

I. V. FEDOROVA, Y. V. MITRAIKINA, L. V. KAMARCHUK

# EPIDEMIOLOGY

Student \_\_\_\_\_ group \_\_\_\_\_

Minsk BSMU 2024

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ  
БЕЛОРУССКИЙ ГОСУДАРСТВЕННЫЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ  
КАФЕДРА ЭПИДЕМИОЛОГИИ

**И. В. ФЕДОРОВА, Ю. В. МИТРЯЙКИНА, Л. В. КОМАРЧУК**

# ЭПИДЕМИОЛОГИЯ

# EPIDEMIOLOGY

Практикум



Минск БГМУ 2024

УДК 616-036.22(076.5)(075.8)

ББК 51.9я73

Ф33

Рекомендовано Научно-методическим советом университета в качестве практикума 26.06.2024 г., протокол № 18

Р е ц е н з е н т ы: канд. мед. наук, доц., доц. каф. микробиологии, вирусологии, иммунологии Белорусского государственного медицинского университета Е. Ю. Кирильчик; каф. доказательной медицины и клинической диагностики ФПК и ПК Витебского государственного ордена Дружбы народов медицинского университета

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Содержит учебные задания для самостоятельной работы и иллюстрации по общей и частной эпидемиологии, вакцинопрофилактике инфекционных болезней.

Предназначен для студентов 3-го курса медицинского факультета иностранных учащихся, обучающихся на английском языке по специальности «Лечебное дело».

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## Class № 1. BASIC EPIDEMIOLOGICAL NOTIONS

### Questions for self-control:

1. Give the definition of notion «epidemiology». Name the object and subject of study in epidemiology.
2. Explain the significance of each factor (biological, natural and social) in the epidemic process.
3. Determine how different theories (self-regulation, the transmission mechanism) explain of the mechanism of epidemic process development.
4. Explain the manifestations of the epidemic process from the standpoint of the self-regulation theory.

### Basic epidemiological notions

The epidemic process is \_\_\_\_\_

The source of infection is \_\_\_\_\_

Who can be the source of infection among people? 1. \_\_\_\_\_ 2. \_\_\_\_\_

The transmission mechanism is \_\_\_\_\_

The transmission factors are \_\_\_\_\_

The route of transmission is \_\_\_\_\_

The epidemic focus is \_\_\_\_\_

**The modern doctrine of the epidemic process includes 3 sections**

1.

2.

3.

**Factors of the epidemic process**

*Name them and compare with their examples*

The contagiousness  
of a pathogen

The healthcare system

The climate and the weather

The susceptibility  
to infectious diseases

The landscape  
and geographical conditions

1.

2.

3.

The migration of the population

The presence of organized  
collectives

The level of sanitary culture  
of the population

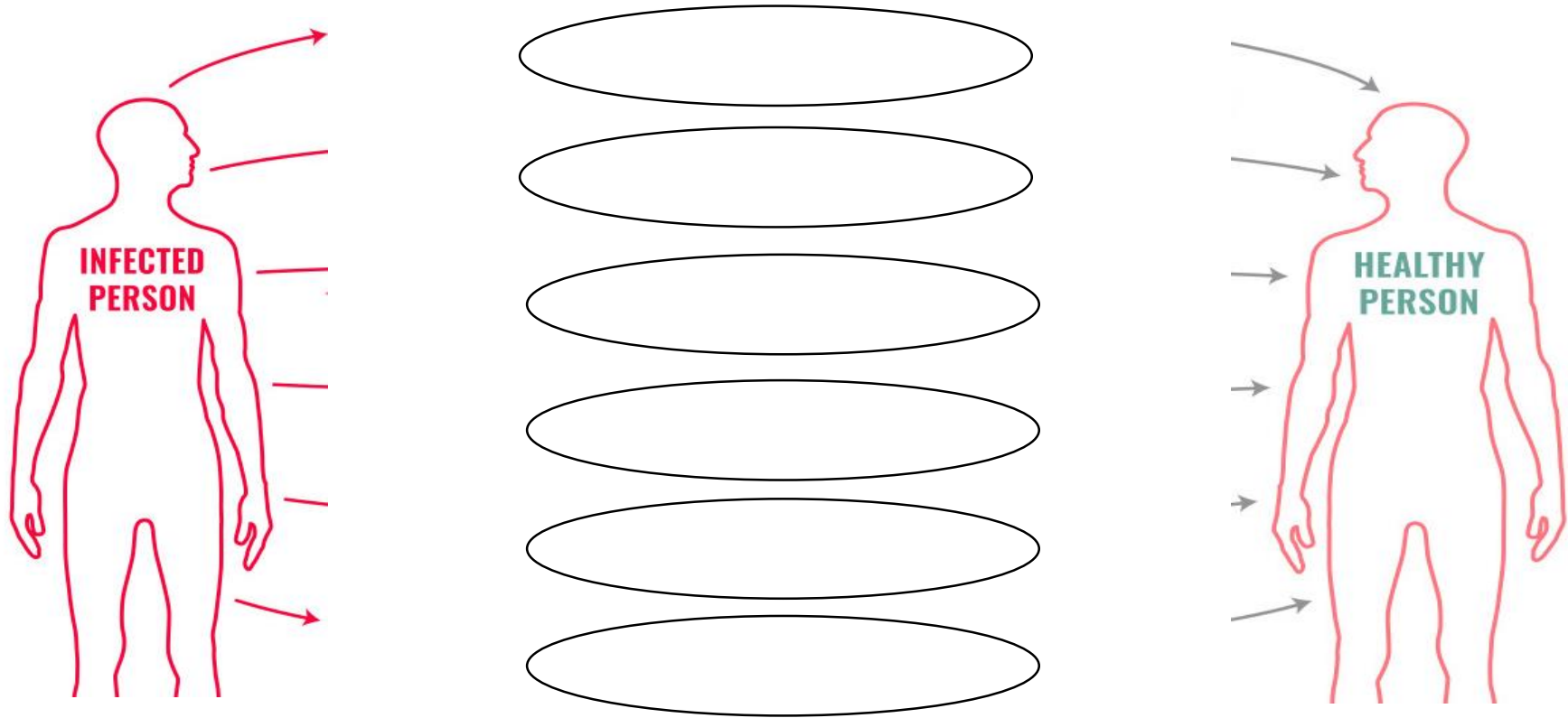
The state of the immune system

The species composition  
of animals

**Transmission mechanism includes 3 phases**



**The main groups of factors of transmission of the causative agent of an infectious disease**



### Mechanisms of infectious diseases transmission

<b>Mechanism of transmission</b>	<b>Localazation of the pathogen in human body</b>	<b>Factors of transmission</b>	<b>Routes of transmission of infection</b>	<b>Examples of infectious diseases (3–4)</b>
<b>Aerosol</b>				
<b>Fecal-oral</b>				
<b>Vector-borne</b>				
<b>Contact</b>				
<b>Vertical</b>				

**Artificial mechanism of infection of the causative agent**

Sources of infection	Routes of infection	Factors of infection	Examples of infectious diseases (3–4)
1. 2. 3.	1. 2. 3. 4.		

**Manifestations of the epidemic process**

\_\_\_\_\_ is an incidence, unusual for the area; it occurs as a result of introduction of the pathogen from outside of the host's body or objects of the external environment.

\_\_\_\_\_ is mass distribution among people of infectious diseases of the same name covering the country (city, collective) and originating from a common source of infection or common pathways, as well as related chain of infections.

\_\_\_\_\_ is the frequency of infectious diseases; expressed as indexes (ratios) per 100,000, 10,000 or 1,000 population. These indicators allow us to compare the incidence in different populations, at different times, in different areas.

\_\_\_\_\_ are age, professional and other groups, among which the incidence is higher than among other groups.

\_\_\_\_\_ is time periods characterized by higher levels of morbidity than in other periods.

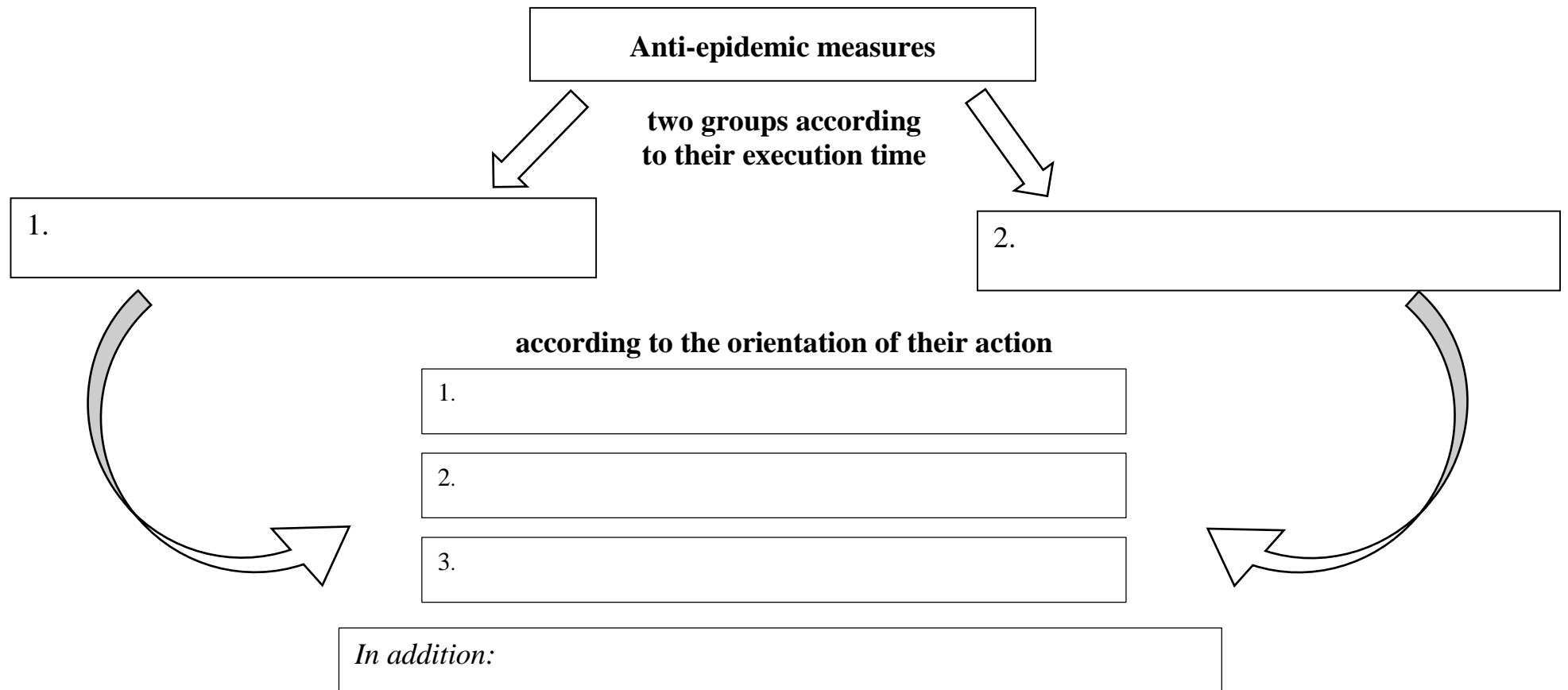
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## Class № 2. ANTI-EPIDEMIC MEASURES AND MEANS

### Questions for self-control:

1. Define the concept «anti-epidemic measures».
2. Give the definition of term «anti-epidemic means».
3. Divide anti-epidemic measures into groups according to their implementation time.
4. Distribute preventive measures according to the direction of action.



**Compare antiepidemic measures, the direction of their action and the antiepidemic agents used**

- Antibiotics
- Bacterial raticides
- Chemical disinfectants
- Immune sera
- Repellents
- Vaccines
- Insecticides
- Acaricides
- Immunoglobulins
- Chemical raticides

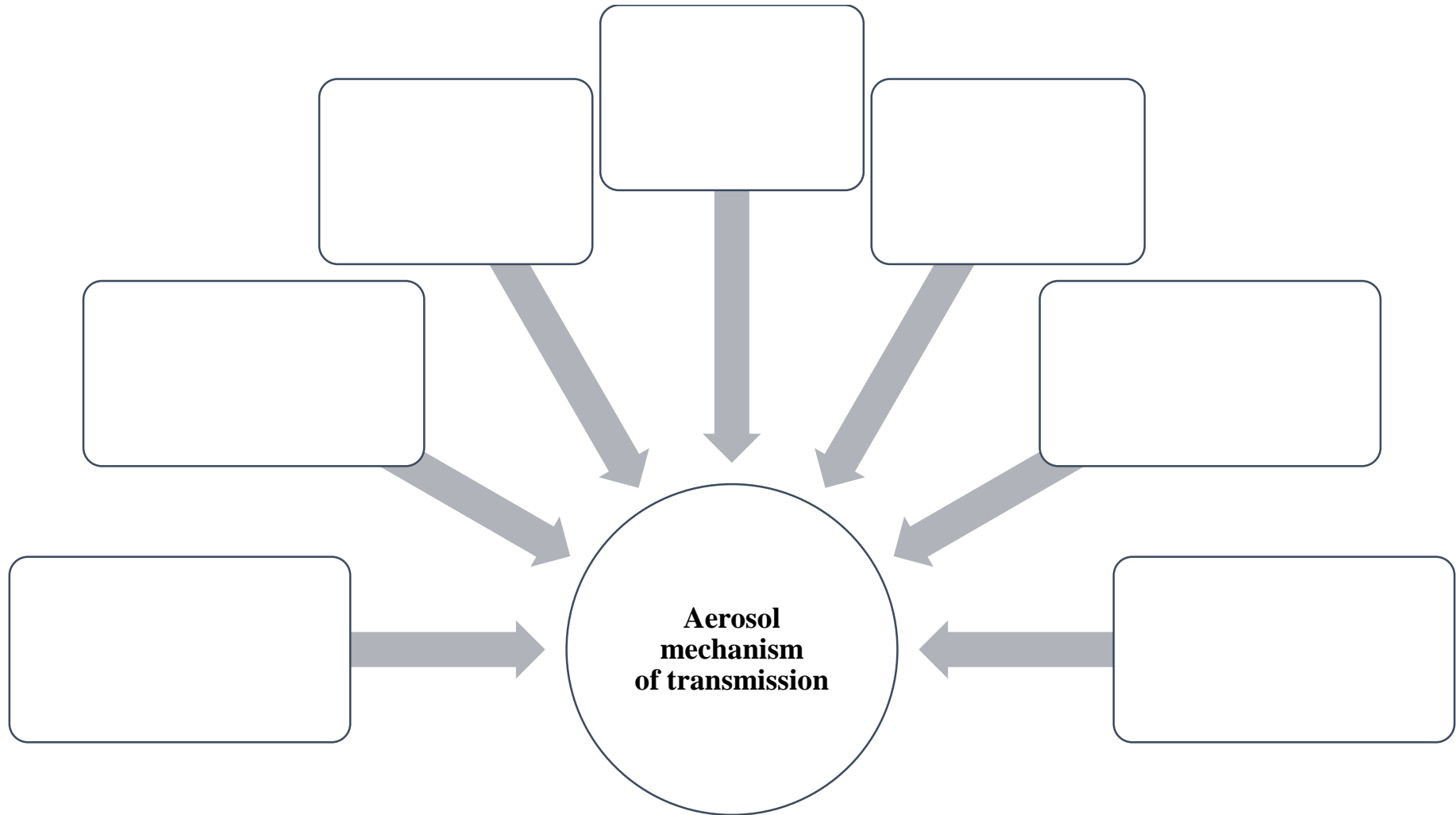
- Dsinfektion
- Disinsection
- Treatment
- Immunoprophylaxis
- Deratization
- Emergency prevention

1. Activities aimed at

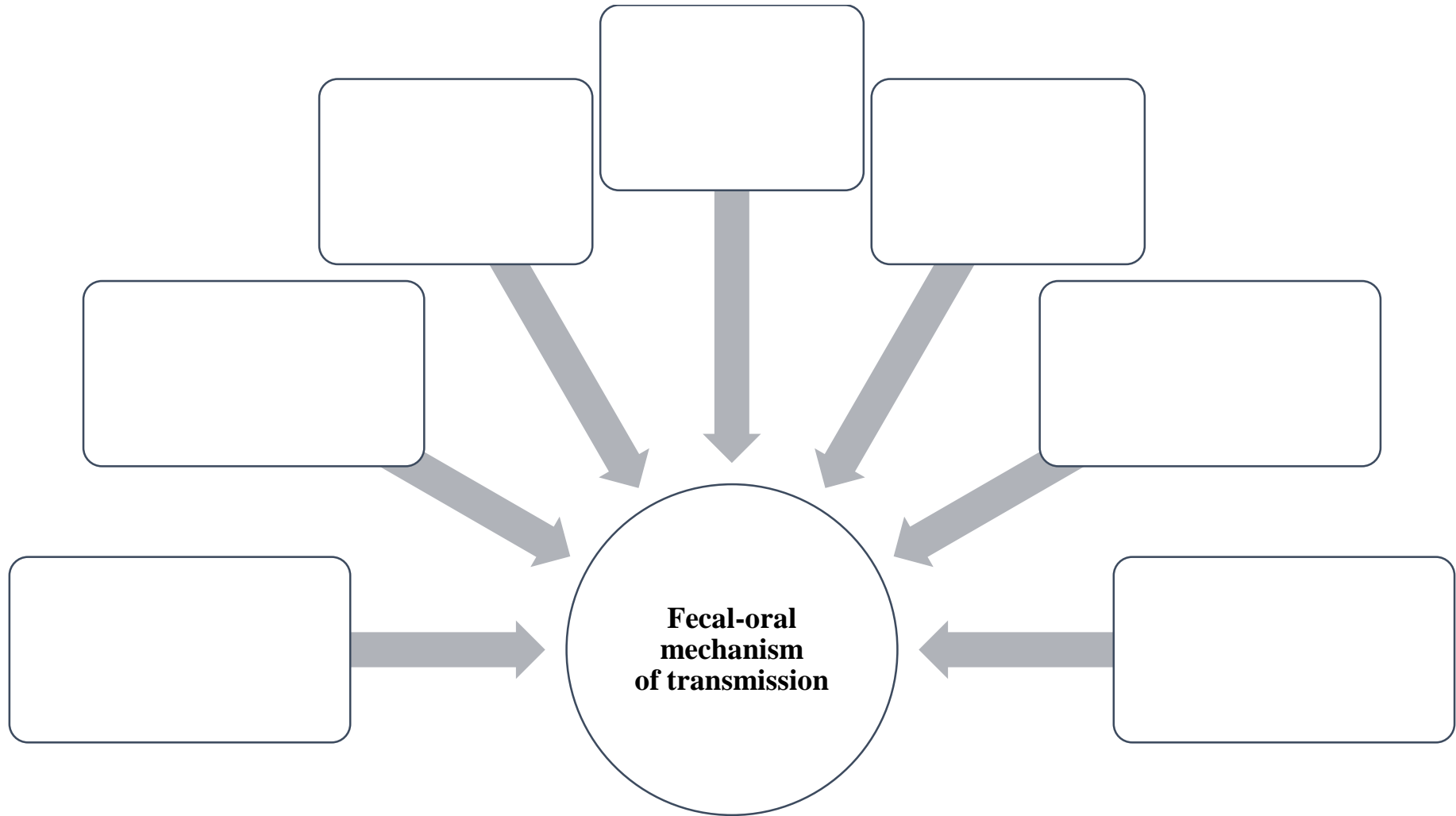
2. Activities aimed at

3. Activities aimed at

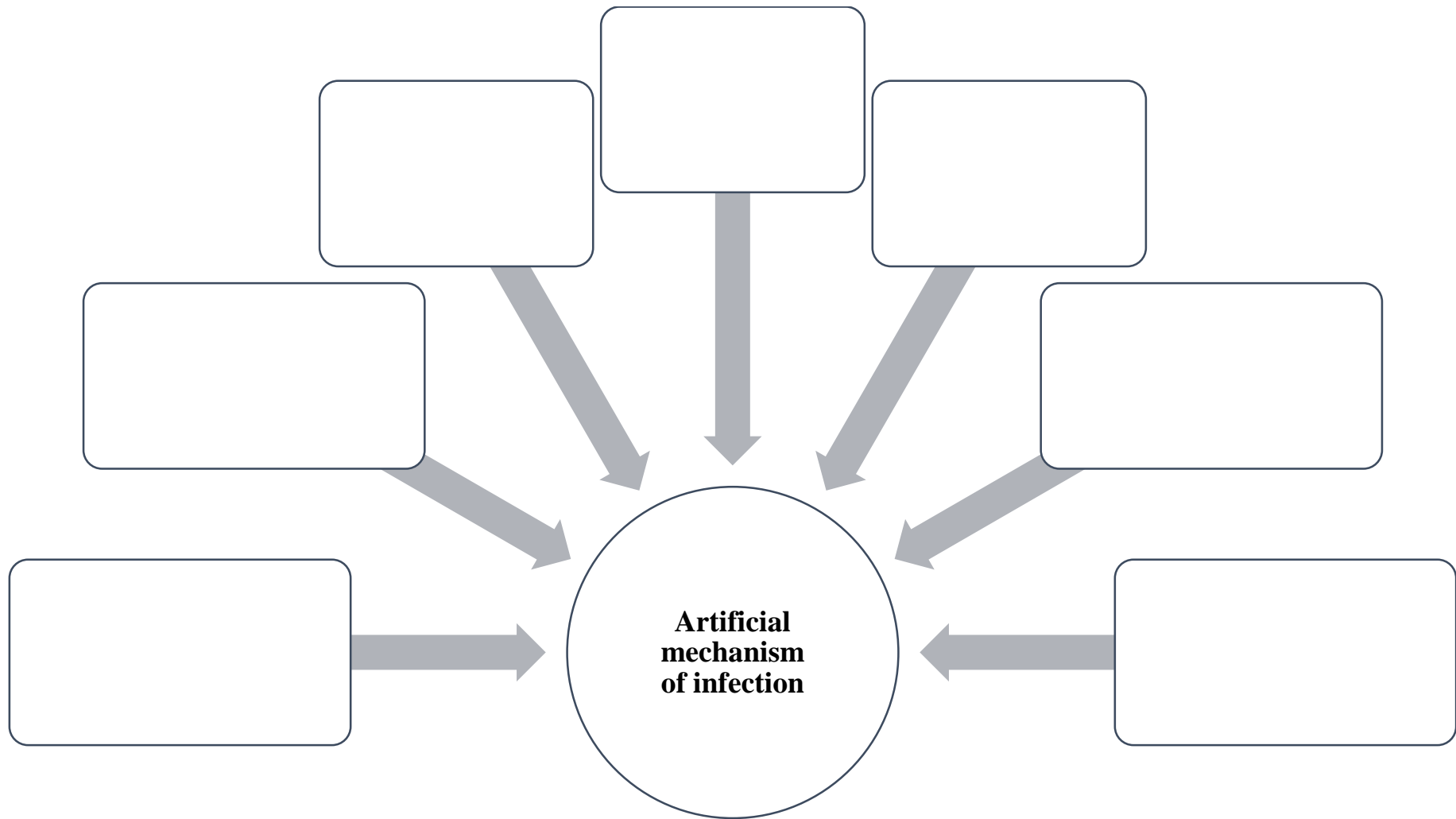
**Prevention of the aerosol mechanism of transmission of the causative agent**



**Prevention of the fecal-oral mechanism of transmission of the causative agent**



**Prevention of the artificial mechanism of infection of the causative agent**



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**Class № 3. ORGANIZATION OF ANTI-EPIDEMIC WORK IN OUTPATIENT CLINICS AND MEDICAL AND PREVENTIVE ORGANIZATIONS**

**Questions for self-control:**

1. Specify the main objectives of anti-epidemic measures in healthcare organizations.
2. Distribute the activities conducted in the epidemic focus according to the direction of action.
3. Describe the measures aimed at the source of the infection in the epidemic focus.
4. Describe the activities for contact persons in the epidemic focus.

**Epidemic control measures in health care organizations**

**Disinfection is** \_\_\_\_\_

\_\_\_\_\_

**Sterilization is** \_\_\_\_\_

\_\_\_\_\_

**Antiseptics is** \_\_\_\_\_

\_\_\_\_\_

**Asepsis is** \_\_\_\_\_

\_\_\_\_\_

**Methods of disinfection of medical devices**

*Name and give an example*

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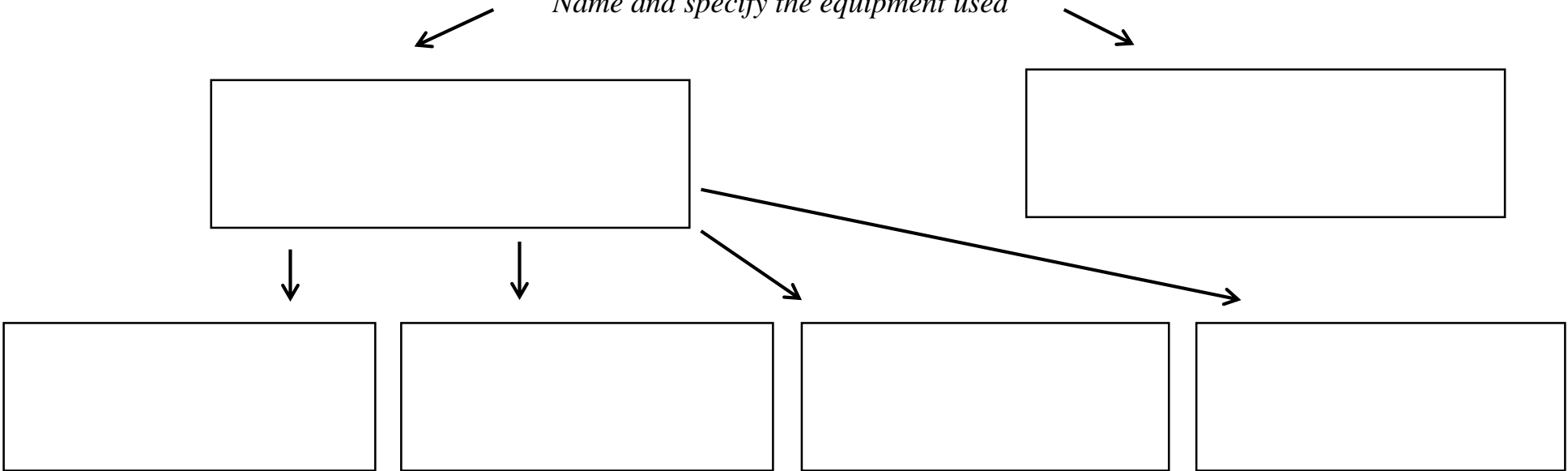
### Stages of sterilization of medical devices

*Name and describe*

1.	2.	3.
----	----	----

### Methods of sterilization of medical devices

*Name and specify the equipment used*



**Activities in the epidemic focus**

<b>Measures aimed at the <i>source of infection</i></b>	<b>Activities aimed at the <i>transmission mechanism</i></b>	<b>Activities in regard to persons who communicate with the source of infection (<i>contact persons in the focus</i>)</b>
1.	1.	1.
2.		2.
3.		3.
4.	2.	4.
5.		5.
6.		6.
7.	3.	7.
8.		
9.		

**Signature of the tutor** \_\_\_\_\_ **Date** \_\_\_/\_\_\_/\_\_\_/



**Class № 4. ORGANIZATIONAL AND METHODOLOGICAL ISSUES OF IMMUNOPROPHYLAXIS  
OF INFECTIOUS DISEASES: GENERAL REQUIREMENTS FOR THE ORGANIZATION OF VACCINATIONS;  
TECHNICAL REGULATIONS ON IMMUNOPROPHYLAXIS; NATIONAL CALENDAR OF PREVENTIVE  
VACCINATIONS; PREVENTIVE VACCINATIONS FOR EPIDEMIC INDICATIONS;  
PLANNING OF PREVENTIVE VACCINATIONS**

**Questions for self-control:**

1. Give the definition «immunity». Describe the main categories of immunity.
2. Give the definition «body’s immune response». Describe the primary and secondary immune response of the body.
3. Name basis for inclusion of vaccines in the National Immunization Schedule.
4. Name the population groups that are subject to vaccination for epidemic indications.

**Factors influencing the development of post-vaccination immunity**

<b>Immunobiological medicine (IBM)</b>	<b>Microorganism-dependent factors</b>	<b>Factors that depend on the external environment</b>
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.
5.		5.
6.		
7.		

**National Preventive Immunization Schedule  
of the Republic of Belarus**

<b>Patient's age</b>	<b>List of name of vaccines</b>
newborns of the first 12 hours of life	
newborns on the 3–5th day of life	
2 months	
3 months	
4 months	
from 6 months	
12 months	
18 months	
6 years	
7 years	
11 years	
16 years and every 10 years until the age of 66	

**National Preventive Immunization Schedule  
of your country (specify the name of the country)**

<b>Patient's age</b>	<b>List of vaccine name or the name of the infection</b>

**The main characteristics of vaccine preparations**

<b>Type of vaccine. Vaccine Technology Platform</b>	<b>The composition of the vaccine. What is included in the vaccine?</b>	<b>Advantages and pros</b>	<b>Disadvantages and cons</b>	<b>Examples of infectious diseases</b>
<b>Live attenuated vaccine</b>				
<b>Inactivated corpus- cular vaccine (killed)</b>				
<b>Chemical vaccine</b>				
<b>Conjugated vaccine</b>				
<b>Vaccine by recombinant producers</b>				
<b>Vaccine by recombinant vectors</b>				

**The main characteristics of vaccine preparations**

<b>Type of vaccine. Vaccine Technology Platform</b>	<b>The composition of the vaccine. What is included in the vaccine?</b>	<b>Advantages and pros</b>	<b>Disadvantages and cons</b>	<b>Examples of infectious diseases</b>
<b>Nucleic acids (DNA, RNA)</b>				
<b>Subunit vaccine</b>				
<b>Split vaccine</b>				
<b>Virosomal</b>				
<b>Peptides</b>				
<b>Toxoid</b>				

**Signature of the tutor** \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/\_\_\_\_/

**Class № 5. ORGANIZATIONAL AND METHODOLOGICAL ISSUES OF IMMUNOPROPHYLAXIS OF INFECTIOUS DISEASES: REQUIREMENTS FOR THE DEVICE AND EQUIPMENT OF VACCINATION OFFICES OF ORGANIZATIONS; REQUIREMENTS FOR TRANSPORTATION AND STORAGE OF IMMUNOBIOLOGICAL MEDICINES; REQUIREMENTS FOR PREVENTIVE VACCINATIONS**

**Questions for self-control:**

1. List the requirements for the device and equipment of vaccination offices of organizations.
2. Name the main requirements for transportation and storage of immunobiological medicines (IBM).
3. Give the definition «immunization safety». What does the immunization safety system include?
4. Describe the injection safety and waste recycling.

**Requirements for preventive vaccinations**

An 11-year-old patient came to an appointment with his mother for another vaccination in accordance with the National Preventive Immunization Schedule.

1. What should the doctor tell the mother and the patient before vaccination? \_\_\_\_\_

\_\_\_\_\_

2. What does a medical examination before vaccination include? \_\_\_\_\_

\_\_\_\_\_

3. What are the actions of the nurse before the introduction of the vaccine? \_\_\_\_\_

\_\_\_\_\_

4. What should be done after the vaccination? \_\_\_\_\_

\_\_\_\_\_

## Requirements for transportation and storage of immunobiological medicines

1. Define the concept of «cold chain system» \_\_\_\_\_

---

2. The cold chain system comprises three main elements:

1.

2.

3.

3. Specific requirements for IBM storage in the Inoculation office.

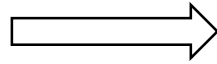
Specify the correct statements:

- The vaccination room in newly built polyclinics for children should include a separate room for immunization against tuberculosis and a tuberculin test.
- Immunoprophylaxis against tuberculosis and tuberculin tests should be carried out on a special table used only for these purposes.
- In the vaccination room, the number of doses in the refrigerator should correspond to the number of vaccinations scheduled for 2 months.
- The arrangement of IBM packages in the refrigerator should ensure that cooling air is available to each package.
- Other medicines can be stored in the IBM refrigerator.
- IBM products of the same name must be stored in the same batch, taking into account the expiration date.
- Temporary storage of the vaccine at the bottom of the refrigerator is allowed.
- IBM with a shorter shelf life should be used first.
- The volume of the stored IBM products should not exceed two thirds of the volume of the refrigerator compartment.

## Correct storage of vaccines in the refrigerator

1. Place the following immunobiological preparations in the refrigerator:

DTaP, BCG, IPV, OPV, HBV, DT,  
the solvents to live IBM.

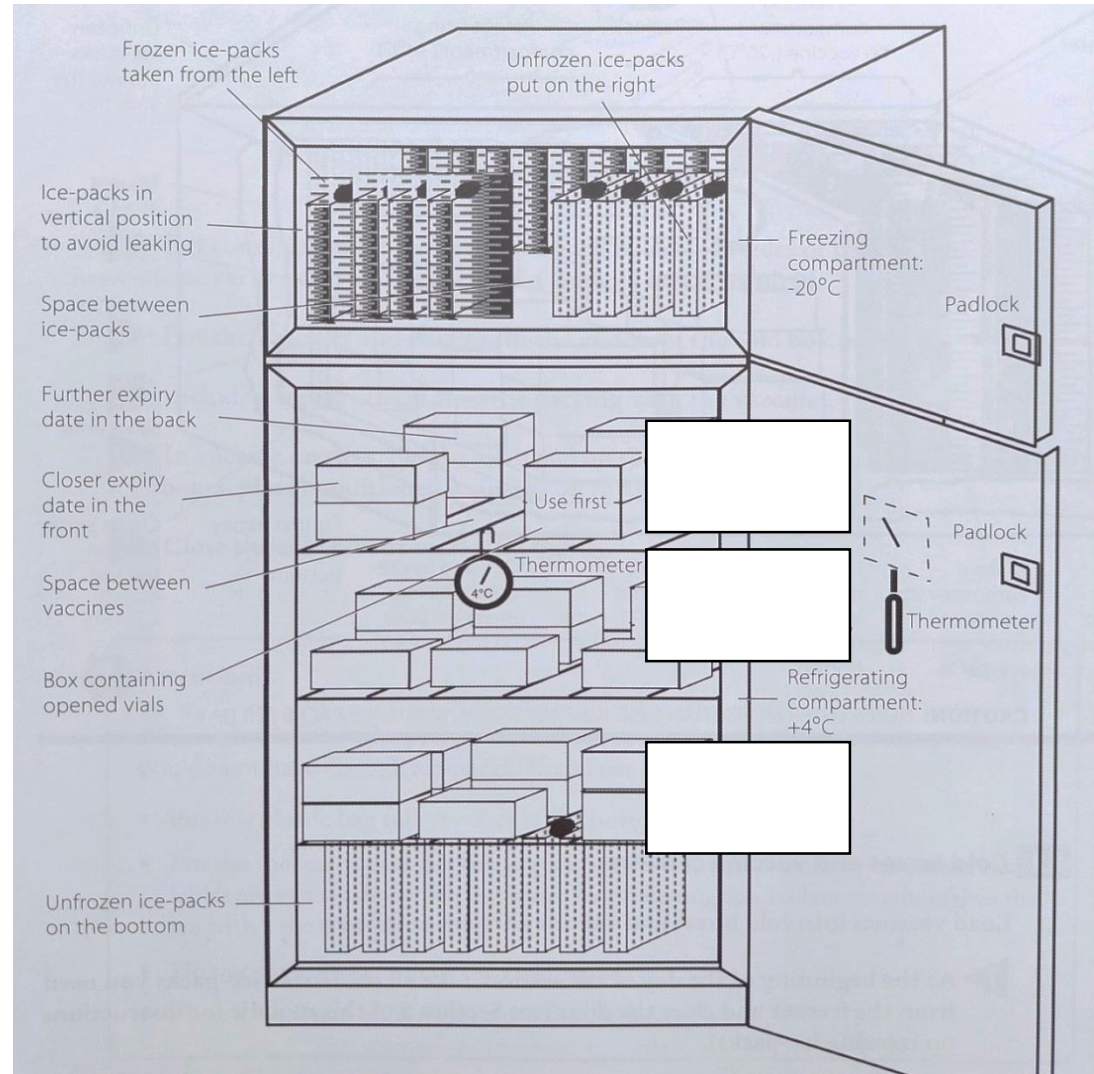


2. Specify the limits of the temperature of storage and transportation of most vaccine preparations

3. Which vaccines can be frozen during long-term storage

4. Specify what is used to control the storage temperature of vaccines

1.
2.



Signature of the tutor \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_/

**Class № 6. ORGANIZATIONAL AND METHODOLOGICAL ISSUES OF IMMUNOPROPHYLAXIS OF INFECTIOUS DISEASES: THE CONCEPT OF ADVERSE REACTIONS TO PREVENTIVE VACCINATIONS: TYPES, DETECTION, REGISTRATION, INVESTIGATION, EVALUATION OF THE QUALITY AND EFFECTIVENESS OF IMMUNOPROPHYLAXIS**

**Questions for self-control:**

1. Formulate the concept of «adverse reactions (side effects)».
2. Describe mechanism for adverse reactions monitoring.
3. Name and describe groups of medical contraindications to vaccination.
4. Describe evaluation of the quality and effectiveness of immunoprophylaxis.

**The concept of adverse reactions to preventive vaccinations**

**Adverse events** after vaccination (AEAV) are \_\_\_\_\_

\_\_\_\_\_

**Adverse reactions** (side effects) are \_\_\_\_\_

\_\_\_\_\_

**Adverse reactions monitoring** is \_\_\_\_\_

\_\_\_\_\_

**Signs of poor-quality medicines:** 1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_



## The types of adverse reactions to preventive vaccinations

Specify the type of adverse reactions according to its definition and connect it with the correct examples from the list:

1. Reactions established by the instruction on application, disappear without medical intervention. They don't require registration.

1.

Skin abscess

2. Reactions are reactions of a general nature in the form of temperature rise over 40 °C or local in the form of edema and hyperemia of more than 8 cm in diameter manifested within two days after the administration of IBM.

2.

Lymphadenitis

Soreness at the injection site

3. Reactions require medical intervention involving hospitalization, they are detrimental to the health of the patient.

3.

Anaphylactic shock

Fatigue, decreased appetite

4. Reactions are reactions the information about which is absent in the instructions on medical application and (or) in the package leaflet.

4.

Encephalopathy

Seizures

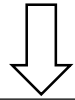
Headache

**What should be done to minimize the risks of adverse reactions?**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**Medical contraindications to vaccination are divided into three groups**

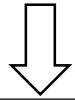
1. \_\_\_\_\_  
(up to one month)



*Examples*

1.  
2.  
3.

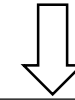
2. \_\_\_\_\_  
(from 1 to 3 months, up to 1 year)



*Examples*

1.  
2.  
3.

3. \_\_\_\_\_  
(1 year or more)



*Examples*

1.  
2.  
3.

Contraindications to all live vaccines:

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_

**Specify the correct statements:**

- Routine vaccination is carried out after disappearance of acute manifestations and in the state of complete or maximum possible remission.
- Exacerbation of a chronic disease is a temporary indication for vaccination.
- The decision on the establishment permanent medical contraindications can be made by pediatrician (physician).

**Signature of the tutor** \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/\_\_\_\_/

**Class № 7. IMMUNOPROPHYLAXIS OF INFECTIOUS DISEASES INCLUDED  
IN THE NATIONAL SCHEDULE OF PREVENTIVE VACCINATIONS: VIRAL HEPATITIS B,  
TUBERCULOSIS, DIPHTHERIA, WHOOPING COUGH, TETANUS**

**Questions for self-control.**

Make a characteristic of:

- **recombinant vaccine against viral hepatitis B (HBV)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **BCG, BCG-M vaccines**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **pertussis-diphtheria-tetanus vaccine (DTaP/DTwP/Dtap)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **adsorbed diphtheria-tetanus toxoid (DT)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **adsorbed diphtheria-tetanus toxoid with a reduced content of antigens (Td)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **adsorbed diphtheria toxoid (Dt)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **adsorbed tetanus toxoid (Tt)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization.

### Viral hepatitis B immunoprophylaxis

Name of the vaccine	Type of the vaccine (live (attenuated), inactivated etc.)	The composition of the vaccine	Method of administration and dosage	Contraindications	Adverse reactions
<b>HBV</b>					
<p><i>Vaccination schemes</i></p> <p>according to the National Preventive Immunization Schedule(NPIS):</p> <p>short scheme:</p> <p>regular scheme:</p>				<p><i>Epidemiological indications</i></p> <ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> <li>5.</li> </ol>	

**Viral hepatitis B immunoprophylaxis** (*continuation*)

<i>Vaccination schemes</i>	<i>Vaccination is recommended</i>
<p>For children who was born to HBsAg-positive mothers or unknown mother's HBsAg status:</p> <p>People on hemodialysis and regularly receiving blood products:</p>	

**TASK 1**

Patient M, 46 years old, is preparing for planning surgery on the gastrointestinal tract. The operation is scheduled in 2 months. The patient is not vaccinated against viral hepatitis B.

***The Questions:***

1. Describe the vaccine for preventive immunization against viral hepatitis B.
2. Prescribe a vaccination regimen, dosage and explain the method of administration.
3. Specify the dates when the patient should come to the clinic for vaccination.

***The answers:***

### Tuberculosis immunoprophylaxis

Name of the vaccine	Type of the vaccine (live (attenuated), inactivated etc.)	The composition of the vaccine	Method of administration and dosage	Contraindications	Adverse reactions
<b>BCG, BCG-M</b>					
<p style="text-align: center;"><i>Vaccination schemes</i></p> <p>According to the NPIS:</p> <p>Children over the age of two months who are not vaccinated:</p>				<p style="text-align: center;"><i>A local specific reaction On BCG, BCG-M</i></p>	

### Tuberculosis immunodiagnosis (*continuation*)

	<b>The mantoux test</b>	<b>The diaskin test</b>
What components does the allergology test contain?		
The allergology test is used for:	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> </ol>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> </ol>
The results of the allergology test:	<ol style="list-style-type: none"> <li>1. negative —</li> <li>2. questionable —</li> <li>3. positive —</li> <li>4. hyperergic —</li> </ol>	<ol style="list-style-type: none"> <li>1. «injection reaction» or «bruise» of 2–4 mm in size</li> <li>2. doubtful —</li> <li>3. positive:               <ul style="list-style-type: none"> <li>– weakly</li> <li>– moderate</li> <li>– pronounced</li> <li>– hyperergic</li> </ul> </li> <li>4. negative —</li> </ol>

### Tuberculosis immunodiagnosis (*continuation*)

	<b>The mantoux test</b>	<b>The diaskin test</b>
Method of administration and dosage		
Contraindications		

#### **TASK 2**

Determine the schedule of vaccination of a child in the maternity hospital, born on 11/12/2024, weight 2300g., mother is a carrier of HBsAg.

#### ***The Questions:***

1. Describe the IBM for preventive immunization.
2. Prescribe a vaccination regimen, dosage and explain the method of administration.
3. Specify the dates when the child should receive IBM.

#### ***The answers:***



**Diphtheria, whooping cough, tetanus immunoprophylaxis**

<b>Name of the vaccine</b>	<b>Type of the vaccine (live (attenuated), inactivated etc.)</b>	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
<b>D<sub>w</sub>TP</b>					
<b>DT<sub>a</sub>P</b>					
<b>DT</b>					
<b>Td</b>					
<b>Dt</b>					

**Diphtheria, whooping cough, tetanus immunoprophylaxis (continuation)**

<i>Vaccination schemes</i>	<i>Epidemiological indications</i>
according to the NPIS:	for the pertussis vaccinations:
If a child who has pertussis:	1.  2.
If a child has a serious adverse reaction to the first administration of DTwP:	for the diphtheria vaccinations: 1.
If 12 months or more have passed after the second vaccination with DTwP or DTaP:	2.  3.  4.

**Diphtheria, whooping cough, tetanus immunoprophylaxis** (*continuation*)

<i>Vaccination schemes</i>	<i>Epidemiological indications</i>
Children aged 1–6 years who haven't previously been immunized:	for the tetanus immunoprophylaxis:
Persons 7 years of age and older who haven't previously been immunized:	<ol style="list-style-type: none"><li>1.</li><li>2.</li><li>3.</li><li>4.</li><li>5.</li><li>6.</li><li>7.</li></ol>

**Signature of the tutor** \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/\_\_\_\_/

**Class № 8. IMMUNOPROPHYLAXIS OF INFECTIOUS DISEASES INCLUDED IN THE NATIONAL SCHEDULE OF PREVENTIVE VACCINATIONS: IMMUNOPROPHYLAXIS OF POLIO, MEASLES, RUBELLA, MUMPS**

**Questions for self-control.**

Make a characteristic of:

- **oral polio vaccine (OPV), inactivated polio vaccine (IPV)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **MMR live attenuated combined vaccine against measles, mumps and rubella**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization.

**Measles, mumps and rubella immunoprophylaxis**

<b>Name of the vaccine</b>	<b>Type of the vaccine (live (attenuated), inactivated etc.)</b>	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
MMR					

**Measles, mumps and rubella immunoprophylaxis (continuation)**

<i>Vaccination schemes</i>	<i>The interval between vaccination MMR and Mantoux test</i>
according to the NPIS:  children who have had measles, mumps or rubella:  persons receiving blood products:	

**TASK 1**

Make an individual vaccination calendar for a child aged 10 months to 18 years. It is known that the child had a history of immediate allergic reactions to neomycin. Up to 10 months vaccinated according to the calendar.

***The Questions:***

1. Name the vaccines for preventive immunization.
2. Prescribe the vaccination schedule, dosage and explain the method of administration.
3. Specify the age when the patient should come to the clinic for vaccination.

***The answers:***

### Polio immunoprophylaxis

<b>Name of the vaccine</b>	<b>Type of the vaccine (live (attenuated), inactivated etc.)</b>	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
<b>OPV</b>					
<b>IPV</b>					

**Polio immunoprophylaxis (*continuation*)**

<i>Vaccination schemes</i>	<i>Epidemiological indications</i>
According to the NPIS:	1.
Persons who don't have preventive vaccinations:	2.

**TASK 2.** Pair up: *infectious disease — vaccine.*

BCG
MMR
IPV
DT
OPV
HBV

Viral hepatitis B
Diphtheria-tetanus
Whooping cough
Tuberculosis
Measles, rubella, mumps
Polio

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**Class № 9. IMMUNOPROPHYLAXIS OF INFECTIOUS DISEASES INCLUDED IN THE NATIONAL SCHEDULE OF PREVENTIVE VACCINATIONS: IMMUNOPROPHYLAXIS OF HIB-INFECTION, PNEUMOCOCCAL INFECTION, INFLUENZA. TEST ON DRAWING UP INDIVIDUAL IMMUNIZATION SCHEDULE**

**Questions for self-control.**

Make a characteristic of:

- **influenza vaccines:** indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **vaccine against Hib-infection:** indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **vaccines against pneumococcal infection:** indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization.

**Influenza immunoprophylaxis**

<b>Type of the influenza vaccines (live (attenuated), inactivated etc.)</b>	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
<p align="center"><b>Live vaccines</b> for children over 3 years old and adults</p>				



**Influenza immunoprophylaxis** (*continuation*)

<b>Type of the influenza vaccines</b> (live (attenuated), inactivated etc.)	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
<p><b>Inactivated vaccines:</b>                      corpuscular vaccines                      (from 7 years of age);</p> <p>split vaccines                      (from 6 months of age);</p> <p>subunit vaccines                      (from 6 months of age);</p> <p>virosomal vaccines                      (from 6 months of age);</p>				
<i>Vaccination schemes</i>			<i>Influenza vaccination is carried out for the following groups (NPIS)</i>	

### Immunoprophylaxis of infection caused by haemophilus influenzae type B

Name of the vaccine	Type of the vaccine (live (attenuated), inactivated etc.)	The composition of the vaccine	Method of administration and dosage	Contraindications	Adverse reactions
<b>Hib</b>					
<p style="text-align: center;"><i>Vaccination schemes</i></p> <p>According to the NPIS:</p>  <p>For children who didn't receive vaccinations against Hib infection before they reached the age of 5 years</p>				<p style="text-align: center;"><i>List the purulent-septic diseases caused by Haemophilus influenzae type B</i></p>	

### Pneumococcal infection immunoprophylaxis

Name of the vaccine	Type of the vaccine (live (attenuated), inactivated etc.)	The composition of the vaccine	Method of administration and dosage	Contraindications	Adverse reactions
<b>PCV</b>					
<p style="text-align: center;"><b><i>Vaccination schemes</i></b></p> <p>According to the NPIS:</p> <p>The polysaccharide vaccine:</p> <p>The conjugated pneumococcal vaccines: up to 12 months of life</p> <p>12–23 months of life:</p> <p>2–5 years old :</p>				<p style="text-align: center;"><b><i>Risk groups of pneumococcal etiology infections</i></b></p>	

**Check the following phrases. Put a «+» sign if you agree, or a «-» sign if the phrase is not correct**

<b>№</b>	<b>The phrases about immunoprophylaxis</b>	<b>Yes</b>	<b>No</b>
1.	Persons in close contact (relatives, medical workers) with children under the age of 12 months are vaccinated against tuberculosis according to epidemic indications		
2.	Children who have contraindications for the DTWP administration are not given vaccines against pertussis, diphtheria and tetanus at all		
3.	Preventive vaccinations against pertussis using DTwP vaccines are given to children aged 2 months to 4 years		
4.	There are only inactivated polio vaccine for vaccination against polio		
5.	The minimum interval between preventive vaccinations with IPV in the initial series is 6 weeks		
6.	IPV is indicated for vaccination of persons with immunodeficiency		
7.	Passive measles and rubella prophylaxis is carried out by normal human immunoglobulin		
8.	The 4-valent vaccine is recommended for active immunization against measles, mumps, rubella and chickenpox in the age group from 9 months to 12 years		
9.	The minimum interval between the first and second vaccinations against measles, mumps and rubella is 1 year		
10.	HIV infection is not a contraindication for the MMR vaccination		
11.	Preventive immunization against Hib- infection recommended for children aged 2 months to 5 years with a chronic hepatitis, liver cirrhosis, chronic kidney diseases, removed spleen, diabetes mellitus, immunodeficiency states, chronic heart diseases, lungs, etc.		
12.	Healthy children over the age of 5 don't need a Hib vaccine		
13.	Vaccination against pneumococcal infection using the pneumococcal conjugate vaccine is recommended for all children aged 2–59 months and is given to children under 5 years of age who have some diseases or conditions		

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**Class № 10. IMMUNOPROPHYLAXIS OF INFECTIOUS DISEASES ACCORDING TO EPIDEMIC INDICATIONS: HEPATITIS A, CHICKENPOX, INFLUENZA**

**Questions for self-control.**

Make a characteristic of:

- **hepatitis A**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **chickenpox vaccines**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization.

**Immunoprophylaxis of hepatitis A**

<b>Name of the vaccine</b>	<b>Type of the vaccine (live (attenuated), inactivated etc.)</b>	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
<b>HAV</b>					

## Immunoprophylaxis of hepatitis A (*continuation*)

<i>Vaccination schemes</i>	<i>Indications for vaccination HAV</i>
	<p>In areas of high endemicity:</p>          <p>In areas with low to moderate endemicity:</p>



**WHO position paper on hepatitis A vaccines.**

### Immunoprophylaxis of chickenpox

<b>Name of the vaccine</b>	<b>Type of the vaccine (live (attenuated), inactivated etc.)</b>	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
<b>Chickenpox</b>					
<i>Vaccination schemes</i>					

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**Class № 11. IMMUNOPROPHYLAXIS OF INFECTIOUS DISEASES ACCORDING TO EPIDEMIC INDICATIONS: TETANUS AND RABIES**

**Questions for self-control.**

Make a characteristic of:

- **emergency rabies prevention**: indications, doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **adsorbed tetanus toxoid (Tt)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **tetanus human immunoglobulin (TI)**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **tetanus serum**: indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization.

**Rabies immunoprophylaxis**

	<b>Pre-exposure prophylaxis</b>	<b>Post-exposure prophylaxis</b>
Prophylaxis is carried out to persons	1. 2. 3. 4. 5. 6. 7.	



**Rabies immunoprophylaxis** (*continuation*)

	<b>Pre-exposure prophylaxis</b>	<b>Post-exposure prophylaxis</b>
Immunobiological medicines (IBM)	1.	1. 2.
Tactics of the using of the vaccine (vaccination scheme)		
Tactics of the using of the anti-rabies immunoglobulin	—	
Nonspecific prophylaxis	—	

### Immunobiological medicines (IBM) for prevention rabies

Name of the immunobiological medicines (IBM)	The composition of the IBM	Method of administration and dosage	Contraindications	Adverse reactions
The lyophilized anti-rabies vaccine for humans (vaccine)			Pre-exposure prophylaxis:  Post-exposure prophylaxis:	
The homologous immunoglobulins				
The heterologous immunoglobulins				

**Allergology test of individual sensitivity to horse protein:**

- 1.
- 2.
- 3.

### Who recommendations for post-exposure prevention of rabies

Category	Type of contact with an animal suspected for rabies or rabies-confirmed one	The actions that should be performed
	Touching the animal, feeding the animal, but no wound	
	Damage to uncovered skin, minor scratches or abrasions without bleeding, contact of saliva with damaged skin	
	Single or multiple transdermal bites or scratches with a contact with saliva	

## Tasks on the rabies immunoprophylaxis

### TASK 1

On 27/02/2024, a veterinarian turned to a general practitioner to prescribe preventive rabies vaccinations due to the risk of infection in professional activities.

#### *Questions:*

Name the drugs for preventive rabies vaccination.

Prescribe a vaccination schedule, dosage, and explain the method of administration.

Specify the dates when the veterinarian should come to the clinic for vaccination.

#### *The answers:*

### TASK 2

On 28/01/2024, a mother and a child went to the emergency room. The child was bitten by a stray dog. Upon examination, multiple wounds were found on the hands, forearms, and shins.

#### *Questions:*

Explain the method of wound treatment.

What immunobiological drugs should be prescribed?

Specify the dosage and explain the method of administration.

Make a vaccination schedule.

Specify the dates on which the child should appear at the clinic for vaccination.

#### *The answers:*

### **TASK 3**

A 23-year-old man contacted the polyclinic on 02/22/2024 in connection with scratching by a pet cat. 4 superficial scratches were found on the surface of the forearm, they do not bleed.

#### ***Questions:***

Determine the category of contact with the animal.

Prescribe a vaccination schedule.

Specify the drugs, dosages, and method of administration.

Set the dates for vaccinations.

In which case can vaccinations be stopped?

#### ***The answers:***

### **Emergency tetanus prevention**

Epidemiological indications for the tetanus immunoprophylaxis:

- 
- 
- 
- 
-

### Immunobiological medicines (IBM) for emergency tetanus prevention

Name of the immunobiological medicines (IBM)	The composition of the IBM	Method of administration and dosage	Contraindications	Adverse reactions
Adsorbed tetanus toxoid (Tt) or adsorbed diphtheria-tetanus toxoid with a reduced content of antigens (Td)				
Tetanus human immunoglobulin (TI)				
Tetanus serum				

### The principles of choosing an IBM for emergency tetanus prevention

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**Class № 12. CARRYING OUT PREVENTIVE VACCINATIONS AGAINST INFECTIONS THAT ARE NOT INCLUDED IN THE NATIONAL SCHEDULE OF PREVENTIVE VACCINATIONS: PAPILOMAVIRUS INFECTION, ROTAVIRUS INFECTION**

**Questions for self-control.**

Make a characteristic of:

- **human papillomavirus vaccines:** indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization;
- **rotavirus infection vaccines:** indications; doses and routes of administration; immunization schedule; contraindications; adverse reactions after immunization.

**Papillomavirus infection immunoprophylaxis**

<b>Name of the vaccine</b>	<b>Type of the vaccine (live (attenuated), inactivated etc.)</b>	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
<b>PV vaccines:</b> 9-valent HPV vaccine (Gardasil 9, 9vHPV);  quadrivalent HPV vaccine (Gardasil, 4vHPV);		Gardasil 9, 9vHPV  Gardasil, 4vHPV			

**Papillomavirus infection immunoprophylaxis** (*continuation*)

<b>Name of the vaccine</b>	<b>Type of the vaccine</b> (live (attenuated), inactivated etc.)	<b>The composition of the vaccine</b>	<b>Method of administration and dosage</b>	<b>Contraindications</b>	<b>Adverse reactions</b>
Bivalent HPV vaccine (Cervarix, 2vHPV)		Cervarix, 2vHPV			

*Vaccination schemes*

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### Rotavirus infection immunoprophylaxis

Name of the vaccine	Type of the vaccine (live (attenuated), inactivated etc.)	The composition of the vaccine	Method of administration and dosage	Contraindications	Adverse reactions
RotaTeq					
Rotarix					
Rotavac					
ROTASIIL:					

*Vaccination schemes*

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**Class № 13. INTESTINAL INFECTIONS: GENERAL EPIDEMIOLOGICAL CHARACTERISTICS;  
FUNDAMENTALS OF PREVENTION AND ANTI-EPIDEMIC MEASURES. SHIGELLOSIS. SALMONELLA INFECTIONS**

**Questions for self-control:**

1. Give a general epidemiological description of intestinal infections, describe their role in human infectious pathology
2. Describe the fecal-oral transmission mechanism and transmission routes of intestinal infections.
3. List the risk groups for the incidence of intestinal infections
4. Describe the prevention of intestinal infections.

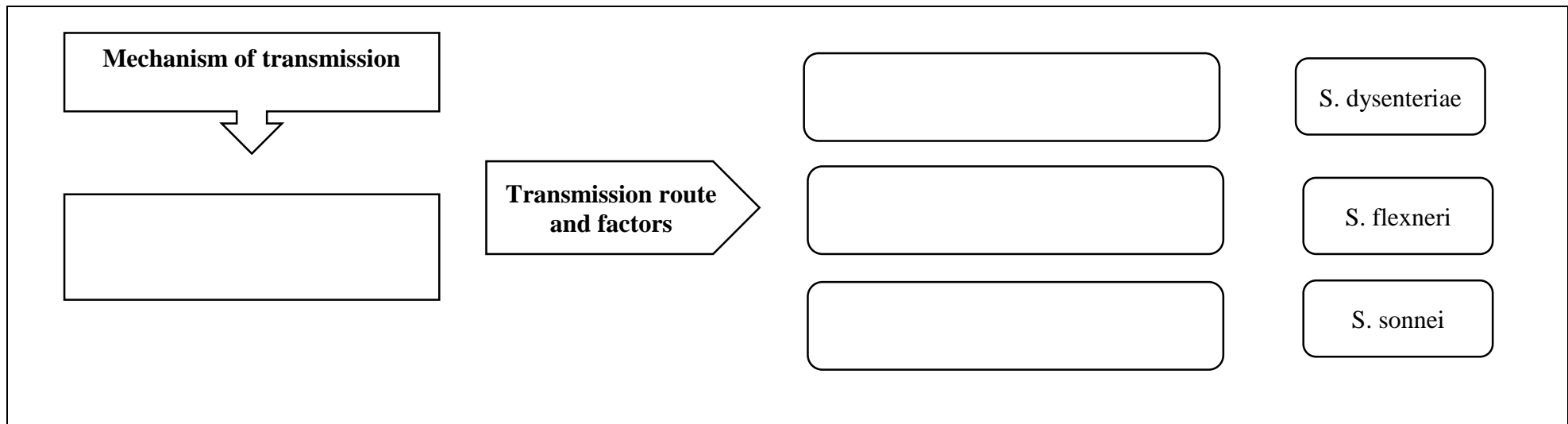
**Epidemiological characteristics of causative agents of intestinal infections**

<b>Epidemiological features</b>	<b>Shigellosis</b>	<b>Salmonellosis</b>
The causative agent of infection (family, genus, species)		
Pathogenicity factors providing virulent properties		
Resistance of the infectious agent in the environment		
The sensitivity of the causative agent to physical and chemical disinfection methods		

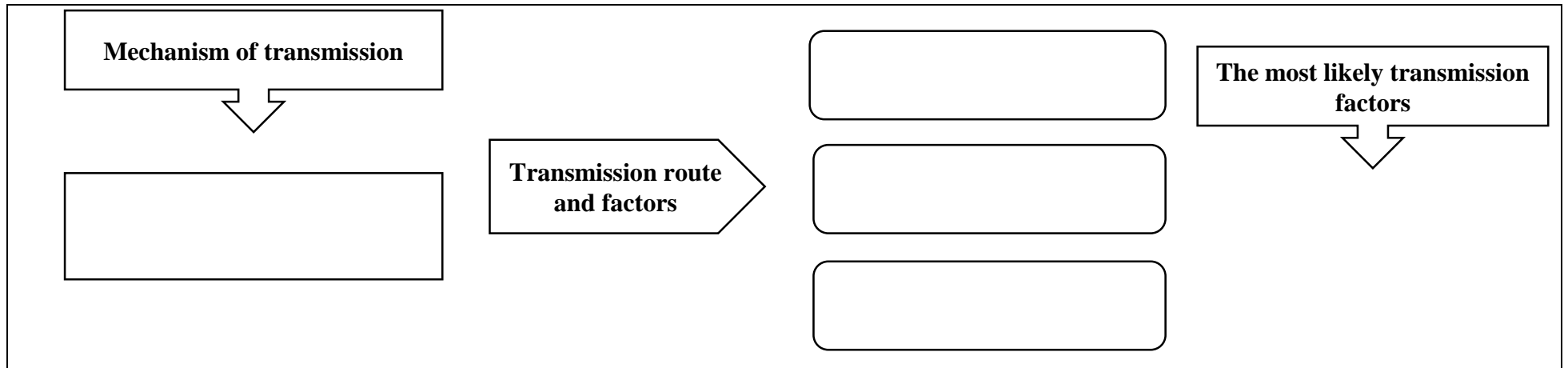
### Epidemiological characteristics of the sources of infection

Epidemiological features	Shigellosis	Salmonellosis
Categories of sources of infection	– – –	– – –
Incubation period (minimum, average, maximum)	– – –	– – –
The period of contagiousness		

### The mechanism of Shigella transmission



### The mechanism of Salmonella transmission



### Epidemiological features of a susceptible organism

<b>Epidemiological features</b>	<b>Shigellosis</b>	<b>Salmonellosis</b>
Factors determining susceptibility to infection		
Duration and specificity of immunity after an infectious disease		

### Manifestations of the epidemic process

<b>Nosological form</b>	<b>The intensity of the epidemic process and the risk areas</b>	<b>Seasonality</b>	<b>Risk groups</b>
<b>Shigellosis</b>			
<b>Salmonellosis</b>			

### Preventive and anti-epidemic measures for bacterial intestinal infections

Epidemiological features	Shigellosis	Salmonellosis
Directions of prevention	— — — — — — — —	— — — — — — — —
Anti-epidemic measures aimed at the source of infection		
The need for disinfection in an epidemic focus		
Duration of monitoring of the contact persons in an epidemic focus		
Prevention of contact persons		

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**Class № 14. INTESTINAL INFECTIONS: ROTAVIRUS INFECTION, VIRAL HEPATITIS A**

**Questions for self-control:**

1. Indicate the epidemiological differences between viral and bacterial intestinal infections.
2. Explain why the contagiousness of viral intestinal infections differs from bacterial ones.
3. List the risk groups for the incidence of viral intestinal infections.
4. Describe the social and natural factors that affect the incidence of intestinal infections.

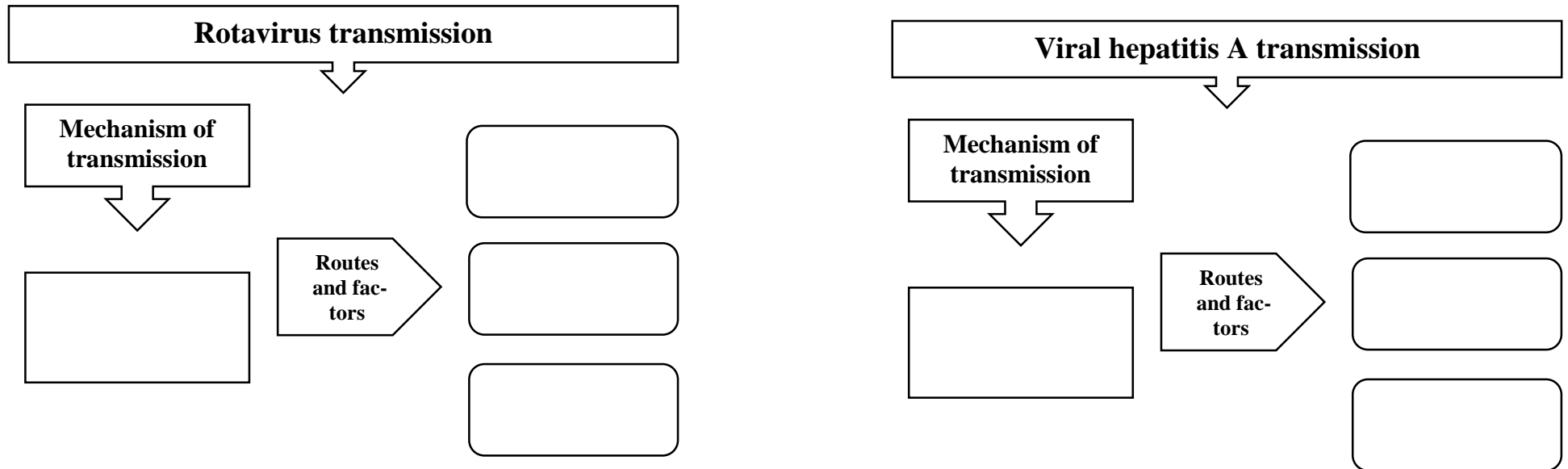
**Epidemiological characteristics of causative agents of viral intestinal infections**

<b>Epidemiological features</b>	<b>Rotavirus infection</b>	<b>Viral hepatitis A</b>
The causative agent of infection (family, genus, species)		
Pathogenicity factors providing virulent properties		
Resistance of the infectious agent in the environment		
The sensitivity of the causative agent to physical and chemical disinfection methods		

## Epidemiological characteristics of the sources of infection

Epidemiological features	Rotavirus infection	Viral hepatitis A
Categories of sources of infection	– – –	– – –
Incubation period (minimum, average, maximum)	– – –	– – –
The period of contagiousness		

## Mechanism, routes and factors of transmission of pathogens of viral intestinal infections



### Epidemiological features of a susceptible organism

<b>Epidemiological features</b>	<b>Rotavirus infection</b>	<b>Viral hepatitis A</b>
Factors determining susceptibility to infection		
Duration and specificity of immunity after an infectious disease		

### Manifestations of the epidemic process

<b>Nosological form</b>	<b>The intensity of the epidemic process and the risk areas</b>	<b>Seasonality</b>	<b>Risk groups</b>
Rotavirus infection			
Viral hepatitis A			



**Preventive and anti-epidemic measures for bacterial intestinal infections**

<b>Epidemiological features</b>	<b>Rotavirus infection</b>	<b>Viral hepatitis A</b>
Directions of prevention	— — — — — —	— — — — — —
Anti-epidemic measures aimed at the source of infection		
The need for disinfection in an epidemic focus		
Duration of monitoring of the contact persons in an epidemic focus		
Prevention of contact persons		

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**Class № 15. AEROSOL INFECTIONS: MENINGOCOCCAL INFECTION, GROUP A RESPIRATORY STREPTOCOCCAL INFECTION, INFLUENZA, NEW CORONAVIRUS INFECTION**

**Questions for self-control:**

1. Give a general epidemiological description of aerosol infections, describe their role in human infectious pathology.
2. Describe the aerosol transmission mechanism and transmission routes of aerosol infections.
3. List the risk groups for the incidence of aerosol infections
4. Describe the prevention of aerosol infections.

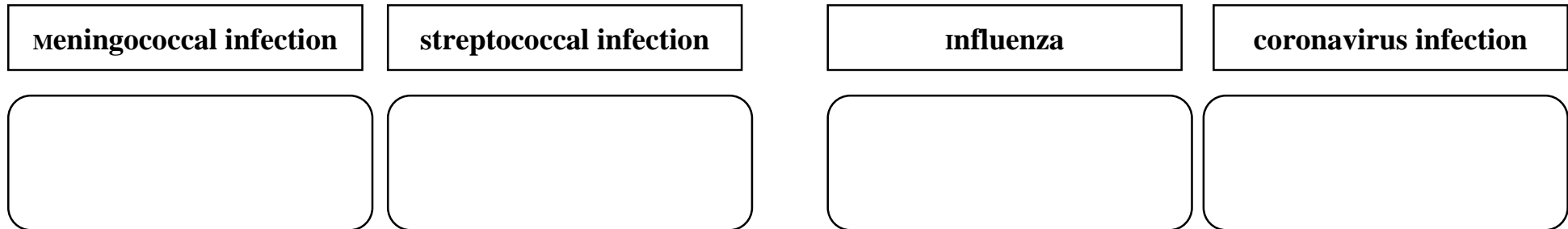
**Epidemiological characteristics of causative agents of bacterial aerosol infections**

<b>Epidemiological features</b>	<b>Meningococcal infection</b>	<b>Group A respiratory streptococcal infection</b>
The causative agent of infection (family, genus, species)		
Pathogenicity factors providing virulent properties		
Resistance of the infectious agent in the environment		
The sensitivity of the causative agent to physical and chemical disinfection methods		

### Epidemiological characteristics of causative agents of viral aerosol infections

<b>Epidemiological features</b>	<b>Influenza</b>	<b>New coronavirus infection</b>
The causative agent of infection (family, genus, species)		
Pathogenicity factors providing virulent properties		
Resistance of the infectious agent in the environment		
The sensitivity of the causative agent to physical and chemical disinfection methods		

### Routes and factors of infections with an aerosol transmission mechanism



### Epidemiological features of a susceptible organism

<b>Epidemiological features</b>	<b>Meningococcal infection</b>	<b>Respiratory streptococcal infection</b>	<b>Influenza</b>	<b>New coronavirus infection</b>
Factors determining susceptibility to infection				
Duration and specificity of immunity after an infectious disease				

### Manifestations of the epidemic process

<b>Nosological form</b>	<b>The intensity of the epidemic process and the risk areas</b>	<b>Seasonality</b>	<b>Risk groups</b>
Meningococcal infection			
Respiratory streptococcal infection			
Influenza			
New coronavirus infection			

**Preventive and anti-epidemic measures for bacterial intestinal infections**

<b>Epidemiological features</b>	<b>Meningococcal infection</b>	<b>Respiratory streptococcal infection</b>	<b>Influenza</b>	<b>New coronavirus infection</b>
Directions of prevention				
Anti-epidemic measures aimed at the source of infection				
The need for disinfection in an epidemic focus				
Duration of monitoring of the contact persons in an epidemic focus				
Prevention of contact persons				

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**Class № 16. INFECTIONS WITH A PREDOMINANTLY PARENTERAL MECHANISM OF INFECTION:  
A DISEASE CAUSED BY THE HUMAN IMMUNODEFICIENCY VIRUS (HIV)**

**Questions for self-control:**

1. Indicate the main epidemiological features of the parenteral transmission mechanism.
2. What is sentinel epidemiological surveillance of HIV infection?
3. List the risk groups for the incidence of HIV infection.
4. Describe the social and natural factors that affect the incidence of HIV infection.

<b>Epidemiological characteristics of intestinal infections</b>	<b>Disease caused by the human immunodeficiency virus (HIV)</b>
Etiology of the disease Properties of the pathogen.	
Pathogen resistance in the environment	
Sources of infection	
Mechanism and factors of transmission	
Incubation period	
The period of contagion	
Susceptible individuals	
Methods of laboratory diagnostics	

### Directions of prevention and sentinel surveillance of HIV-infection

Preventive measures	Disease caused by the human immunodeficiency virus (HIV)
Directions of prevention	
Anti-epidemic measures for the source of infection	
Current and final disinfection in the epidemic focus	
Monitoring of contact persons	

#### TASK 1. For monitoring knowledge about HIV infection.

<p><b>Conditions for the death of HIV:</b></p> <ol style="list-style-type: none"> <li>1) heating at a temperature of 50 °C for 1 min;</li> <li>2) exposure to 3% chloramine solution for 60 minutes;</li> <li>3) Exposure to ultraviolet radiation;</li> <li>4) boiling for 15 minutes.</li> </ol> <p><b>The source of HIV infection is most often infected in stages:</b></p> <ol style="list-style-type: none"> <li>1) asymptomatic (latent);</li> <li>2) secondary clinical manifestations;</li> <li>3) terminal;</li> <li>4) Lymphadenopathy.</li> </ol>	<p><b>Which of the following ways can you get HIV infection?</b></p> <ol style="list-style-type: none"> <li>1) when breast feeding a child with an HIV-infected mother;</li> <li>2) when caring for an HIV-infected person at home;</li> <li>3) When staying together with an infected person in the clinic;</li> <li>4) When using shared utensils with an infected person;</li> <li>5) When using general medical instruments for invasive procedures;</li> <li>6) When bitten by insects;</li> <li>7) When kissing an HIV-infected person.</li> </ol>
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**TASK 2. For monitoring knowledge about HIV-infection.**

<p><b>The maximum epidemic danger is experienced by HIV-infected people at the stage of:</b></p> <ol style="list-style-type: none"><li>1) incubation stage;</li><li>2) stage of primary manifestations;</li><li>3) stage of secondary manifestations;</li><li>4) terminal stage.</li></ol>	<p><b>In case of violation of the integrity of the skin (cuts, injections), it is necessary:</b></p> <ol style="list-style-type: none"><li>1) squeeze blood from the wound, remove gloves, treat with 70 % alcohol;</li><li>2) remove gloves, squeeze out blood, treat with 70 % alcohol, then 5 % iodine;</li><li>3) remove gloves, squeeze out blood, treat with 5 % iodine.</li></ol>
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**TASK 3. For monitoring knowledge about HIV-infection.**

*In the task, it is necessary to assess the risk of HIV-infection. Green square — low risk, red square — high risk.*

To get a tattoo in a basement room without observing the sanitary and epidemiological regime

Work as a teacher for a 7-year-old child. Child is HIV-positive

Kissing an HIV-positive person with a low viral load

Having sex with a regular partner without a condom

Having sex with different sexual partners without a condom

Use injectable drugs with a reusable syringe

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**Class № 17. INFECTIONS WITH A PREDOMINANTLY PARENTERAL MECHANISM OF INFECTION:  
VIRAL HEPATITIS B, C, D**

**Questions for self-control:**

1. List the main directions of prevention of viral hepatitis with an artificial mechanism of infection.
2. Indicate the measures for the prevention of viral hepatitis during therapeutic and diagnostic manipulations.
3. Describe the measures to prevent occupational infection of medical workers.
4. Describe measures to prevent infection with viral hepatitis in newborns.

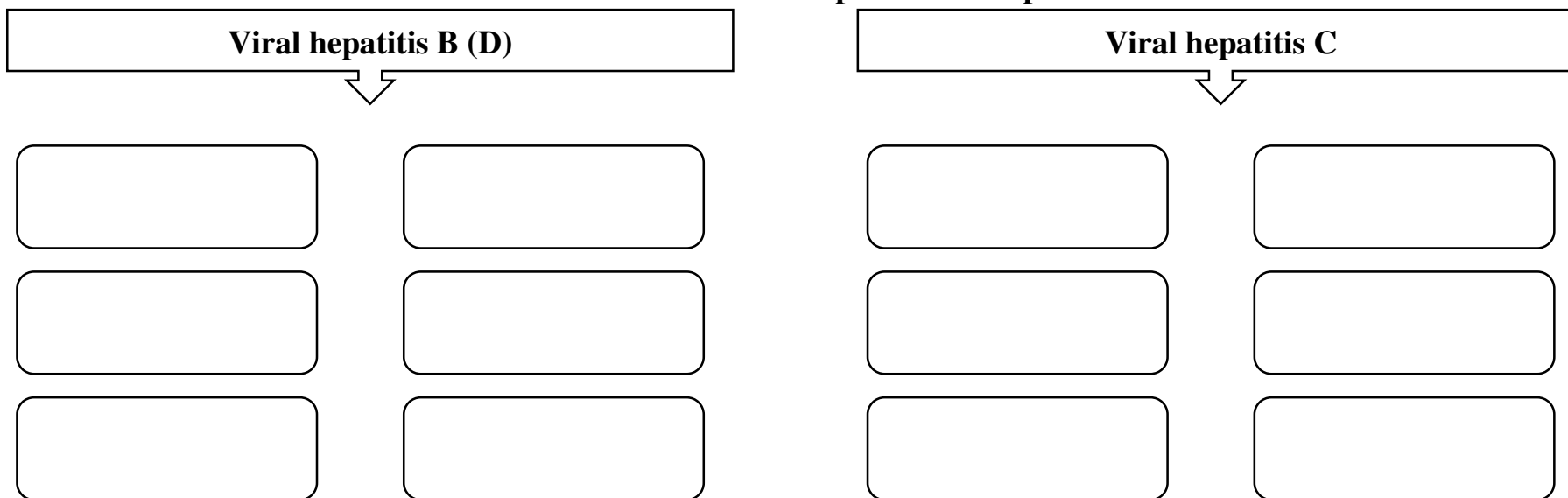
**Epidemiological characteristics of causative agents of viral hepatitis**

<b>Epidemiological features</b>	<b>Viral hepatitis B</b>	<b>Viral hepatitis C</b>
The causative agent of infection (family, genus, species)		
Pathogenicity factors providing virulent properties		
Resistance of the infectious agent in the environment		
The sensitivity of the causative agent to physical and chemical disinfection methods		

### Epidemiological characteristics of the sources of infection

Epidemiological features	Viral hepatitis B	Viral hepatitis C
Categories of sources of infection	– – –	– – –
Incubation period (minimum, average, maximum)	– – –	– – –
The period of contagiousness		

### Factors of transmission of parenteral hepatitis viruses



### Epidemiological features of a susceptible organism

Epidemiological features	Viral hepatitis B	Viral hepatitis C
Factors determining susceptibility to infection		
Duration and specificity of immunity after an infectious disease		

### Manifestations of the epidemic process

Nosological form	The intensity of the epidemic process and the risk areas	Seasonality	Risk groups
Viral hepatitis B (B)			
Viral hepatitis C			

### Preventive and anti-epidemic measures for viral hepatitis

Epidemiological features	Viral hepatitis B	Viral hepatitis C
Directions of prevention	- - - - -	- - - - -
Anti-epidemic measures aimed at the source of infection		
The need for disinfection in an epidemic focus		
Duration of monitoring of the contact persons in an epidemic focus		
Prevention of contact persons		

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**Class № 18. VECTOR-BORNE INFECTIONS: TICK-BORNE ENCEPHALITIS, LYME DISEASE**

**Questions for self-control:**

1. Indicate the main epidemiological features of the transmissible (vector-borne) transmission mechanism.
2. List the insects of epidemiological importance in the implementation of the transmissible transmission mechanism.
3. List the risk groups for the incidence of vector-borne infections.
4. Describe the social and natural factors that affect the incidence of vector-borne infections.

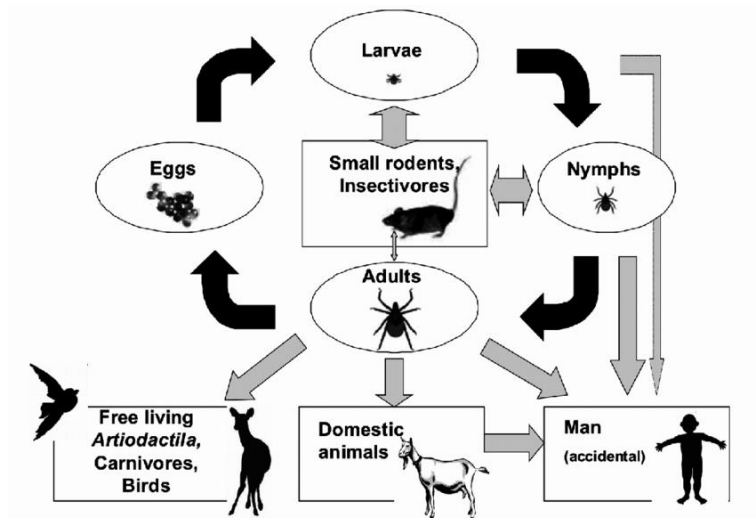
**Epidemiological characteristics of causative agents of vector-borne infections**

<b>Epidemiological features</b>	<b>Tick-borne encephalitis</b>	<b>Lyme disease</b>
The causative agent of infection (family, genus, species)		
Pathogenicity factors providing virulent properties		
Resistance of the infectious agent in the environment		
The sensitivity of the causative agent to physical and chemical disinfection methods		

### Epidemiological characteristics of the sources of infection

Epidemiological features	Tick-borne encephalitis (TBE)	Lyme disease
Categories of sources of infection		
Incubation period		
The period of contagiousness		

### Mechanism, routes and factors of transmission of pathogens of viral intestinal infections



1. Using Fig. 1, describe the development cycle of the tick-borne encephalitis vector.

2. List the main feeders of ticks.

3. Indicate the risks of infection with pathogens transmitted through tick bites

1.

2.

3.

Fig. 1. Life cycle of ixodid tick and transmission cycle of TBE virus

**TASK. What should you do if you notice a tick on your skin?**

Choose the right tick removal technique





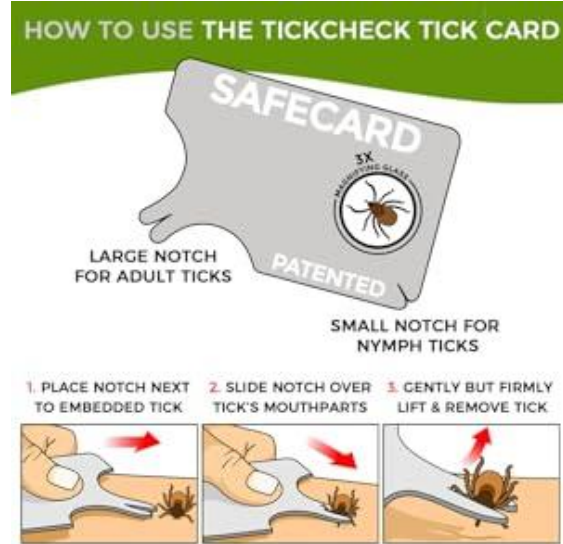
1. Describe the algorithm of actions when sucking a tick.
2. What should you do with the removed tick?
3. Suggest measures for the emergency prevention of tick-borne encephalitis and Lyme disease.





Fig. 2. The algorithm of actions for sucking a tick

Practical Tick Removal Skill



<b>Briefing. Tick-borne encephalitis</b>	<b>Answers to the briefing tasks</b>
<p>On the evening of June 15, a 12-year-old girl was admitted to the infectious diseases department of the district hospital. From the epidemiological history, it was established that the patient was at the cottage, went to the forest. Upon returning from the forest, she took off a crawling tick from her outer clothes. In the evening, taking a shower, I independently removed the attached tick from my neck, threw the tick away and did not go to the doctor. The doctor on duty was diagnosed with tick-borne viral encephalitis.</p> <p><i>Task for performing a practical skill:</i></p> <ol style="list-style-type: none"> <li>1. Indicate possible sources of infection in tick-borne encephalitis.</li> <li>2. Describe the mechanism of infection, possible ways and factors of transmission of tick-borne encephalitis pathogens.</li> <li>3. List the specific vectors of the causative agent of tick-borne encephalitis.</li> <li>4. Indicate the procedure for sucking the tick.</li> <li>5. Indicate the drugs for planned and emergency specific prevention of tick-borne encephalitis, indications and application scheme.</li> </ol>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> <li>5.</li> </ol>

**Preventive and anti-epidemic measures for vector-borne infections**

<b>Types of prevention</b>	<b>Tick-borne encephalitis (TBE)</b>	<b>Lyme disease</b>
Specific preventive measures		
Non-specific preventive measures		

**Signature of the tutor** \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/\_\_\_\_/



## THE FINAL TEST QUESTIONS

1. Basic epidemiological notions (epidemic process, source of infection, susceptibility).
2. Basic epidemiological notions (mechanism of transmission, epidemic focus).
3. Anti-epidemic measures: grouping and orientation; criteria for selection of leading directions.
4. Disinfection: organization; types; methods; essential to preventing and communicable diseases control.
5. Chemical disinfectants: main groups and its characteristics; methods of application.
6. Sterilization: types, methods, stages of sterilization.
7. Epidemic control measures in outpatient and health-care organizations.
8. Immunoprophylaxis of infectious diseases: immune response (primary, secondary), justification of the optimal date of vaccination.
9. Immunoprophylaxis of infectious diseases: Immunization schedule, functioning of vaccination room.
10. Indications and contraindications for preventive vaccination.
11. General characteristics of immunobiological preparations (vaccines, toxoids, serum immunoglobulins).
12. Immunoprophylaxis of viral hepatitis B: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
13. Immunoprophylaxis of tuberculosis: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
14. Immunoprophylaxis of polio: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
15. Immunoprophylaxis of measles, mumps, rubella: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
16. Immunoprophylaxis of diphtheria and pertussis in persons who do not have contraindications to administration DTP vaccine: product characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
17. Immunoprophylaxis of diphtheria and pertussis, adsorbed diphtheria and tetanus toxoids with a reduced amount of antigen: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.

18. Emergency tetanus prophylaxis: indications, preparation characteristics, order of products selection and schemes of their application.
19. Emergency prevention of rabies: preparation characteristics; indications to anti-rabies vaccination; organization of anti-rabies aid.
20. Immunoprophylaxis of influenza: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
21. Immunoprophylaxis of Hib-infection: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
22. Immunoprophylaxis of viral hepatitis A: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
23. Immunoprophylaxis of pneumococcal infection: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
24. Immunoprophylaxis of HPV (human papillomavirus)-infection: preparation characteristics; indications; doses and ways of application; immunization schedule; contraindications; adverse reactions (side effects) after immunization.
25. Salmonellosis: epidemic process, basics of anti-epidemic and preventive measures.
26. Viral hepatitis A: epidemic process, basics of anti-epidemic and preventive measures.
27. Meningococcal infection: epidemic process, basics of anti-epidemic and preventive measures.
28. Influenza: epidemic process, basics of anti-epidemic and preventive measures.
29. Chickenpox and varicella zoster infection: epidemic process, basics of anti-epidemic and preventive measures.
30. HIV (acquired immune deficiency syndrome): epidemic process, basics of anti-epidemic and preventive measures
31. Viral hepatitis B, D, C: epidemic process, basics of anti-epidemic and preventive measures.
32. Infections related to the provision of medical care: definition of the concept, epidemiological characteristics of pathogens, the mechanism of development of the epidemic process and the basics of prevention.
33. Clinical epidemiology: definition of the concept, methods of clinical epidemiology.

















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**Федорова** Инна Владимировна  
**Митряйкина** Юлия Васильевна  
**Комарчук** Людмила Владимировна

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