani*

40) A man enters the emergency room claiming to have been stabbed two days earlier. Muscles in his arm hurt, and on palpation small air bubbles are felt below the skin. The wound area exudes a blackish, ill-smelling fluid that generates a crackling sound when touched. The patient has a fever, a low blood pressure, marked tachycardia, and urinated very little since his injury. The doctor decides to amputate the arm, as well as monitor the patient for shock and renal failure. Which of the following is the most likely cause?

- a) *C. difficile*
- b) *C. perfringens*
- c) *C. septicum*
- d) *C. botulinum*
- e) *C. tetani*

41) Which of the following is associated with Floppy Baby Syndrome?

- a) *C. difficile*
- b) *C. perfringens*
- c) *C. septicum*
- d) *C. botulinum*
- e) *C. tetani*

42) Which of the following groups of people is most at risk for contracting *T. pallidum*?

- a) Pregnant mothers
- b) Cystic fibrosis patients
- c) Sexually active patients
- d) Elderly patients
- e) Anyone (spread through contact with inanimate objects, such as toilet seats)

43) The tissue destruction and lesions observed in syphilis are primarily a consequence of which of the following?

- a) Bacterial capsule
- b) Bacterial endoflagellum
- c) Bacterial overgrowth
- d) Bacterial hyaluronidase
- e) Host immune response

44) Children born with congenital syphilis often exhibit Hutchinson Triad, which includes deafness, blindness, and centrally notched teeth. If the mother has been exposed to Chlamydia, syphilis, or gonorrhea, the newborn may receive a prophylactic antibiotic for their:

- a) Ears
- b) Eyes
- c) Nose
- d) Mouth
- e) Systemic antibiotic (via IV)

45) What is characteristic of primary syphilis?

- a) Painful chancre
- b) Painless chancre
- c) Several painful ulcers in genital region
- d) Several painless ulcers in genital region
- e) Disseminating rash on entire body, soles, and palms

46) Which of the following is NOT used for laboratory diagnosis of *C. trachomatis*?

- a) Microscopy of Gram-negative rods with no peptidoglycan cell wall
- b) Molecular amplification (e.g. PCR)
- c) Cell culture using certain cell lines (e.g. nonciliated columnar, cuboidal)
- d) Antigen test (e.g. ELISA, fluorescence)
- e) Vaginal specimen cytology

47) *C. trachomatis* would iodine stain _____ and Giemsa stain _____.

- a) Positive; Positive
- b) Positive; Negative
- c) Negative; Negative
- d) Negative; Positive

Answer Key

1. D
2. C
3. E
4. A
5. B
6. E
7. C
8. A
9. A
10. D
11. B
12. B
13. C
14. E
15. D
16. D
17. C
18. A
19. B
20. D
21. C
22. D
23. A
24. C
25. A
26. C
27. C
28. A
29. C
30. B
31. C
32. A
33. B
34. C
35. A
36. A
37. E
38. D
39. A
40. B
41. D
42. C
43. E
44. B
45. B

46. E
47. A