"The Orenburg state medical University"

**KNOWLEDGE CONTROL   
for module 2 “Epidemiological control”**

DISCIPLINE "EPIDEMIOLOGY"

WITH STUDENTS OF THE 5TH COURSE

OF THE FACULTY OF FOREIGN STUDENTS

Methodical recommendations are developed

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# Lesson 6. The basis of epidemiology of infectious diseases

## Incoming control

|  |  |
| --- | --- |
| **Task** | **Answer** |
| List ecological epidemiological classification of infections (3 words only). |  |
| List - 3 phases (stages) of mechanisms of transmission. |  |
| List (specify) the mechanisms of transmission (5 items). |  |
| The surveillance system includes 3 subsystem. List them. |  |
| Control measures are subdivided intro 3 groupp. List them (list only, without decoding). |  |

## Output control

Choose one correct answer.

1. Epidemical process is:
2. the chain of specific infectious states (diseases, carriers), following each other and connected with each other
3. the chain of epidemic foci
4. the place of being a source of infection on a surrounding territory within the limits of which an agent can be transmitted to susceptible host
5. the process of occurrence and spread diseases in human Population
6. Anthroponoses are classified accoding to:
7. the ecology of the etiologic agent
8. the reservoir o f the etiologic agent
9. the specific location of the etiologic agent in the human body and corresponding mechanism of transmission
10. the type of vectors
11. Sapronoses are classified according to:
12. the ecology of etiologic agent
13. the reservoir of a etiologic agent
14. the specific location of the etiologic agent in the human body and corresponding mechanism of transmission
15. the type of animals, who are the sources of the etiological agent of infection
16. Isolation is directed to the following link of epidemical process:
17. a source of infection
18. a mechanism of transmission
19. a susceptible host
20. the correct answer is missing
21. Sanitary and hygienic measures are directed to the following:
22. a source of infection
23. a mechanism of transmission
24. a susceptible host
25. the correct answer is missing
26. Immunoprophylaxis is directed to the following link of epidemical process:
27. a source of infection
28. a mechanism of transmission
29. a susceptible host
30. the correct answer is missing
31. An appropriate definition of epidemiologic surveillance is:
32. the complex of organizational, medical, diagnostic, sanitary and hygienic and other measures used to prevent occurrence of inflectional diseases
33. the complex of organizational, medical, diagnostic, sanitary and hygienic and other measures used to localize and eliminate an epidemic focus
34. the system of collection, analysis, deissemination of all data, needed to control diseases, and manage control system
35. the correct answer is missing
36. An appropriate definition of prophylactic measures is:
37. the complex of organizational, medical, diagnostic, sanitary and hygienic and other measures used to prevent occurrence of inflectional diseases
38. the complex of organizational, medical, diagnostic, sanitary and hygienic and other measures used to localize and eliminate an epidemic focus
39. the system of collection, analysis, deissemination of all data, needed to control diseases, and manage control system
40. the correct answer is missing
41. An appropriate definition of antiepidemic measures is:
42. the complex of organizational, medical, diagnostic, sanitary and hygienic and other measures used to prevent occurrence of inflectional diseases
43. the complex of organizational, medical, diagnostic, sanitary and hygienic and other measures used to localize and eliminate an epidemic focus
44. the system of collection, analysis, deissemination of all data, needed to control diseases, and manage control system
45. the correct answer is missing
46. An appropriate definition of a pathway (route) of transmission is:
47. the complex of factors to transmit the agent from the source of infection to a susceptible host in a certain case at a certain moment
48. the way of transferring the agent from one host to another. This way was formed by evolution and makes the existence of the agent as the biologic species possible
49. the complex of inanimate objects and live organisms, which can transfer an agent (microbe) from a source of infection to a susceptible host
50. the correct answer is missing
51. Examples of the anthroponoses among listed below:
52. Brucellosis
53. dysentery
54. Legionelliosis
55. tularemia
56. Examples of the zoonoses among listed below:
57. hepatitis A
58. measles
59. tularemia
60. malaria
61. Examples of the sapronoses among listed below:
62. legionelliosis
63. Rabies
64. Plague
65. malaria
66. Examples of the respirotory anthroponoses among listed below:
67. Rubella
68. Smallpox
69. Pertussis
70. all answers are correct
71. Links of the epidemical process are the following:
72. the source of the etiological agent of infection
73. the mechanism of transmission
74. the susceptible population (person)
75. all answers are correct
76. Types of sources of etiological agent of infection include:
77. Humans
78. Animals
79. Environment
80. all answers are correct
81. Factors of transmission include:
82. Fomites
83. Insects
84. Ticks
85. Dust
86. all answers are correct
87. Natural mechanisms of transmission include:
88. air-borne
89. vector-borne
90. fecal-oral
91. all answers are correct
92. Fecal-oral mechanism of transmission can be realized by the following pathways (routes):
93. water-borne route
94. food-borne route
95. contacts with fomites
96. all answers are correct
97. Air-borne mechanism of transmission may be realized by the following pathways (routes):
98. water-borne route
99. food-borne route
100. contact with fomites
101. dust route
102. Air-borne mechanism of transmission may be realized by the following pathways (routes):
103. water-borne route
104. food-borne route
105. arial-droplet spread
106. contact with fomites
107. Contact mechanism of trasmission involves:
108. vector-bone route
109. indirect contact
110. dust route
111. pransplacental pathway
112. Contact mechanism of trasmission involves:
113. vector-bone route
114. direct contact route
115. dust route
116. pransplacental pathway
117. Choose the pathway for the fecal-oral mechanism of transmission:
118. dust route
119. sexual pathway
120. vector-bone route
121. water-borne pathway
122. Choose the pathway for the fecal-oral mechanism of transmission:
123. dust route
124. sexual pathway
125. vector-bone route
126. food-borne pathway
127. Choose the pathway for the air-borne mechanism of transmission:
128. dust route
129. sexual pathway
130. water-borne pathway
131. food-borne pathway
132. Choose the pathway for the contact mechanism of transmission:
133. dust route
134. sexual pathway
135. water-borne pathway
136. food-borne pathway
137. Match the quantitative type of feature of epidemical process with the epidemiologic features:
138. incidence rate
139. seasonal variations
140. secular trend (tendency)
141. periodicity
142. Match the quantitative type of feature of epidemical process with the epidemiologic features:
143. seasonal variations
144. prevalence rate
145. secular trend (tendency)
146. periodicity
147. Match the qualitative type of feature of epidemical process with the epidemiologic features:
148. seasonal variations
149. secular trend (tendency)
150. periodicity
151. all answers are correct
152. Match the measure, directed to the source of infection and corresponding control measures:
153. isolation
154. Chemoprophylaxis
155. Disinfection
156. Disinsection
157. Immunoprophylaxis
158. sanitary and hygienic measures
159. Match the measure, directed to the source of infection and corresponding control measures:
160. Chemoprophylaxis
161. Disinfection
162. diratisation (rodent control)
163. Disinsection
164. Immunoprophylaxis
165. sanitary and hygienic measures
166. Match the measure, directed to interrupt mechanism of transmission and corresponding control measures:
167. Isolation
168. Chemoprophylaxis
169. disinfection
170. diratisation (rodent control)
171. immunoprophylaxis
172. Match the measure, directed to interrupt mechanism of transmission and corresponding control measures:
173. Isolation
174. Chemoprophylaxis
175. diratisation (rodent control)
176. disinsection
177. immunoprophylaxis
178. Match the measure, directed to interrupt mechanism of transmission and corresponding control measures:
179. Isolation
180. Chemoprophylaxis
181. diratisation (rodent control)
182. immunoprophylaxis
183. sanitary and hygienic measures
184. Match the measure, directed to the susceptible host and corresponding control measures:
185. Isolation
186. chemoprophylaxis
187. Disinfection
188. diratisation (rodent control)
189. disinsection
190. sanitary and hygienic measures
191. Match the measure, directed to the susceptible host and corresponding control measures:
192. Isolation
193. Disinfection
194. diratisation (rodent control)
195. disinsection
196. immunoprophylaxis
197. sanitary and hygienic measures

Choose some correct answers.

1. Examples of the anthroponoses among listed below:

1) brucellosis

2) dysentery

3) malaria

4) legionelliosis

1. Examples of the zoonoses among listed below:
2. hepatitis A
3. salmonellosis
4. Measles
5. tularemia
6. Examples of the sapronoses among listed below:
7. Pseudotuberculiosis
8. Legionelliosis
9. Rabies
10. plague
11. Examples of the respirotory anthroponoses among listed below:

1) leptospirosis

2) rubella

3) smallpox

4) pertussis

1. Examples of the enteric anthroponoses among listed below:

1) hepatitis A

2) salmonellosis

3) yersiniosis

4) poliomyelitis

1. Links of the epidemical process are the following:

1) the source of the etiological agent of infection

2) the factor of transmission

3) the mechanism of transmission

4) the susceptible population (person)

5) all answers are correct

1. Types of sources of etiological agent of infection include:

1) humans

2) animals

3) insects

4) ticks

5) environment

6) all answers are correct

1. Factors of transmission include:

1) fomites

2) animals

3) insects

4) ticks

5) dust

6) all answers are correct

1. Natural mechanisms of transmission include:

1) food-borne

2) water-borne

3) air-borne

4) vector-borne

5) fecal-oral

6) all answers are correct

1. Fecal-oral mechanism of transmission can be realized by the following pathways (routes):

1) water-borne route

2) food-borne route

3) ariai-droplet spread

4) sexual pathway

5) contacts with fomites

6) all answers are correct

1. Match the type of features of epidemical process in the left column with the epidemiologic features:

a) incidence rate

b) seasonal variations

c) prevalence rate

d) secular trend (tendency)

e) periodicity

f) all answers are correct

Pick a word.

1. The interaction of the population of microorganism and the human population, displaying itself (in some environmental conditions) as morbidity with different intensity level is …
2. A natural environment (habitats), where biological agents (microbes) live, multiplie, grow and come out, and disseminate to susceptible hosts is the …
3. The chain of specific infectious states (diseases, carriers); following each other and connected with each other is …
4. The concept of epidemiologic triangle states that, in order for a disease process to occur, there must be a unique combination of events: a harmful agent that comes into contact with a susceptible host in the proper …
5. The law “about three links of epidemical process” states that, the continuos epidemical process is maintained by the interaction of three factors: the source of infection, the … and the susceptible population (person).

# Lesson 7. Disinfection. Cleaning and disifection in healthcare setting

## Incoming control

|  |  |
| --- | --- |
| **Task** | **Answer** |
| Disinfection is a generalizing term. It includes…. |  |
| List the methods of the disinfection. |  |
| Final disinfection is carried after… |  |
| What is “zona A”? |  |
| Disinsection may be carried on in two form. List them. |  |

## Output control

Choose one correct answer.

1. A prophylactic disinfection is carried out when a source of infection is present
2. a source of infection is absent
3. just after case revealing
4. just after carrier revealing
5. Choose the correct indication for a current disinfection:
6. after hospitalization of a case
7. during a treatment in the sanatorium
8. before hospitalization of a case
9. after patient's recovery
10. Current dlslnfectfon lasts:
11. all the incubation period
12. all the period of communicahility of a patient
13. before confirmation of the diagnosis
14. all the period of disease manifestation
15. Current disinfection in the epidemic focus is usually conducted by:
16. the physician who diagnoses a case
17. the person who takes care of a patient
18. the epidemiologist
19. any medical health provider
20. Final disinfection must be conducted only by professionals (e.g., the disinfection station personnel) in case of:
21. outbreak of typhoid fever
22. outbreak of meningococcal infection
23. epidemic o f influenza
24. outbreak of scarlet fever
25. Give an example of the critical medical item:
26. Bedpans
27. surgical instruments
28. Thermometer
29. anesthesia equipment
30. Give an example of the semicritical medical item:
31. Crutches
32. surgical instruments
33. implants
34. laryngoscope blades
35. Find an example of the noncritical item:
36. Implants
37. esophageal manometry probes
38. blood pressure cuffs
39. syringes
40. The term “critical item” means that:
41. it contacts the intact skin rather than mucous membranes
42. it confers a high risk for infection if it is contaminated with any microbe
43. it contacts mucous membranes and nonintact skin
44. it comes in contact with intact skin and mucous membranes
45. The term “semicritical item” means that:
46. it comes in contact with intact skin but not mucous membranes
47. it confers a high risk for infection if it is contaminated with any microbe
48. it contacts mucous membranes and nonintact skin
49. it comes in contact with intact skin and mucous membranes
50. The term “noncritical item” means that:
51. it comes in contact with intact skin but not mucous membranes
52. it confers a high risk for infection if it is contaminated with any microbe
53. it contacts mucous membranes and nonintact skin
54. it comes in contact with intact skin and mucous membranes
55. High-level disinfection of the medical devices provides:
56. destruction of all microorganisms, with the exception of heavy contamination by bacterial spores
57. destruction of all microorganisms including bacterial spores
58. killing most bacteria except M. tuberculosis
59. inactivation of M. tuberculosis, most viruses and fungi.
60. Intermediate disinfection of the medical devices provides:
61. destruction of all microorganisms, with the exception of heavy contamination by bacterial spores
62. destruction of all microorganisms including bacterial spores
63. killing most bacteria with exception of M. tuberculosis
64. inactivation of M. tuberculosis, most viruses and fungi
65. Low-level disinfection of the medical devices provides:
66. destruction of all microorganisms, with the exception of heavy contamination by bacterial spores
67. destruction of all microorganisms including bacterial spores
68. killing most bacteria with exception of M. tuberculosis
69. inactivation of M. tuberculosis, most viruses and fungi
70. Choose the correct definition of disinfection among listed below:
71. a destruction of all forms of microbial life
72. a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects
73. a destruction or inhibiting growth and replication of microorganisms on the surface and in the body
74. a precautionary method used to prevent introduction of microbe into the patients body
75. Choose the correct definition of sterilization among listed below:
76. a destruction of all forms o f microbial life
77. a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects
78. a destruction or inhibiting growth and replication of microorganisms on the surface and in the body
79. a precautionary method used to prevent introduction of microbe into the patient’s body
80. Choose the correct definition of antiseptic measures among listed below:

1) a destruction of all forms of microbial life

2) a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects

3) a destruction or inhibiting growth and replication of microorganisms on the surface and in the body

4) a precautionary method used to prevent introduction of microbe into the patients body

1. Choose the correct definition of aseptic techniques among listed below:

1) a destruction of all forms of microbial life

2) a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects

3) a destruction or inhibiting growth and replication of microorganisms on the surface and in the body

4) a precautionary method used to prevent introduction of microbe into the patient’s body

1. Disinfection is directed to the following link of epidemical process:

1) a source of infection

2) a mechanism of transmission

3) a susceptible host

1. Diratisation is directed to the following link of epidemical process:

1) a source of infection

2) a mechanism of transmission

3) a susceptible host

1. Disinsectation is directed to the following link of epidemical process:
2. a source of infection
3. a mechanism of transmission
4. a susceptible host
5. all answers are correct
6. Final disinfection is necessary:
7. after hospitalization of a case
8. after recovery
9. in case of death
10. all answers are correct
11. Choose an appropriate measure to prevent the infection transmission in healthcare settings among listed below:
12. prophylactic disinfection
13. antiseptic measures
14. cleaning
15. all answers are correct
16. A prophylactic disinfection should be conducted:
17. in healthcare settings
18. in hotel and hostels
19. in airports
20. all answers are correct
21. The efficacy of disinfection depends on the following factors:
22. a type of transmission mechanism
23. microbiological properties of pathogens
24. concentration and potency of disinfectants
25. all answers are correct
26. The final disinfection should be conducted by professionals only (e.g., the disinfection station personnel), if there is:
27. epidemic focus of plague
28. epidemic focus of anthrax
29. epidemic focus of cholera
30. all answers are correct
31. The processing of medical and patientcare items consist of the following stages:
32. Sterilization
33. pre-sterilization cleaning
34. disinfection
35. all answers are correct
36. A wide range of antimicrobial activity includes

1) fungicidal effect

2) sporicidal effect

3) virulicidal effect

4) destruction of helminthes

1. Features of chlorine-containing compounds, which are considered to be their good points:

1) a wide spectrum of microbicidal action

2) surface disinfection

3) no interference with protein load

4) a good solubility in water

1. Choose all disadvantages of organic chlorine-containing disinfectants among listed below:

1) damage to the medical equipment

2) good stability in concentration

3) can cause local skin allergic reactions

4) restricted spectrum of biocidal activity

1. Choose all advantages of organic chlorine-containing disinfectants among listed below:

1) good solubility in water

2) low cost

3) possibility of the surface disinfection

4) no damage to the equipment

1. Choose all disadvantages of aldehydes among listed below:
2. carcinogenic to humans
3. irritating odor
4. dangerous for life
5. all answers are correct
6. Choose all disadvantages of oxygencontained disinfectants among listed below:
7. Expensive
8. corrosive action to copper, brass
9. damage eyes and skin when contacted
10. all answers are correct
11. Good points of quaternary axmmonium compounds are the following:
12. low toxicity levels
13. lack of odor
14. good cleaners
15. all answers are correct
16. Chemical disinsectants are divided into the following groups on the basis of the pathway of penetration into arthropods:
17. contact disinsectants
18. enteric disinsectants
19. respiratory disinsectants
20. all answers are correct
21. Destructive diratisation is conducted by the following methods:
22. mechanical method
23. biological method
24. chemical method
25. all answers are correct
26. Disinsectation is conducted against the following infections:
27. Malaria
28. louse-borne typhus
29. tick-borne encephalitis
30. all answers are correct
31. Diratisation is conducted for prophylaxis of such infections as:
32. Plague
33. Tularemia
34. hemorrhagic fever with renal syndrome
35. all answers are correct
36. Match hospital zone A with the appropriate disinfection requirements:
37. use of the detergent solutions
38. use of detergent/disinfectant solutions, withseparate cleaning of equipment
39. normal domestic cleaning
40. cleaning in intensive care units, delivery rooms
41. Match hospital zone B with the appropriate disinfection requirements:
42. use of the detergent solutions
43. use of detergent/disinfectant solutions, withseparate cleaning of equipment
44. normal domestic cleaning
45. cleaning in intensive care units, delivery rooms
46. Match hospital zone C with the appropriate disinfection requirements:
47. use of the detergent solutions
48. use of detergent/disinfectant solutions, withseparate cleaning of equipment
49. normal domestic cleaning
50. cleaning in intensive care units, delivery rooms
51. Match hospital zone D with the appropriate disinfection requirements:
52. use of the detergent solutions
53. use of detergent/disinfectant solutions, withseparate cleaning of equipment
54. normal domestic cleaning
55. cleaning in intensive care units, delivery rooms
56. Compare the disinfection measures with the listed functions:
57. maintain the asepsis stage
58. destroy bacterial spores
59. inhibit the growth of microorganisms
60. cover inanimate objects
61. Compare the sterilization measures with the listed functions:
62. maintain the asepsis stage
63. destroy bacterial spores
64. inhibit the growth of microorganisms
65. cover inanimate objects
66. Compare the antiseptic measures with the listed functions:
67. maintain the asepsis stage
68. destroy bacterial spores
69. inhibit the growth of microorganisms
70. cover inanimate objects
71. Compare the aseptic techniques with the listed functions:
72. maintain the asepsis stage
73. destroy bacterial spores
74. inhibit the growth of microorganisms
75. cover inanimate objects

Choose some correct answers.

1. A prophylactic disinfection is usually carried out when:

1) a source of infection is present

2) a source of infection is absent

3) a source of infection is unknown

4) during an outbreak

1. The main tasks of prophylactic disinfection are the following:

1) to prevent spread of a pathogen out of the epidemic focus

2) to prevent infecting the contacts

3) to prevent occurrence of infectious diseases

4) to interrupt transmission in case of an unknown source of infection

1. The main tasks of disinfection in epidemic focus are the following:

1) to interrupt transmission within the epidemic focus

2) to prevent occurrence of infections

3) to prevent spread of a causative agent out of an epidemic focus

4) to interrupt transmission if a source of infection exists but is unknown.

1. Current disinfection is necessary:

1) in household isolation

2) after discharging of the carrier from the hospital

3) after deathof the case

4) if a patient was hospitalized

1. Final disinfection is necessary:

1) after hospitalization of a case

2) after recovery

3) in case of death

4) in household isolation

1. Choose an appropriate measure to prevent the infection transmission in healthcare settings among listed below:

1) prophylactic disinfection

2) antiseptic measures

3) cleaning

4) postexposure prophylaxis

1. A prophylactic disinfection should be conducted:

1) in healthcare settings

2) in hotel and hostels

3) in airports

4) in epidemic focus

1. A current disinfection should be conducted:

1) in healthcare settings during the outbreak of infection

2) in hotel and hostels

3) in airports

4) in epidemic focus

1. The efficacy of disinfection depends on the following factors:

1) a type of transmission mechanism

2) a herd immunity

3) microbiological properties of pathogens

4) concentration and potency of disinfectants

1. The final disinfection should be conducted by professionals only (e.g., the disinfection station personnel), if there is:

1) epidemic focus of plague

2) epidemic focus of anthrax

3) epidemic focus of cholera

4) epidemic focus of pertussis

1. The processing of medical and patientcare items consist of the following stages:

1) sterilization

2) drying up

3) pre-sterilization cleaning

4) disinfection

1. Choose the correct examples of the mechanic disinfection among listed below:

1) cleaning

2) steam exposure

3) dusting

4) flash sterilization

1. Choose the correct examples of the physical method of disinfection among listed below:

1) shaking out

2) disinfection by heat

3) ionizing radiation

4) filtration

1. Choose the correct examples of the physical method of disinfection among listed below:

1) shaking out

2) ventilation

3) boiling

4) disinfection by fire

1. Choose the correct examples of the mechanical method of disinfection among listed below:

1) disinfection by oxidizers

2) aeration

3) dusting

4) biothermal punching of waste products

1. Choose all disadvantages of aldehydes among listed below:

1) carcinogenic to humans

2) irritating odor

3) dangerous for life

4) restricted spectrum of boicidal activity

1. Choose all good points of aldehydes among listed below:

1) relatively cheap

2) can be both disinfectant and sterilant

3) noncorrosive to rubber and plastics

4) absence of significant odor

1. Choose all advantages of oxygen-contained disinfectants among listed below:

1) wide germicidal activity

2) can be a sterilant

3) noncorrosive to metals

4) low cost

1. Choose all disadvantages of oxygencontained disinfectants among listed below:

1) expensive

2) corrosive action to copper, brass

3) their by-products are not environment-friendly

4) damage eyes and skin when cintacted

1. Good points of quaternary axmmonium compounds are the following:

1) low toxicity levels

2) lack of odor

3) good cleaners

4) sporicidal action

1. Disadvantages of quaternary ammonium compounds are the following:

1) a wide spectrum of bactericidal activity

2) a restricted spectrum of biocidal activity

3) resistance of pathogens

4) expensive

1. Disinsectation xmay be carried on in the following forms:

1) prophylactic disinsectation

2) destructive disinsectation

3) antiepidemic disinsectation

4) routine disinsectation

1. Chemical disinsectants are divided into the following groups on the basis of the pathway of penetration into arthropods:

1) contact disinsectants

2) attractants

3) enteric disinsectants

4) respiratory disinsectants

1. Destructive diratisation is conducted by the following methods:

1) radiation method

2) mechanical method

3) biological method

4) chemical method

1. Disinsectation is conducted against the following infections:

1) malaria

2) louse-borne typhus

3) leptospirosis

4) tick-borne encephalitis

1. Diratisation is conducted for prophylaxis of such infections as:

1) plague

2) tularemia

3) hemorrhagic fever with renal syndrome

4) malaria

Pick a word.

1. To expunge any hint of visible soil and dust in hospital environment (walls, windows, beds etc) is the objective of …
2. Any procedure that reduces to a significant degree the microflora of skin or mucous membrane is called ...
3. The exclusion of all microorganisms before they can contaminate a sterile field during surgery is the aim of …
4. A chemical that can be applied to inanimate objects to eliminate causative agents with the exception of spores is called …
5. A substance that tends to inhibit the growth and reproduction of microorganisms when applied to living tissue is called ...
6. Measures that prevent the penetration of rodents in the house are named … (rodent control).
7. Measures of killing rodents by various methods are named ...

# Lesson 8. Immunoprophylaxis of infectious diseases-1

## Incoming control

|  |  |
| --- | --- |
| **Task** | **Answer** |
| Innate immunity |  |
| Acquired immunity |  |
| Herd immunity |  |
| Constant contraindication to immunization |  |
| Temporal contraindication to immunization |  |
| Reactions after vaccination |  |
| Adverse events after vaccination |  |

## Output control

Choose one correct answer.

1. Live vaccines induce:
2. natural active immunity
3. acquired active immunity
4. natural passive immunity
5. acquired passive immunity
6. Killed vaccines induce:
7. natural active immunity
8. acquired active immunity
9. natural passive immunity
10. innate immunity
11. Live vaccines create:
12. natural active immunity
13. acquired passive immunity
14. artificial active immunity
15. artificial passive immunity
16. Inactivated vaccines create:
17. natural active immunity
18. acquired passive immunity
19. artificial active immunity
20. artificial passive immunity
21. An appropriate definition of a vaccine is:
22. a suspension of bacteria or viruses or fractions thereof, administered to induce immunity
23. a modified bacterial toxin that has been rendered nontoxic but that retains the ability to form immunity
24. a sterile solution of human antibodies prepared by special method
25. a solution of antibodies derived from the serum of animals immunized with specific antigens
26. An appropriate definition of a toxoid is:
27. a suspension of bacteria or viruses Or fractions thereof, administered to induce immunity
28. a modified bacterial toxin that has been rendered nontoxic but that retains the ability to form immunity
29. a sterile solution of human antibodies prepared by special methods
30. a solution of antibodies derived from the serum of animals immunized with specific antigen
31. An appropriate definition of an antitoxin is:
32. a suspension of bacteria or viruses or fractions thereof, administered to induce immunity
33. a modified bacterial toxin that has been rendered nontoxic but that retains the ability to form immunity
34. a sterile solution of human antibodies prepared by special methods
35. a solution of antibodies derived from the serum of animals immunized with specific antigens
36. The primary series of vaccination with opv (ipv) consist of:
37. 1 dose
38. 2 doses
39. 3 doses
40. 4 doses
41. An appropriate immunization recommendation against measles is:
42. a single dose MMR vaccination schedule
43. a two-dose MMR vaccination schedule
44. a three-dose MMR vaccination schedule
45. vaccination is not obligatory
46. An appropriate immunization schedule against hepatitis в includes:
47. intramuscular injections at 0,1, and 6 months
48. intramuscular injections at 0,3, and 6 months
49. intramuscular injections at 0,2,3, and 12 months
50. intramuscular injections at 0,1,2, and 24 months
51. A protective level for diphtheria (in elisa) is the following antibody concentration:

a) 0.03 IU/ml

b) 0.06 IU/ml

c) 0.01 IU/ml

d) 0.02 IU/ml

1. An antibody concentration which is considered to be a protective level for tetanus (in elisa) is:

a) 0.03 IU/ml

b) 0.06 IU/ml

c) 0.01 IU/ml

d) 0.02 IU/ml

1. An antibody concentration which is considered to be a protective level for hepatitis в (in elisa) is:

a) 0.03 IU/ml

b) 0.06 IU/ml

c) 0.01 IU/ml

d) 0.02 IU/ml

1. What antibody concentration is considered to be a protective level for measles?
2. 1:20
3. 1:10
4. 1:8
5. 1:16
6. What antibody concentration is considered to be a protective level for influenza?
7. 1:20
8. 1:10
9. 1:8
10. 1:16
11. The aim of booster immunizations is:
12. to produce the protection at the first time of vaccination
13. to increase the protection already given by a primary immunization
14. to increase the protection already given by several revaccinations
15. to avoid adverse events after further immunizations
16. An appropriate definition of herd immunity is the following:
17. a post-infection immunity of a specified group of people
18. an immunity of a specified group of people caused by vaccination
19. a protection of population independent on a way of immunization
20. a latent immunization of a specified group of people
21. An appropriate scheme of immunization for measles (according to russian schedule) is the following:
22. at 12 months, 6 years
23. at 10 months, 6 years
24. at 6 months
25. at 12—13 months
26. An appropriate scheme of immunization for diphtheria (according to russian schedule) is the following:
27. vac. - 3, 4, 5, 6 mo; revac.- 18 mo, 7, 14 years
28. vac. - 3, 4, 5, 6 mo; revac.- 18 mo, 7, 14 years, each 10 years
29. vac. - 3, 4, 5 mo; revac.- 18 mo, 7, 14 years, each 10 years
30. vac. - 3 ,4, 5, 6 mo; revac.- 18 months
31. The vaccine currently used to prevent hepatitis в is constituted by:
32. conjugate of HBsAg and a bacterial toxoid
33. HBsAg isolated from chronic carriers
34. inactivated hepatitis В virus
35. recombinant HBsAg
36. Examples of the live vaccines among listed below:
37. against measles
38. against rabies
39. against hepatitis В
40. the correct answer is missing
41. Examples of the live vaccines among listed below:
42. against poliomyelitis
43. against rabies
44. against hepatitis В
45. the correct answer is missing
46. Examples of the inactivated vaccines among listed below:
47. against poliomyelitis
48. against rabies
49. against hepatitis В
50. all answers are correct
51. Artificial immunity occurs when:
52. individuals are immunized with vaccines
53. individuals are immunized with immunoglobulins
54. individuals are immunized with serum
55. all answers are correct
56. Phases of immune response to vaccination include:
57. lag phase
58. log phase
59. decline phase
60. all answers are correct
61. Match the passive intrinsic of immunity with the way of immunity acquisition:

injection of heterologous immunoglobulin

1. transmission of antibodies from mother to infant
2. injection of homologous immunoglobulin
3. injection of heterologous serum
4. Match the passive artificial of immunity with the way of immunity acquisition:
5. injection of heterologous immunoglobulin
6. injection of homologous immunoglobulin
7. injection of heterologous serum
8. all answers are correct

# Lesson 9. Immunoprophylaxis of infectious diseases-2

Choose some correct answers.

1. Examples of the inactivated vaccines among listed below:

1) against poliomyelitis

2) against rabies

3) against hepatitis В

4) against mumps

1. Artificial immunity occurs when:

1) individuals are immunized with vaccines

2) individuals suffered from an infectious disease

3) individuals are immunized with immunoglobulins

4) individuals are immunized with serum

1. Natural immunity occurs when:

1) a person is immunized with toxoids

2) a person is immunized with live vaccines

3) a person is immunized by minimal dose of infective agent

4) a person is exposed to biologic agents as he/ she suffers from infection

1. The contraindications for immunization w ith opv are the following:

1) patients with immunodeficiency

2) people with evolving neurologic disorders

3) household contacts of immunodeficient patients

4) mild respiratory diseases without fever

1. The contraindications for immunization with mmr are:

1) pregnancy

2) history of anaphylactic reactions to neomicines

3) postexposure prophylaxis

4) respiratory diseases with fever

1. Phases of immune response to vaccination include:

1) plateau phase

2) lag phase

3) log phase

4) decline phase

1. Appropriate schemes of immunization for hepatitis в (according to Russian schedule) are:

1) 0, 1, 3

2) 0, 1, 6

3) 0, 1, 2, 12

4) 0, 1, 2, 24

1. Infections, which are accessible for the schedule child immunoprophylaxis in Russia:

1) rotaviral infection

2) diphtheria

3) mumps

4) scarlet fever

1. Match the heterologous preparations with the material:

a) serum (plasma) of the blood donors;

b) serum (plasma) of hyper-immunized horses’ blood;

c) serum of hyper-immunized animals;

d) placental blood (of women recently confined).

1. Match the homologous preparations with the material:

a) serum (plasma) of the blood donors;

b) serum (plasma) of hyper-immunized horses’ blood;

c) serum of hyper-immunized animals;

d) placental blood (of women recently confined).

1. Match the active natural type of immunity with the way of immunity acquisition:

a) convalescents;

b) subclinical form of infection;

c) usage of live vaccine;

d) usage of inactivated vaccine.

1. Match the active artificial type of immunity with the way of immunity acquisition:

a) convalescents;

b) subclinical form of infection;

c) usage of live vaccine;

d) usage of inactivated vaccine.

1. Match the passive artificial of immunity with the way of immunity acquisition:

a) injection of heterologous immunoglobulin;

b) transmission of antibodies from mother to infant;

c) injection of homologous immunoglobulin;

d) injection of heterologous serum.

Pick a word.

1. The complex of measures for prevention and restriction of the spread of the infectious diseases, eradication some of diseases by conducting prophylactic immunization is …
2. The proportion of certain aged children, who was vaccinated, to common amount of children of a given age, being expressed in percentage, is called …
3. The share oi persons, with specific im to a certain infection in the estimated group, is …

# Lesson 10. Hospital epidemiology. Healthcare-associated infections

## Incoming control

|  |  |
| --- | --- |
| **Task** | **Answer** |
| HAIs according to the group of contracted people (affected cohort) include… | 1)  2) |
| According to the conditions of medical service HAIs are classified as… | 1)  2)  3) |
| Classification of HAIs by a reservoir of a causative agent… | 1)  2)  3) |
| Sources of HAI are… | 1)  2)  3) |
| Risk factors of HI development (three groups)… | 1)  2)  3) |

## Output control

**Case 1**. Patient K., 72 yrs, from 15.12. to 15.01. was in surgical department of hospital with the diagnosis “Gastric ulcer complicated by hemorrhage and decompensated stenosis”.

Associated diseases: diabetes mellitus.

24.12. the patient was operated (upper-median laparotomy, anterior gastroenteroanastomosis with Brown anastomosis) within an hour and 35 minutes.

The postoperative period: the patient was in intensive care unit for 24 hours, and during 10 hours artificial lung ventilation was performed

. In early postoperative period (first 24 hours after the operation) there was hemorrhage that required reintervention.

From 27.12. to 02.01. the patients temperature rose up to 37.5°C. On 30.12. infiltrate in postoperative wound site was observed in palpation.

02.01. in wound revision 5 ml of purulent sanioserous fluid was taken away. As a result of bacteriological analysis of wound discharge, Staphylococcus epidermidis was revealed.

* How can you assess the complications occurred in patient in postoperative period?
* What are risk factors o f the complication in this case?

**Answer (Case 1)**. The present state is to be classified as hospital-acquired infection, be more precise - hospital purulent septic infection. Clinical form - in surgical site infection (postoperative wound suppuration), caused by Staphylococcus epidermidis.

Risk factors related to patient’s initial state:

* severe principal disease;
* severe associated pathology accompanied by patients reduced immunity (diabetes mellitus);
* elderly age.

Factors of diagnostic and treatment process contribute fing to hospital-acquired infection development risk:

* long stay in hospital before surgery (9 days);
* the character of operation (complex and traumatic surgery);
* prolonged operationstay in intensive care unit;
* artificial lung ventilation;
* early postoperative complication;
* reintervention.

**Case 2**.Patient L. was administered out-patient treatment under the care of a surgeon from polyclinic after scheduled surgery in hospital on papilloma of scalp (resection of papilloma under local anaesthesia on 23.11.).

When seen by the doctor of out-patient department on 24.11. the patient complained of moderate pain in site of postoperative wound.

On examination: clean wound, no inflammatory signs, with slight serous discharge, stitches had been put well. Discharge was taken for bacteriological analysis.

26.11. The patient complained of the pain in the area of postoperative scar; edematous suture lines; slight hyperemia;

29.11.— complaints of throbbing pain in operative intervention site, sleep disorders. Subfebrile temperature.

Objective signs: wound edges under sutures moved apart, edematous and hyperemic suture lines, slight seropurulent discharge form wound.

The surgeon from polyclinic made the diagnosis “postoperative wound infection”.

Bacteriological test findings of wound discharge (dated 24.11.): Pseudomonas aeruginosa (10s CFU/ml) resistant to Gentamicin, Kanamycin, Cefalotin and Polymyxin was revealed.

* Refer the case to one of three PSI groups according to occurrence conditions.
* Prove your answer.

**Answer (Case 2)**. The present case can be referred to the second group of “PSI brought in polyclinic from hospital”.

Evidences:

* present history (infection occurrence immediately after being discharged from hospital);
* clinical signs of infection (complaints of tenderness in the region of postoperative scar, the presence of discharge from the wound);
* bacteriological test findings of wound discharge taken on the patient’s first visit to polyclinic after being discharged from hospital (blue pus bacillus in etiologically significant amount was revealed).

The characteristic of the strain revealed let us to suppose its hospital nature (multi-resistant strain of blue pus bacillus).

Required measures:

* record and report of the case as HAI in hospital where the patient was operated;
* filling in the record of prospective observation of HAI case;
* hospital epidemiologist informing; microbiological examination of the patient along with obligatory basteriophages of P.aeruginosa and/or pyobacteriophage sensitivity test as well as antibioticogram;
* administration of adequate antibiotic therapy relying on the sensitivity of the strain revealed to antibiotics;
* usage of bacteriophage of P.aeruginosa or pyobacteriophage in complex therapy of PSI.

**Case 3**.Patient T. consulted a surgeon in polyclinic on 4.10. on trophic ulcer of left calf. On examination on inner surface of the left calf there was extensive ulceration, 10x4 cm in size, with slight purulent discharge.

Diagnosis: varicose disease, thrombophlebitis, trophic ulcer of left calf. Wound discharge was taken for bacteriological analysis.

Bacteriological test findings of wound discharge (dated 4.10.): Staphylococcus aureus (10J CFU/ml) resistant to benzylpenicillin.

The patient was administered capsular Troxevazin, toilet of the wound and aseptic dressing with Laevomecolum ointment every other day. From 4.10. to 10.10. the patients wound was treated in pus dressing room of the surgical department of polyclinic according to doctor’s administrations.

10.10. There was aggravation of symptoms: subfebrile temperature, edema and hyperemia of left calf.

Objective signs: the wound of the same size, with “sapped” edges and profuse cacodorous purulent discharge.

Pathological material from the wound was taken for repeated bacteriological test.

Bacteriological test findings of wound discharge (dated 10.10.):

1) Staphylococcus aureus (103 CFU/ml) resistant to Benzylpenicillin;

2) Pseudomonas aeruginosa (104 CFU/ml) resistant to cephalosporins, Gentamicin, Polymyxin, Ciprofloxacin;

3) Escherihia coli (105 CFU/ml) resistant to Ampicillin, Ciprofloxacin, Tetracycline and Gentamicin.

The association of microorganisms revealed was pyobacteriophage-sensitive.

* Refer the case to one of three PSI groups according to occurrence conditions.
* What is the doctor’s action?

**Answer (Case 3)**. The present case can be referred to the third group of PSI on occurrence conditions (HAIs). The change of agent in pathological focus gives evidence of intra-polyclinic infection: antibioticsensitive Staphylococcus revealed on the first examination was associated on the 10th day of treatment by antibiotic resistant strains of Pseudomonas aeruginosa. Agent change was accompanied by associated changes (burdening) of clinical presentation of the disease.

The doctor’s actions:

* record and report of the case as intra-polyclinic purulent septic infection;
* filling the record of prospective observation of HAI case;
* polyclinic epidemiologist informing;
* further microbiological examination of the patient in dynamics;
* administration of adequate antibiotic therapy relying on the sensitivity of the strain revealed to antibiotics;
* use of pyobacteriophage in com plex PSI therapy.

**Case 4**. Patient A. consulted a surgeon in polyclinic on 19.01. complaining of the tenderness in big toe of left foot.

Diagnosis: ingrow I toenail of left foot without inflammatory signs.

The patient was scheduled an operation in out-patient department.

21.01. onychectomy was performed under local anesthesia. 'Ihe surgery was made in pus dressing room of the surgical department of polyclinic.

23.01. During regular dressing the patient complained of constant severe pain in postoperative wound.

On examination: edematous wound, with profuse sanious discharge.

The patient was administered toilet of the wound, and aseptic dressing was applied.

On 25.01. the patient complained of acute throbbing pain in left foot; I toe was hyperemic, there was profuse seropurulent discharge form wound, edema of the back of the foot.

The patient was directed to the department of purulent surgery for inpatient treatment.

* What mistakes were made by the doctor in his management of the patient?
* What measures are to be taken?
* Refer this case to one of three PSI groups according to occurrence conditions.

**Answer (Case 4)**. When treating the patient the following mistakes were made. Onychectomy and subsequent dressings (before inflammation) were to be performed in “clean” operating room as there were no infection signs. When first inflammation signs occurred (23.01.) it was necessary to take wound discharge for bacteriological test (with obligatory testing of antibiotic resistance and sensitivity to staphylococcal and/or pyobacteriophage) and before the results obtained broad-spectrum antibiotic was to be administered. The present case can be referred to the third group of “Intrapolydinic PSI" on the base of the following criteria: absence of infection sings before surgery; clinical manifestation of infection In 48 hours after the operation performed in out-patient department. The doctor's behavior: see Task 2.

# Lesson 11. International Health Regulations

## Incoming control

|  |  |
| --- | --- |
| **Task** | **Answer** |
| Year of adoption last IHR is |  |
| Features of the participation of India in IHR |  |
| Public health observation |  |
| Public health risk |  |
| Quarantine |  |

## Output control

* Algorithm of primary measures for suspected particularly dangerous infection
* Decision instrument for the assessment and notification of events that may constitute a public health emergency of international concern
* Anti-Plague Suit Policy