№ ЛД-21

Federal State Budgetary Educational Institution Higher Education

"North Ossetian state medical academy"

Ministry of Health Russian Federation

(FSBEI HE NOSMA MOH Russia)

Department microbiology

METHODOLOGICAL INSTRUCTIONS FOR PERFORMANCE OF INDEPENDENT (OUTSIDE AUDIENCE) WORKS

on discipline - microbiology, virology, immunology

basic professional educational program higher education - programs specialty on specialties 31.05.01 General Medicine,
approved on May 24, 2023

Vladikavkaz

Methodological recommendations intended for extracurricular independent work teaching students of the 2nd and 3rd year (4, 5 semesters) of the Faculty of Medicine of the Federal State Budgetary Educational Institution of Higher Education NOSMA of the Ministry of Health of Russia in the discipline "Microbiology, virology, immunology"

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№ ЛД-21

COLLECTION METHODOLOGICAL DEVELOPMENT ON MICROBIOLOGY, VIROLOGY AND IMMUNOLOGYFOR INDEPENDENT STUDENT WORKS MEDICAL FACULTY

SPRING SEMESTER

Vladikavkaz

Occupation #1

TOPIC: MORPHOLOGY OF BACTERIA. MICROSCOPIC METHODS STUDIES BACTERIA, SIMPLE COLOR METHOD BACTERIA.

I. Questions for checks original (base) level of knowledge

1. What such prokaryotes?
2. Distinctive signs of prokaryotes from eukaryotes?
3. What is device microscope?
4. How different dry system microscope from immersion?

II. Target tasks

Student should know:	**Literature**
1. Main principles classification formsbacteria. 2. Device and equipment microbiological laboratories, mode work and appointment. 3. Methods for diagnosing infectious diseases: microscopic, microbiological, biological, serological, skin - allergic samples 4. Technics microscopic research. Immersion system, Technics her applications. 5. Technique and stages smear preparation for microscopy. 6. Modern methods microscopic research (dark field microscopy, phase contrast microscopy, electronic microscopy). 7. Main forms bacteria.	1. . Microbiology, virology and immunology./Under. ed. V.N. Tsareva. - M., 2009. 2.Medical and sanitary microbiology. / Under ed. A.A. Vorobiev,Yu.S. Krivoshein, V.P. Shirobokov. **Main literature:** 1. Medical microbiology, virology and immunology./Under. ed. A.A. Vorobyov. M. 2004. 2. Microbiology./Under ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova, A.M. Rybakova.-M., Medicine, 2003. 3. Medical microbiology, immunology and virology. / under. ed. A.I. Korotyaeva, S.A. Babicheva. St.Petersburg. 2002. 4. Medical microbiology./Under Ed. Acad. RAMS IN A. Pokrovsky.-M.,2001. 5.Microbiology and immunology./ Undered. A.A. Vorobiev.-M., 1999. **6.** Microbiology with virology and immunology./Under ed. L.B. Borisov,A.M. Smirnova-M., 1994. **Additional literature:** 1. Sanitary microbiology and Virology./Under ed. Z.N. Kochemasova, S.A. Efremova, A.M. Rybakova.-M., 1987. 2. Fundamentals of Medical biotechnology./Ed. A.A. Vorobiev.- M., 1990. 3. Nosocomial infections. Ed. V.P. Venzela.-M., 1990. 4. Ecological immunology./Ed. R.M. Khaitova, B.V. Pinegina, H.I. Istamova.-M.: Publishing House VNIIRO, 1995. 5. Clinical immunology./Under ed.

	A.V. Karaulova.-M., 1999. 6. Immunology for doctors./Ed. S.A. Ketlinskaya, N.M. Kalinina.-SPB., 1998. 7. Brief terminological vocabulary microbiologist-biotechnics./Under ed. Yu.A. Ovchinnikova.-M.: An THE USSR, 1989. 8. Basics biotechnologies.-spb.: Publishing housefirm " Science. -1995.
Student should be able to: 1. cook smear from clean culture,paint the easy way. 2. Microscopic immersion system. 3. cook smear and paint simplemethod.	1 . Workshop laboratory works With illustrated situationaltasks in microbiology, immunology and virology./ Under. ed.A.A. Vorobiev, V.N. Tsareva. M., 2008. 2.Guide to practicalmedical _ _microbiology, virology and immunology./Ed . V.V. Teza, 2002. 3. Management to laboratory classes in microbiology./Ed. L.B. Borisova.-M., 1984.

Replenish missing knowledge will help studying special literature specifiedhigher

III. Tasks for independent work on topic under study:

Methods diagnostics infectious diseases:

1. ***Microscopic method*** - is in .....

2. ***cultural method*** - is in .....

3. ***Biological method*** - is in .....

4. ***Serological method*** - is in .....

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five. ***Skin-allergic method*** - is in ---------- ------

Morphology major forms bacteria:
Cocky :- ----------

micrococci ----------

diplococci ----------

Tetracocci ----------

Sarcina ----------

streptococci ----------

Staphylococci ----------

rod-shaped microorganisms ----------

Collection forms ----------

Methods microscopic research

Luminous microscopy - ----------

Microscopy in dark field vision

phase contrast microscopy -

fluorescent microscopy

Electronic microscopy

Stages cooking smear :

Coloring drug - smear.
The preparations are stained with aniline dyes. From a chemical point of view,dyes:
1.
2.
3.

Fill table:

Most wide apply the following dyes:

red	blue	purple	tan

Simple methods coloring allow define ---------- ----

SELF CONTROL

1. For microbiological diagnosis of bacterial infections .the following methods diagnostics:
(select 3 correct answer)
A. Microscopic;
B. Bacteriological;
C.Serological;
G. Biochemical.

2. For cooking smear use: (select 3 correct answer)
A. subject glass;
B. Isotonic saline chloride sodium;
B. Microbial culture tubes or dishes;
G. Chicken embryo.

3. Dried up smears fix in flame burners for Togo, to: (select 3correct answer)
A. kill bacteria;
B. Fasten bacteria on glass;
B. Prevent them from washing off during the painting process;
G. Define mobility.

4. Simple methods coloring: (select 2 correct answer)
A. Allow define Availability and form bacteria;
B. Allow define mobility;
C.use one dye;
G. use some dyes.

5. To coccoid form relate the following bacteria: (select 2correct answer)
A. Sarcina;
B. Streptococci;
C.Brucella;
G. Clostridia.
6.To tortuous forms refer the following microorganisms: (select2 correct answer)
A. Mycobacteria;
B. Spirilla;
B. Spirochetes;
G. Corynebacteria.
7. AT difference from eukaryotic cells bacteria have: (select 2correct answer)
A. Haploid set of chromosomes;
B. Diploid set of chromosomes;
C.Cellular center;
G. Nucleoid.
8. The three essential components of a bacterial cell are: (selectone correct answer)
A. Nucleus, cytoplasm, shell.
B. Nucleoid, cytoplasmic membrane, inclusions.
C.Cellular wall, cytoplasmic membrane, nucleoid.
G. shell, cytoplasm, DNA.

9. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER

1. Taxonomic category, unifying kinds microorganisms With greatestquantity similar signs and properties

2. What stands for second word in latin title microorganisms

A. Family
Ford
V.View

10. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER

1. Yeast-like mushrooms
2. cocci, located in form chains
3. bacteria, diameter dispute at which more thickness cells

A. BacilliB.
Mukor
C.Candida
G. Clostridia
D. streptococci

Occupation #2

TOPIC: MORPHOLOGY MICROBOV. DIFFICULT WAYS COLORING MICROORGANISMS. CONTROL OCCUPATION.

I. Questions for checks initial (basic) level knowledge
1. 1. What such bacterium?
2. Differences prokaryotes from eukaryotes;
3. Device microscope?
4. Essence immersion microscopy;

5. Methods laboratory diagnostics infectious diseases;
6. Stages cooking smear;
7. Simple methods coloring bacteria.

II. Target tasks

Student should know:	**Literature**
1. Structure bacterial cells: cellular wall, cytoplasmic membrane, cytoplasm, nucleoid, ribosome, mesosomes, plasmids. Meaningthese formations for microbial cells. 2. Fundamental differences simple ways coloring from complex. 3. Method and mechanism coloring on Gram. 4. Different attitude of bacteria to color on Gram. 5. Methodology coloring according to Tsil – Nelsen.	1.Microbiology, virology and immunology./Under. ed. V.N. Tsareva. - M., 2009. 2.Medical and sanitary microbiology. / Under ed. A.A. Vorobiev,Yu.S. Krivoshein, V.P. Shirobokov. **Main literature:** 1. medical microbiology, virology and immunology./Under. ed. A.A. Vorobyov. M. 2004. 2. Microbiology./Under ed. A.A.Vorobiev, A.S. Bykov, E.P. Pashkova, A.M. Rybakova.- M., Medicine, 2003. 3. medical microbiology, immunology and virology. / under. ed. A.I. Korotyaeva, S.A. Babicheva. St. Petersburg. 2002. 4. Medical microbiology./Under Ed. Acad. RAMS IN A. Pokrovsky.-M.,2001. 5.Microbiology and immunology./ Under ed. A.A. Vorobiev.-M., 1999. **6.** Microbiology with virology andimmunology./Ed . L.B. Borisov,A.M. Smirnova-M., 1994. **Additional literature:** 1. Sanitary microbiology and Virology./Under ed. Z.N. Kochemasova, S.A. Efremova, A.M. Rybakova.-M., 1987. 2. Fundamentals of Medical biotechnology./Under ed. A.A. Vorobiev.- M., 1990. 3. Nosocomial infection.Under ed. V.P. Venzela.-M., 1990. 4. Ecological immunology ./Under ed.

	R.M. Khaitova, B.V. Pinegina, H.I. Istamova.-M.: Publishing House VNIIRO, 1995. 5. Clinical Immunology./Ed. A.V. Karaulova.-M., 1999. 6. Immunology for doctors./Ed. S.A. Ketlinskaya, N.M. Kalinina.-SPB., 1998. 7. Brief terminological vocabulary microbiologist-biotechnics./Under ed. Yu.A. Ovchinnikova.-M.: An THE USSR, 1989. 8. Basics biotechnologies.-spb.: Publishing house firm " Science. -1995.
The student must be able to: 1. Prepare a smear from a pure culture bacteria E. coli S. aureus and paint difficult way. 2. technique and stages of cooking complex method coloring on Gramu, Tsilyu – to Nielsen. 3. microscopy smear.	1. Workshop laboratory works With illustrated situational assignments in microbiology, immunology and virology./ Under. ed. A.A. Vorobiev, V.N. Tsareva. M., 2008. 2.Guide to practical exercises on medical microbiology, virology and Immunology./Under ed. V.V. Teza, 2002. 3. Lab Guide Microbiology./Under ed. L.B. Borisov.-M., 1984.

Replenish missing knowledge will help studying special literature specifiedhigher

III. Tasks for independent work on topic under study:

Complex methods coloring suggest .....

To difficult method coloring refer .....

Coloring on Gram method includes from four stages

1. .....

---

2. .....

---

3. .....

4.

AT cellular wall gram-positive bacteria contained ----------

The form bacteria determined structure her ---------- ---------

AT difference from eukaryotic cells bacteria have: ----------

L- forms bacteria -

Part cellular walls gram-positive bacteria included ----------

Coloring on Tsilyu - Nielsen used -

acid resistance microorganisms conditioned presence in them cells ----------

Coloring microorganisms on Ziehl method – Nielsen includes the following stages:

1 .....

2. .....

3. .....

cytoplasmic membrane is yourself ----------

Nucleoid .....

Plasmids.....

SELF CONTROL

1.To difficult method refer coloration: (select 3 correctanswer)

A. By Gram;
B. Tsil-Nielsen;
C.Neisser;
G. Magenta.

2. The Ziehl-Nielsen stain is used for: (select onecorrect answer)

A. Detection of acid-resistant mycobacteria;
B. Identifications grains volute;
B. Detection of the bacterial cell wall;

G. Identifications flagella.

3. Coloring on Gramu used for: (select onecorrect answer)

A. Detection of acid-resistant mycobacteria;
B. Identifications grains volute;
B. Detection of the bacterial cell wall;
G. Identifications flagella.

4. coloring by Neisser used for: (select onecorrect answer)

A. Identifications acid resistant mycobacteria;
B. Identifications grains volute;
B. Detection of the bacterial cell wall;
G. Identifications flagella.

5.coloring by Burri-Ginsu is used for: (pick onecorrect answer)

A. Detection of acid-resistant mycobacteria;
B. Identifications grains volute;
B. Detection of the bacterial cell wall;
G. Discoveries capsules.

6. Coloring according to the Romanovsky-Giemsa method allows you to contrast:(choose one correct answer)

A. Intracellular nucleoproteins
B. Capsular polysaccharides;
B. Mycolic acid of acid-resistant bacteria;
G. cell wall.

7. Way coloring on Ziel-Nielsen apply for identifying in materialbacteria: (select one correct answer)

A. staphylococci and streptococci;
B. Tuberculosis bacillus and leprosy bacillus;
C.dysentery sticks and salmonella;
G. bacillus Siberian ulcers and Clostridium gas gangrene.

8. Mycoplasmas different from majority bacteria: (select onecorrect answer)

A. The absence cellular walls;
B. The absence of a membrane surrounding the nucleoid;
C.The presence ribosome;
G. The absence kernels

9. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER

1. Components outdoor membranes bacteria
2. bacteria, having many flagella around cells
3. microorganisms, not having cellular walls

A. amphitriches
B. Peritrichi
C.Spirochetes
G. MycoplasmasD. Porins

10. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER

1. Function movements at bacteria
2. Adhesion bacteria to eukaryotic cells

A. Poriny
B. drinking
C.Inclusions G. PseudopodiaD. Flagella

OCCUPATION No. 3-4

THEME: BACTERIOLOGICAL METHOD DIAGNOSIS INFECTIOUS DISEASES. NUTRITION BACTERIA. PRINCIPLES CULTIVATION MICROORGANISMS. NUTRITIONAL ENVIRONMENT. METHODS STERILIZATION.

I. Motivational characteristic, themes lessons.

Mastering the issues of the bacteriological method for determining the pure culture of aerobic and anaerobic infectious diseases necessary for diagnosis and treatment, study which carried out same on department epidemiology, infectious diseases, childhood infections and others clinical disciplines.

Necessary original level knowledge: ***Physiology microorganisms.***

II. Target tasks

STUDENT MUST KNOW:	STUDENT MUST BE ABLE TO:
1. Bacteriological method diagnostics infectious diseases, its purpose and stages.	1. cook nutritious environment.
2. Types nutrition bacteria.	2. Estimate efficiency sterilization and disinfection.
3. Principles of cultivation microorganisms.	
4. Nutrient media, requirements, presented to nutritious Wednesdays.	
5. Classification of nutrient media, composition andcooking.	
6. Methods sterilization.	
7. The mechanism of action of sterilizing factors on the molecular structure	
microorganisms.	
8. Differences between the concepts of contamination anddecontamination, disinfection and sterilization, asepsis and antiseptics.	
nine. Modern technologies sterilization and equipment.	
10. Ways to control efficiency sterilization and disinfection.	

Main literature:

1. Microbiology with Virology and Immunology / Ed. L.B. Borisova, AMSmirnova - M., 1994.
2. Medical microbiology. / Under ed. acad. RAMS IN A. Pokrovsky. - M., 2001.
3. Microbiology, virology, immunology / Ed. A.A. Vorobyov. - M., 2004. Chapter3.
4. Microbiology, virology and immunology / Edited by V.N. Tsareva - M., 2009.Part 1, chapter 1.4
5. Guide to practical exercises in medical microbiology, virology andimmunology. /Under. ed.

V.V. Teza, 2002. Chapter 3
6. Practicum of laboratory work with illustrated situational tasks on microbiology, immunology and virology / Ed. V.N. Tsareva, A.A. Vorobyov. – M.,2008.

Additional literature:
Physiology microorganisms / methodical development to practical classes ongeneral microbiology. - Rostov-on-Don, 2001.
methodical recommendations, published department microbiology, virology andimmunology GOU HPE SOGMA Roszdrav:
1. Methods laboratory diagnostics / methodical recommendations for students medical, pediatric, dental, pharmaceutical faculties, faculty of higher nursing education. - Vladikavkaz, 2003.
2. Fence pathological material for microbiological, virological and serological diagnosis of infections / Educational and methodical development for students higher nursing education. - Vladikavkaz, 2005.
3. Guidelines for independent work of students in microbiology / Educational-methodical recommendations. - Vladikavkaz, 2003.
4. Collection methodical developments on microbiology for students medical, pediatric, medical-prophylactic and pharmaceutical faculties / Educational methodical developments, part I.- Vladikavkaz, 2008.

III. Tasks for independent extracurricular work
1. Give definition microbiological research allocation pure cultures microorganisms. What are main principles?

2. Methods allocation pure cultures.1.

2.

3.

4.

3. List stages allocation pure cultures.1.

2.

3.

four.

4. Classification nutritional Wednesdays and methods them cooking.

5. Methods sterilization. Fill in table:

No.	Way sterilization	Apparatus	Reliability	sterilizable material

1.	Sterilization in flames			
2.	Plasma sterilization			
3.	Dry heat			
four.	Ferry under pressure			
five.	Fluid ferry			
6.	Tyndalization			
7.	Filtration			
8.	Physical factors(UFL, gamma rays, ultrasound)			
nine.	Gas sterilization			
10.	Pasteurization			

6. Give definition asepsis, antiseptics, disinfection and sterilization.

7. List chemical methods disinfection:
1.
2.
3.
four.
five.
6.
7.
8.

8. As carried out control efficiency sterilization (methods).

SELF CONTROL

1. At sterilization most quickly are destroyed the following kinds chemicalconnections in bacterial peptidoglycan cellular walls:
A. Peptide;
B. Glycosidic;
B. Hydrogen;
G. Covalent.

2. For destruction prions necessary:
A. violate structure NK;
B. break the structure squirrel prion;
B. Destroy all the molecules that form the prion;
G. destroy peptidoglycan.

3. List ways sterilization, liberating an object from spore formsmicrobes:
A. Ultraviolet irradiation;
B. Autoclaving;
C.Pasteurization;
G. Dry heat.

4. Complex measures aimed at the destruction of / in the objects of pathogenic microbes are called:
A. Asepsis;
B. Antiseptics;
B. Disinfection;
G. Sterilization.

5. If means has detergent and antimicrobial properties:
A. Allowed combination disinfection and pre-sterilization cleansing;
B. Disinfection and pre-sterilization report must be carried out separately;
C. This tool maybe used only for cleaning;
G. Given means maybe used only for disinfection.

6. Complex environment, containing protein and carbohydrate Components, sterilize:
A. Fractional-fluid steam;
B. Boiling;
B. Dry heat in a Pasteur oven;
G. Tyndallization;

D. Filtration;
E. Chemical disinfection.

7. To physical methods sterilization relate:
A. Ultrasound;
B. Ultraviolet rays;
C.antibiotics;
G. Filtration;
D. Steam sterilization;
E. Dry heat sterilization.

8. What kind factors are used at autoclaving:
A. Temperature;
B. Filters;
C.Steam;
G. Pressure.

9. To simple Wednesdays relate:
A. MPA;
B. Peptone water;
C.Blood agar;
G. Wednesday Hiss;
D. MPB.
E. Whey environment.

10. To difficult Wednesdays relate:
A. MPA;
B. Peptone water;
C.Blood agar;
G. Wednesday Hiss;
D. JSA;

11. in liquid nutritional environment height microbes may be observed in form:
A. colonies;
B. Diffuse haze;
B. Bottom haze;
G. Wall plaque.

12. Density nutritional Wednesdays depends on content:
A. Blood serum;
B. sucrose;
B. Agar-agar;
G. Peptone.

13. On height bacteria affect the following terms cultivation:
A. The content of nutrients in the nutrient medium;
B. pH environment;
C.Temperature;
D. Humidity of the
environment;
D. Factors growth.

14. The optimal temperature for growing most pathogens microorganisms is:

A. 20º C
B. 30º C
B. 37º S.
D. 40º
FROM.

15. Nutrients environments on appointment divided into:

A. simple;
B. Elective;
C.liquid;
G. Differential diagnostic;
D. Transport

16.For implementation active transport substances in bacterial cagepresence required:

a) transcriptase
b) translocases
c) hyaluronidase
e) neurominidase
d) DNA bases

17.Process biological oxidation substrate carried out microbial cell:

a) ribosomes
b) mesosomes
c) mitochondria
d) intracellular inclusions
e) lysosomes

18.Microbes using inorganic carbon sources andchemosynthetic reactions for energy production are called:

19.a) photolithotrophs
b) photoorganotrophs
c) chemolithotrophs
e) chemoorganotrophs
e) true chemoorganotrophs

20.Wednesday thioglycolic serves for highlights:

a) obligate aerobes
b) obligate anaerobes
c) facultative aerobes
d) facultative anaerobes
e) Everybody answers correct

21.Energy in microbial cage is stocking up in form:

a) UDF
b) volutinc)
ABOVE
d) FAD
e) ATP
e) Everybody answers correct

22.For anaerobic cultivation use:

a) cylinders with an oxygen-free gas mixture
b) anaerostat
c) vacuum pump
d) gas package with reducing reagents
e) Everybody answers correct

23. Wednesdays containing Sahara and other carbohydrates, sterilize:

a) autoclaving
b) boiling

c) dry heat in a Pasteur oven
G) filtering
e) fractionally fluid ferry

24.On height bacteria affect the following terms cultivation:
a) gas composition
b) the content of organic compounds in the nutrient mediumc)
factors growth
G) pH environments
e) humidity environments
e) Everybody answers wrong

25.Processes biological oxidation conjugated With reactions:
a) catabolic
b) amphibolism
c) anabolism G)
biosynthesis
e) splitting substances

26.At sterilization most quickly are destroyed the following kinds chemicalconnections in peptidoglycan bacterial cellular walls:
a) peptide
b) glycosidic
c) hydrogen
d) covalent

27.pasteurization With subsequent fast cooling carry out in nextmode:
a) at t one hundred FROM in flow 30 seconds
b) at t 65-95 C for 30 seconds-2 minutes
C) at t 35-55 FROM in flow 60 minutes
G) Everybody answers true

28.For control quality sterilization apply:
a) physical and chemical tests
b) phenolphthalein test
C) biological tests
G) molecular genetic methods

29.acids How finite product metabolism source energy:
a) breathing
b) fermentation
c) both
e) neither that, neither another

30.volatile transport vs gradient concentration
a) active transport
b) translocation of radicals
C) both
G) neither that, neither another

31.Proteolytic enzymes microbes are being studied on environments:
a) With carbs
b) with protein substrates
C) milk
d) gelatin
e) BCH

OCCUPATION No. 5

TOPIC: ESSENCE OF BACTERIOLOGICAL RESEARCH METHOD . PECULIARITIES MECHANISMS FOOD And METABOLISM BACTERIA.

Necessary original level knowledge:

1. Knowledge buildings bacterial cells, chemical composition cells.
2. Main mechanisms receipts nutritional substances in bacterial cell.
3. Nitrogen and carbon nutrition.

II. Target tasks:

STUDENT MUST KNOW:	STUDENT MUST BE ABLE TO:
1. Metabolism bacteria, his kinds.	1. Carrying out bacteriological research (on scheme);
2. Breath bacteria, classification on type breathing.	2. Performance first stage allocation clean culture aerobes;
3. Methods microbiological technology.	3. Preparation of a smear, staining according to Gram.
4. Methods for cultivating aerobes and anaerobes.	
5. Methods for isolating pure cultures bacteria.	

Main literature:

1. Medical microbiology. / Under ed. acad. RAMS IN A. Pokrovsky. - M., 2001.
2. Microbiology, virology, immunology / Under ed. A.A. Vorobyov. - M., 2004. Chapter3.
3. Microbiology, virology and immunology / Under editorial V.N. Tsareva - M., 2009.Part 1, chapter 1.
4. Guide to practical exercises in medical microbiology, virology andimmunology. /Under. ed. V.V. Teza, 2002. Chapter 3.
5. Practicum of laboratory work with illustrated situational tasks on microbiology, immunology and virology / Ed. V.N. Tsareva, A.A. Vorobyov. – M.,2008.

Additional literature:

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methodical recommendations, published department microbiology, virology andimmunology GOU HPE SOGMA Roszdrav:

1. Methods laboratory diagnostics / methodical recommendations for students medical, pediatric, dental, pharmaceutical faculties, faculty of higher nursing education. - Vladikavkaz, 2003.
2. Fence pathological material for microbiological, virological and serological diagnosis of infections / Educational and methodical development for students higher nursing education. - Vladikavkaz, 2005.
3. Guidelines for independent work of students in microbiology / Educational-methodical recommendations. - Vladikavkaz, 2003.
4. Collection methodical developments on microbiology for students medical, pediatric, medical-prophylactic and pharmaceutical faculties / Educational methodical developments, part I.- Vladikavkaz, 2008.

III. Tasks for independent extracurricular work on stated topic:

1. Describe concept metabolism bacteria.
2. Give definition:

Substrate -

Catabolism -

Anabolism -

3. Characteristic enzymes bacteria and them classification.

4. Nutrition of bacteria. Carbon sources:
Autotrophs -

Heterotrophs -

5. Sources nitrogen:
Prototrophs -

Auxotrophs -

6. Sources energy:
Phototrophs -

Chemotrophs -

7. Methodology cooking smear and coloring on Gram.1.

    2.

    3.

    4.

    5.

    6.

    7.

    8.

    9.

    10.

8. I stage allocation clean culture aerobic bacteria.

SELF CONTROL

(select one or more correct answers)

1. Process biological oxidation substrate carried out microbial cell in :
A. Ribosomes;
B. Mesosomes;

C.Mitochondria;
G. Intracellular inclusions;D.
Lysosomes.

2. For implementation active transport substances in bacterial cage presence required:

A. Transcriptases;
B. Translocases;
B. Hyaluronidase;
G. Neuraminidase;
D. DNAases.

3. microbes, using inorganic sources carbon and chemosyntheticreactions for receiving energy are called:

A. Photolithotrophs;
B. Photoorganotrophs;
C.Chemolithotrophs;
G. Chemoorganotrophs;
D. True chemoorganotrophs.

4. By type nutrition bacteria, defiant disease in people, refer to:

A. Heterotrophs;
B. Autotrophs;
B. Prototrophs.
G. Auxotrophs.
D. Hemotrophs.

5. By way receiving energy bacteria that cause sickness in people, relate to:

A. Chemoorganotrophs;
B. Photoorganotrophs,
B. Chemoorganotrophs;
G. Photolithotrophs;
D. Hemotrophs.

6. On I stage bacteriological method research are solved the following tasks:

A. Identification clean culture microbes;
B. Determination of sensitivity to antibiotics;
C.Getting Isolated colonies;
D. Determining the type of
microbe;
D. Receipt clean culture.

7. Preferential height some species microbes at simultaneous suppressionothers can receive on next types nutritional Wednesdays:

A. Selective (electoral);
B. simple;
C.complex;
G. Differential diagnostic;
D. Universal.

8. In concept "cultural properties" microbe includes:

A. Character growth on nutritional environments;
B. macroscopic characteristic colonies;
B. Morphology of microbial cells under microscopy;
G. Attitude pathogen to coloration by Gram.

9. On height bacteria affect the following terms cultivation:

A. Gas composition;
B. The content of organic compounds in the nutrient medium;
C.Factors growth;

G. pH environment;
D. Humidity environment;
E. Everybody answers not right.

10. On I bacteriological stage method cook smear from an isolated colonies andmicroscopic his for:
A. Determination of tinctorial properties of a microbe;
B. Receiving clean culture;
B. Studying the microscopic characteristics of colonies;
G. studies biochemical properties microbe.
11. Enzymes in chemical relation contain:
A. substrate;
B. coenzyme;
B. Apoenzyme;
G. Prosthetic group;
D. Metabolite.
12. Main peculiarities metabolism in prokaryotes:
A. Absence of typical enzymes;
B. High intensity;
C.Selection exoenzymes;
G. High permeability cellular wall and CPM for relatively major molecules.
13. High intensity metabolism at prokaryotes due to:
A. Lack of typical enzymes;
B. Enzymatic saturation;
C.Isolation exoenzymes;
G. High permeability cellular walls and CPM for relatively major molecules;
D. Optimal ratio area CPM to volume cells;
E. The absence adaptive capabilities.
14. Install conformity major phases crooked growth bacterial populations and characteristics states populations:
1.Lag-phase; A. Cell death exceeds the frequency of division;
2.Exponential growth; B. Adaptation to culture medium and conditions;
3. Stationary; B. Rapid increase in population size; 4. Withering away; G. Processes division and death cells balanced;
E. Rapid reduction numbers populations.
15. Proteolytic enzymes microbes are being studied on environments:
A. With carbohydrates;
B. MPB;
C.milk;
G. Gelatin.

OCCUPATION #6

THEME: STAGES CULTIVATION AEROBIC BACTERIA.

I. original (base) level knowledge:
1. Definition concepts "the colony", "clone", "pure culture", "view" "strain".
2. Knowledge methods cultivation and receiving clean culture aerobes.
3. Breath bacteria.

II. Target tasks:

STUDENT MUST KNOW:	STUDENT SHOULD BE ABLE TO:
1. Methods for isolating pure cultures bacteria.	1. Fulfill second stage allocation clean culture aerobes.
2. Methods cultivation aerobes.	2. cook smear, paint on Gram.
	3. Characterize macroscopically grown up colonies.
	4. Transfer the intended colony to slant agar.

Main literature:

1. Microbiology, virology, immunology / Under ed. A.A. Vorobyov. - M., 2004. Chapter3.
2. Microbiology, virology and immunology / Edited by V.N. Tsareva - M., 2009.Part 1, chapter 1.4.
3. Management to practical classes on medical microbiology, virology andimmunology. /Under. ed. V.V. Teza, 2002. Chapter 3.
4. Practicum of laboratory work with illustrated situational tasks on microbiology, immunology and virology / Ed. V.N. Tsareva, A.A. Vorobyov. – M.,2008.

Additional literature:

1. Physiology of microorganisms / methodical development to practical classes ingeneral microbiology. - Rostov-on-Don, 2001.

methodical recommendations, published department microbiology, virology andimmunology GOU HPE SOGMA Roszdrav:

1. Methods laboratory diagnostics / methodical recommendations for students medical, pediatric, dental, pharmaceutical faculties, faculty of higher nursing education. - Vladikavkaz, 2003.
2. Fence pathological material for microbiological, virological and serological diagnosis of infections / Educational and methodical development for students higher nursing education. - Vladikavkaz, 2005.
3. Guidelines for independent work of students in microbiology / Educational-methodical recommendations. - Vladikavkaz, 2003.
4. Collection methodical developments on microbiology for students medical, pediatric, medical-prophylactic and pharmaceutical faculties / Educational methodical developments, part I.- Vladikavkaz, 2008.

III. Tasks for independent extracurricular work on studied topic

1. Define the bacteriological method for diagnosing infectious diseases .diseases, his role in any clinic profile.

2. Methods cultivation and receiving clean culture aerobes.

3. Way receiving isolated colonies aerobes (method Drygalsky).

4. Describe macroscopic characteristic colonies, grown on cups WithMPA (I stage).

5. List stages second days allocation clean culture.1.

2.

6. List measures technology security for student working With pathogenicmaterial (selection clean culture) in the educational bacteriological laboratories.

SELF CONTROL

Specify two correct response:

1. At the first stage of the bacteriological research method, the following tasks are solved:a) identification clean cultures of microbes;
b) definition sensitivity to antibiotics;
C) receiving isolated colonies;
d) determination of the type of
microbe;
e) receiving clean culture.

2. Predominant growth of some types of microbes with simultaneous suppressionothers can receive on the following types of nutrients Wednesdays:
a) selective (elective);
b) simple;
C) complex;
G) preservative;
e) differential diagnostic;
e) universal;
d) optimal.

3. AT concept "cultural properties" microbe includes:
a) character growth on nutritional environments;
b) macroscopic characteristic colonies;
c) morphology microbial cells at microscopy;
G) fermentation carbohydrates on environments Hiss;
e) pigment color colonies or culture;
e) attitude pathogen to coloration on Gram.

4. Why, at the 2nd stage of the bacteriological method, a smear is prepared from the colony, stained his and microscopic?
a) definitions tinctorial properties microbe;
b) receiving clean culture;
c) study biochemical properties microbe;
G) study macroscopic characteristics colonies;

e) study morphology of microorganisms.

5. The main goals of using differential diagnostic environments:
6. a) studying biochemical microbial activity;
b) study of cultural properties microbes;
C) definitions sensitivity to antibiotics;
G) differentiation of different species microbes;
e) transportation material in laboratory.
7. Bacterial growth is affected by the following culture conditions:
8. a) gas composition;
b) the content of organic compounds in the nutrient medium;
C) factors growth;
G) medium pH;
e) environment humidity;
e) Everybody answers wrong.
9. What conditions are necessary for bacterial pigment formation?
a) presence oxygen;
b) absence oxygen;
c) a certain composition of the nutrient medium;
G) certain temperature;
e) Everybody answers wrong.
10. The final electron acceptor in aerobic respiration in bacteria is:a) inorganic connections;
b) molecular oxygen;
C) organic connections;
e) simultaneously organic and inorganic connections
11. Transferring material from the colony to agar slant is performed for:
a) study biochemical activity;
b) study tinctorial properties;
c) obtaining a pure culture of microorganisms;
G) Everybody answers wrong.
12.What criteria are used to describe bacterial colonies?
13.a) by color;
b) by the nature of the
region;c) to size;
G) on form;
e) on consistency;
e) All answers are wrong.
11.S-shapes colonies - this is
a) rough colonies with uneven edges;
b) smooth colonies with smooth edges;
C) colorless colonies;
G) Everybody answers wrong.
12. What activities are carried out at the 2nd stage of the bacteriological diagnostic method infectious diseases?
a) study biochemical properties bacteria;
b) study the phagolyzable properties of bacteria;
C) study cultural properties bacteria;
d) study the morphological properties of bacteria;
e) study motility of bacteria;
e) study tinctorial properties bacteria.
13. What is the nature of bacterial growth on liquid nutrient media?
a) colonies;

b) diffuse turbidity of the nutrient medium;c)
surface growth (film);
G) sediment;
e) Everybody answers wrong.
14. What are the tinctorial properties of microorganisms?
a) character growth microorganisms on nutritional environments;
b) the ability of microorganisms to stain with aniline dyes;
C) attitude bacteria to bacteriophages;
G) attitude bacteria to factors growth.
15. How is the mobility of microorganisms studied?
a) darkfield microscopy;
b) phase contrast microscopy;
c) microscopy of a stained smear;
G) Everybody answers wrong.

Lesson number 8

THEME: "GENETICS MICROORGANISMS".

Target tasks: To study the material basis of heredity, forms of variabilitymicroorganisms, genetic recombination.

I. Questions for checks original level knowledge:
1. What such genetics?
2. What such gene, chromosome?
3. carriers genetic information from microorganisms?
4. Definition genome microorganisms.
5. That is material basis heredity microorganisms?

II Targets. Student should

know:
1. material basis heredity microorganisms
2. Forms variability microorganisms.
3. Terms occurrence variability microorganisms. Mutagens
4. genetic recombination microorganisms **.**

The student must be able to:
By cultural properties, determine the affiliation of bacteria to pathogenic strains(R -S dissociation)
Explain mechanism occurrence antibiotic resistance bacteria

LITERATURE:

Main literature:
1.Microbiology With virology and immunology /Under ed. L.B.Borisova, A.M. Smirnova - M., 1994.
2.Microbiology, virology, immunology /Under ed. A.A. Vorobiev. M.-2004
3. Microbiology, virology, immunology / Ed. V.N. Tsareva - 2009 4.Guide to practical classes on medical microbiology, virology andimmunology. /Edited by V.V.Tetsa 2002
5. Workshop of laboratory work with illustrated situational tasks for microbiology, virology and immunology. /Under the editorship of V.N. Tsareva, A.A. Vorobyeva.-M., 2008.

Additional literature:

1. Physiology of microorganisms / Methodological developments for practical exercises on general microbiology. Rostov- on - Don 2001.
2. **methodical recommendations, published department microbiology, virology and immunology GOU HPE SOGMA Roszdrav:**

General microbiology / Educational and methodological recommendations for students of medicalfaculty. - Vladikavkaz, 2004.

Collection of methodological developments in microbiology for medical students, pediatric, preventive and pharmaceutical faculties / Educational andmethodical developments, part 1. Vladikavkaz, 2008.

3. Medical microbiology (educational allowance) under ed. A.M. Korolyuk and V.B.Sboychakova- SPb. 1999.
4. Microbiology for doctors under editorial A.N.Mayansky-N.Novgorod, 1998.

III. Tasks for independent extracurricular work on topic being studied.

1. Continue statement - what such transformation and what kind stages allocate in thatprocess
……
……
……
……
……
…….

2.What kind exist forms manifestations variability microorganisms
……
……
……
……
……
……..

3. Practical meaning variability microorganisms
……
……
……
……..

4.Continue phrase mutagens are
……
……..

SELF CONTROL
Specify correct answers:

1.What belong to extrachromosomal genetic structures?:
a) ribosomes
b) polysomes
c) plasmids

G) mesosomes
e) transposons

2. What such mutagens?

A) genes that cause mutations
B) factors defiant mutation
C) factors that transmit genetic information
G) factors restoring DNA

3. What such inversion

A) way genetic recombination
B) repair of damaged DNA sections
C) chromosomal mutation
G) point mutation

4.What such modification?

A) correction damaged plots DNA
B) phenotypic changes that do not affect the cell genome
c) transfer of genetic material fir with the help of a bacteriophage
G) hereditary spasmodic change sign

5. What such repair?

A) lysogeny
B) recovery damaged DNA
C) a method of transferring genetic information
G) viropexis

6. What such exon ?

A) virulent bacteriophage
B) prophage
C) a section of a gene that carries certain genetic information
G) moderate bacteriophage

7.What such mutations?

A) correction damaged plots DNA
B) transfer of genetic material using a bacteriophage
C) hereditary hop change sign
D) the process of formation of bacterial progeny containing the characteristics of the donor andrecipient

8. For conjugation characteristic:

A) transfer of genetic material using a bacteriophage
B) needed contact cells donor and recipient
C) broadcast genetic material With help RNA
G) broadcast genetic material With help sexual factor a

9. How characterized "minus" chain RNA?

A) is infectious
B) bears hereditary function
B) able to integrate into the chromosome of the cell
G) not has function informational RNA

10. At what microorganisms material basis heredity is RNA?

A) in bacteria
B) at spirochete
C) in RNA-containing viruses
D) in DNA-containing viruses
D) at mycoplasma

11. What such transformation?

A) recovery damaged DNA

B) broadcast genetic information at contact bacterial cells different
"sexual" focus
B) transmission genetic information With help fragment DNA
D) the transfer of genetic information from the donor cell to the recipient cell usingbacteriophage

12. What kind distinguish forms genetic recombinations?

A) repair;
B) transformation;
C) transduction;
D) conjugation;
D) all answers are correct;
E) Everybody answers wrong.

13. What such transduction?

A) transfer of genetic material using a bacteriophage
B) needed contact cells donor and recipient
C) broadcast genetic material With help RNA
G) broadcast genetic material With help sexual factor a

14. What studies genetics microorganisms?

A) Ultrastructure microorganisms;
B) Issues of heredity and variability of microorganisms;
C) Processes metabolism microorganisms;
G) Everybody answers correct;
D) All answers wrong.

15. How characterized "a plus" chain RNA?

A) bears hereditary function
B) able to integrate into the chromosome of the
cell
G) has function informational RNA
D) does not have the function of messenger RNA
E) Everybody answers correct.

Occupation #9

THEME: SYMBIOSIS And ANTAGONISM AT WORLD MICROBOV.

I. Questions for checks original (base) level knowledge

1. Stages and factors symbiosis human With microbes.
2. Terms formation associations residents.3.
Differences pathogens from residents.
4. What methods can study microflora human?
5. Composition resident microflora skin covers person.

II. Target tasks

Student should know:	**Main literature:**
1. Stages and factors symbiosis human With microbes. 2. Microflora of air, water, bodyperson. 3. Conditions for forming an associationresidents. 4. Differences pathogens from residents.	1. Microbiology, virology and immunology./Under. ed. V.N. Tsareva. - M., 2009. With. 145-158 2. medical microbiology, virology and immunology./Under. ed. A.A. Vorobyov. M. 2004. FROM. 82-102 3. Microbiology./Under ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova, A.M. Rybakova.-M., Medicine, 2003. 4. Medical microbiology./Under ed. Acad. RAMS IN A. Pokrovsky.-M., 2001. 5. Microbiology With virology and immunology./Under ed. L.B. Borisov, A.M. Smirnova-M., 1994. FROM. 105-120.
The student must be able to:	**Additional literature:**
1. Sowing material from the fingersper cup With MPA (method prints). 2. Conduct sowing air on cup WithMPA. 3. Sowing detachable from nose and pharynx onMPA.	1. Workshop laboratory works With illustrated situational assignments in microbiology, immunology and virology./ Under. ed. A.A. Vorobiev, V.N. Tsareva. M., 2008. 2. Guide to practical exercises on medical microbiology, virology and immunology./Ed. V.V. Teza, 2002. FROM. 85-110. 3.Lab Guide Microbiology./Under ed. L.B. Borisov.-M., 1984. 4.Sanitary microbiology and Virology./Under ed. Z.N. Kochemasova, S.A. Efremova, A.M. Rybakova.-M., 1987

To fill in the missing knowledge will help the study of special literaturespecified higher

III. Tasks for independent work on topic under study:

1. Symbiosis -this is ----------

2. ***Microbiocenosis -this is*** ----------

3. heterobionts -this is ----------

four. Residents ----------

five. pathogens ----------

6. Stages formation and factors symbiosis:

1. ***Stage infectivity*** **----------**

2. Stage of invasiveness ----------

3. Stage pathogenicity ----------

7. Dysbacteriosis- this **----------**

8. Dysbacteriosis (or in more wide sense – dysbiosis) - It has two stages:

A) subclinical **----------**

B) clinical **----------**

9. **Fill table**

Classification of microbes by ability to the main stagessymbiosis with human body

group of microbes on factor symbiosis	Factors infectivity	Factors invasiveness	Factors toxicity
1. heterobionts	Genotype (-) Phenotype (-)	Genotype (-) Phenotype(-)	Genotype(+or-) Phenotype (+or-)
2. Residents			
3. pathogens			

10. *At aggregates certain conditions* ***residents may to be cause defeatbody:***

1. At .....

2. At- .....

3. At .....

11. diseases, direct cause which are residentgerms, received title ----------

pathogenicity .....

pathogens .....

Virulence .....

12.*heterobionts - this is* .....

13.Fill table

The composition of the human resident microflora in various ecological nicheshuman body

Group microbes	Cavity mouth	Nasopharynx	thick intestine	skin, wounds	Conjunctiva eye
Astreptococci Astreptococci	1 tr				
Staphylococcus aureus epidermis. Staphylococcus aureusgolden	2 2				
corynebacteria lactobacilli actinomycetes	1 2 2				
Bacteroids Fusobacteria Waylonelles Spirochetes	2 2 1 2				
meningococci Mycoplasmas Proteus	0 2 0				
Clostridia	0				
Yeast-like mushrooms	2				

Designations:

1- usually present, are ***an important*** fraction of the regional microflora;2-usually present, are ***small*** faction of the regional microflora;

3- often are found, may to be with a significant ***fraction*** ;

Tr- are found in small quantities or as a transient microflora;0- usually not are found.

SELF CONTROL

1. Microbes providing colonization resistance of microflora intestines: (select one correct answer)

1. Mushrooms
2. Protozoa
3. Viruses
4. Anaerobes

2. Microorganisms that are characteristic representatives of microflora thick intestines person: (choose two correct answer)

1. bifidobacteria
2. intestinal wand
3. Bacteroids
4. Mycobacteria

3. Microbes involved in the formation of colonization resistancemicroflora intestines: (select two correct answer)

1. Mushrooms kind Candida
2. lactobacilli

3. Proteus
4. bifidobacteria

4. microbes, participating in formation colonization resistance thickintestines: (select two correct answer)

1. bifidobacteria
2. Staphylococci
3. lactobacilli
4. Proteus

***5.* Preparations for recovery normal microflora intestines person: (choose three correct answer)**

1. coliphage
2. Bifidumbacterin
3. Bificol
4. Lactobacterin

6. Eubiotics apply for: (select one correct answer)

1. selective decontamination
2. Chemotherapy
3. Identification eubacteria
4. Treatments dysbacteriosis

7. Eubiotics: (select 2 correct answer)

1. Colibacterin
2. Colibacteriophage
3. Bificol
4. Metronidazole

INSTALL, RIGHT LI STATEMENT I RIGHT LI STATEMENT II, And EATLI BETWEEN NIMI CONNECTION

8. AT body human pre-digestion food carries out microflora thick gutsbecause, what

- *in body human missing enzymes, capable split fiber.*

9. Normal microflora organism provides colonization resistancebecause, what

- *normal microflora not capable transform carcinogens and mutagensin non-hazardous for organism substances.*

10. intestinal wand - most numerous from microbes normal microfloraorganism human, because what

- *intestinal wand prevails in composition intestinal microflora.*

OCCUPATION #10

THEME: ANTIBIOTICS And CHEMOTHERAPEUTIC DRUGS.

I. Questions for checks original (basic) level knowledge:

1. History discoveries antibiotics, principles receiving and applications antibiotics(research A. Fleming, G.Flory, E. Cheyna, Z. Ermolyeva, S. Waksman and others).
2. The place of antibiotics in modern medicine. Basic principles

antibiotic therapy.
3. Classification on chemical structure, character and antimicrobial mechanismactions, origin and spectrum actions on a microbial cell.
4.Demonstration antibiotics With various mechanism and spectrum actions. Principlesrational antibiotic- and chemotherapy.
5.The third and fourth stages allocation clean culture aerobes.
6.Highlight clean culture anaerobes (continuation).
7.Dysbacteriosis, eubiotics.
8.Definition sensitivity to antibiotics method indicator disks.9.Genetic control resistance to antibiotics at bacteria.

II.Target tasks:

Student should know:	*Literature:*
• main principles antibiotic therapy; • classification of antibiotics by mechanism actions, spectrum and final result actions on microbial cell; • comparative characteristic major groups of antibiotics (penicillins, cephalosporins, macrolides, aminoglycosides, tetracyclines, chloramphenicol); • Implementation of the 3rd and 4th stages of the studyisolation of a pure culture of aerobes and anaerobes. • Sensitivity method indicatordisks.	1. Medical microbiology, immunology and virology. / Ed. A.I. Korotyaeva, S.A. Babichev. - Saint - Petersburg, 1989. 1. medical microbiology, virology and immunology. / Under. ed. A.A. Vorobyov. - M., 1999 2001 2004. 2. Medical microbiology. / Ed. acad. RAMS IN A. Pokrovsky. - M., 2001. 3. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. 4. Microbiology, virology and immunology. / Under ed. V.N. Tsareva, 2009. 5. Navashin CM., Fomina I.P. Rational antibiotic therapy. - M.,1082. 7.Yakovlev S.V., Yakovlev V.P. Brief directory on antibiotic therapy. - M.,1998. 8.Mashkovsky M.D. Medicinal funds. - M, 2000.
Student should be able to: • Define biochemical and the proteolytic activity of the isolatedclean culture. • Describe sensitivity characteristicclean culture to antibiotics. • Record.	*Literature:* 1.Lab Guide microbiology. / Ed. L.B. Borisov. - M., 1984. 2.Guide to practical exercises on medical microbiology, virology and immunology. / Under. Ed. V.V. Teza, 2002.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic under study:

1.Fill in table:

Characteristic sensitivity cultures to antibiotics	Diameter zones oppression growth bacteria
highly sensitive culture	
Medium sensitive	
Weak sensitive	

culture stable	

2. Fill in protocol research:

№№ p/n	researched material	results research	Graphic image

SELF CONTROL

Specify correct answers:

3. Specify antibiotic, possessing greatest anti-anaerobic activity:

a) Ampicillin
b) Gentamicin
c) Cefoperazone
G) Metronidazole
e) Ciprofloxacin

4. Principles rational antibacterial therapy are:

a) Start treatment With minimal doses antibacterial drugs
b) Start antibacterial therapy after identification pathogenc) Accounting previous antibacterial therapy
G) Accounting age and related pathology
e) Mandatory sampling of biomaterials for bacteriological examination beforetreatment

5. Choose antibacterial drugs that are active against intracellularpathogens (mycoplasmas, chlamydia, legionella):

a) Levofloxacin
b) Clarithromycin
c) Amoxicillin
G) Doxycycline
e) Clindamycin

6.Specify antibiotic, being drug choice at treatment infections,caused methicillin-resistant staphylococcus aureus (MRSA):

a) Clindamycin (dalacc)
b) Metronidazole (trichopolum, flagyl)
c) Vancomycin (edicine)
G) Ampicillin/sulbactam (unazine)e) Meropenem (meronem)

7. **Specify antibacterial a drug, inactive in relation** *Streptococcuspneumoniae* :

a) Azithromycin (sumamed)
b) Benzylpenicillin
c) Ceftriaxone (Longacef)G) Ciprofloxacin
e) Clindamycin (dalacc)

8. Main honors cephalosporins II generations from drugs III generationsis more high activity in relation:

a) Multiresistant Gr (–) flora b) Multiresistant Gr (+) flora c) Anaerobic pathogens
d) Intracellular pathogens e) Enterococci

9. Install conformity:

Indication Drug

1. Cefazolin B a) High Gr.(+), Gr.(-) and anti-anaerobic activity

2. Cefuroxime D b) Gr.(+) Flora
3. Ceftriaxone G c) Gr.(-) Flora, intracellular pathogens
4. cefepime A d) High Gr.(-) and moderate Gr.(+) activity
5. Ciprofloxacin B e) Moderate Gr.(+) and Gr.(-) activity

10. On what kind 4 groups on origin share antibiotics:

1. animal
2. vegetable
3. microbial
4. synthetic and semi-synthetic
5. a wide range actions
6. antifungal
7. narrow spectrum actions
8. anti-tuberculosis

11.Bring 2 example antibiotics animal origin:

1. lysozyme
2. ecmolyn
3. gramicidin
4. polymyxin

12. Representatives of which three groups of microorganisms are producers antibiotics:

1. actinomycetes
2. mushrooms
3. bacteria
4. mycoplasmas
5. rickettsia
6. spirochetes

13. Lead 2 example antibiotics produced bacteria:

1. polymyxin
2. gramicidin
3. streptomycin
4. erythromycin

14.On what kind five groups on antimicrobial spectrum actions share antibiotics:

1. current on gram-positive and gram negative cocci
2. active on majority gram-positive and Gram-negative bacteria
3. anti-tuberculosis
4. antimycotic
5. active in relation protozoa
6. intestinal
7. bactericidal
8. bacteriostatic
9. violation synthesis cellular walls
10. violating functions cytoplasmic membranes

15.Name 2 method definitions sensitivity bacteria to antibiotics:

1. method paper disks
2. method serial dilutions
3. method flocculation in agar
4. method diffusion into agar

OCCUPATION #11

TOPIC: GENERAL VIROLOGY. METHODS OF VIROLOGY OF BACTERIOPHAGES AND PHAGOTYPING

I. Questions for checks initial (basic) level knowledge:

1. cultivation rickettsia, chlamydia and viruses.
2. Main properties viruses, methods virological research.
3. Main properties rickettsia and chlamydia, methods them cultivation.
4. Structure chicken embryo.
5. Classification cellular cultures.
6. Ways infections laboratory animals, chicken embryo.
7. What kind changes are happening in body infected animals, chicken embryo,tissue cultures (cytopathic action).

II. Target tasks:

Student should know:	*Literature:*
• Obtaining and classifying cellularcultures. • Structure and methods infections chicken embryo. • Requirements to laboratory animals,ways them infections. • color sample Salk. • Reactions hemagglutination and hemadsorption.	1. Medical microbiology, immunology and virology. / Ed. A.I. Korotyaeva, S.A. Babichev. - Saint - Petersburg, 1989. 6. medical microbiology, virology and immunology. / Under. ed. A.A. Vorobyov. - M., 1999 2001 2004. 7. Medical microbiology. / Ed. acad. RAMS IN A. Pokrovsky. - M., 2001. 8. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. 9. Microbiology, virology and immunology. / Under ed. V.N. Tsareva, 2009.
Student should be able to: • Conduct take material for virological research. • Conduct infection biological modelsfor the cultivation of viruses, followed by indication. • sketch scheme infections chicken embryo. • Virus culture methods (virological method) on culture fabrics(draw). • cytopathic action viruses on culturecells (draw).	*Literature:* 1.Lab Guide microbiology / Under ed. L.B.Borisova.- M., 1984. 2.Guide to practical exercises on medical microbiology, virology and immunology / Under ed. V.V. Tetsa, 2002. 3.Guide to practical exercises on Microbiology / Ed. Lebedeva M.N.- M., 1980. 4. Brief terminological vocabulary microbiologist-biotechnologist. / Ed. Yu.A. Ovchinnikov. - M.: An THE USSR, 1989. 5. Basics medical biotechnology. /Under ed. A.A. Vorobyov. - M., 1990.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III .Tasks for independent work on studied topic:

Specify correct answers

1. For microbiological diagnostics viral infections apply the followingmain methodological approaches:
a) bacteriological diagnosis
b) virological diagnostics
c) serological diagnosis
G) molecular biological diagnostics
2. Viruses multiply only:
a) in alive systems
b) on meat-peptone agar
c) on differential diagnostic media
G) on selective environments
3. First stage virological diagnostics is receiving and preparation:a) cultures cells
b) chicken embryos
c) sensitive laboratory animals
d) differential- diagnostic Wednesdays
4. Primary culture withstand:
a) no more than 5-10 passages
b) unlimited number of passages
c) before 30-60 passages
5. transplanted cultures withstand:
a) no more than 5-10 passages
b) unlimited number of passages
c) before 30-60 passages
6. Semi-transplantable (diploid) cultures withstand:a) not more
5-10 passages
b) unlimited number of passages
c) before 30-60 passages
7. Reveal viruses
a) by cytopathic effect
b) on education plaques
c) by color sample
G) on biochemical properties
8. discover viruses in chicken embryos:
a) by changing the chorionallantoic membrane
b) reactions agglutination
c) complement fixation reactions
G) reactions precipitation
9. To isolate rickettsiae, they infect:
a) chorionallantoic shell
b) allantoic cavity
c) amniotic cavity
G) yolk bag
10Experimental animals in virology apply for:
a) diagnostics viral infections
b) obtaining immune antiviral sera and blood ingredients
c) developing ways specific and non-specific prevention
d) simulation of viral infections to study pathogenesis, immunity, pathomorphology.

SELF CONTROL

Specify correct answers:

1. Chlamydia have form:
a) spherical
b) ovoid
c) twisted
G) rod-shaped
2.Chlamydia cultivated:
a) laboratory animals
b) chicken embryo yolk sac
c) HELLA
3.Viruses reproduced:
a) MPA
b) MPB
c) Nutrient Medium "199"
d) living cells
e) Nutrient Medium Endo
4.Specify cytopathic action:
a) symplasts
b) destruction mitochondria
c) quickly vacuolizes cytoplasm
5.semi-transplantable (diploid) culture withstand:
a) no more than 5-10 passages
b) unlimited number of passages
c) before 30-60 passages
6.Specify signs color samples:
1) when tissue culture is infected with viruses a) the color of the medium changes
2) metabolism in cage saved b) change colors indicator
7. Agglutination erythrocytes in presence various viruses going on at adsorptionon erythrocytes viruses
a) capsid
b) viruses have hemagglutinin proteins:
c) cellular wall
8.The CPE of the virus expresses in the cell:
9.a) degeneration cage
b) complete decay
c) is happening exchange substances in cage
10. For cultivation cultures cells necessary:
a) observance of the rules of asepsis b) use difficult nutritional Wednesdaysc) use laboratory crockery
d) adding antibiotics to Nutrient Medium for suppression growth strangersmicroorganisms
11.Plaques or "negative colonies" are:
a) limited areas of cells destroyed by viruses
b) color virus
c) determine the concentration of viruses in the test material
d) shape
e) size
f) term appearance
12. culture cells capable of:
1) attach and multiply on surfaces laboratory dishes in monolayer a) organ cellsform

2) whole pieces bodies and tissues, b) suspended cell culturespreserving the original culture
outside organism
3) cells multiply in all c) single-layer cell cultures
nutritional environments at
permanent her mixing
13.For laboratory diagnostics viral infections apply the following mainmethodological approaches :
a) bacteriological
b) virological
c) serological diagnostics
d) molecular biological diagnostics
14.culture cells received: 1) primary a)
embryo human, tumor-like cells 2) transplantable
b) diploid cells 3) semi-transplantable
15.Viruses are found in chicken embryos:
a) about the change in the chorioallantoic membrane
b) reaction agglutination
c) complement fixation reaction
d) reaction precipitation
16. Viral inclusion differ:
a) by size
b) form
c) numbers
d) size.

Occupation #12

TOPIC: IMMUNE STATUS MEASUREMENTSNON-SPECIFIC FACTORS PROTECTION

Motivational characteristics of the topic: Familiarization with the factors of naturalresistance organism and development methods her study.

Necessary original level knowledge: genetic foreignness of microorganismsfor organism person.

I. Questions for checks initial (basic) level knowledge
1. genetic foreignness microorganisms for organism person.
2. Inflammation, signs inflammation.
3. Phagocytosis, stages phagocytosis.
4. Completed and unfinished phagocytosis.
5. Functions lymphoid fabrics.

II. Target tasks:

The student must know:
1. Protective action intact skin and mucous shells.
2. Inflammation.
3. Phagocytosis, stages phagocytosis.
4. Barrier function lymphoid fabrics.

5.Cellular factors non-specific protection blood and biological liquids.
6. bactericidal substances serum blood and biological liquids: lysozyme,complement, properdin, leukins, beta lysines, interferons.
7. Methods estimates non-specific resistance organism.

The student must be able to:
1. Define bactericidal action lysozyme saliva.
2. Define complementary activity serum blood.
3. Define phagocytic activity immunocompetent cells blood.
4. Define bactericidal function skin.

Literature:
Main literature:
1. Medical microbiology, immunology and virology. / Ed.2.A.I. Korotyaeva, S.A. Babichev. - St. Petersburg, 1989.
3.Medical microbiology, virology and immunology. / Under. ed. A.A. Vorobyov. -M., 1999 2001 2004.
4.Medical microbiology. / Ed. acad. RAMS V.I. Pokrovsky. - M., 2001. 5. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, AM Rybakova. -M., Medicine, 2003.
6.Microbiology, virology and immunology. / Under ed. V.N. Tsareva, 2009.
7.Management to laboratory classes on microbiology. / Under ed. L.B. Borisov. - M.,1984.
8.Management to practical classes on medical microbiology, virology andimmunology. / Under. Ed. V.V. Teza, 2002.

Additional literature:

1. Brief terminological vocabulary microbiologist-biotechnologist. / Under ed. Yu.A. Ovchinnikov. - M.: An THE USSR, 1989.
2. Basics medical biotechnology. /Under ed. A.A. Vorobyov. - M., 1990.
3. Nosocomial infections. / Under ed. V.P. Wenzel. - M., 1990.
4. Basics biotechnology. - SPB.: Publishing house firm "The science". - 1995.
5. Ecological immunology. /Under ed. PM Khaitova, B.V. Pinegina, H.I. Istamov.-M.: Publishing house VNIIRO, 1995.
6. Immunology for doctor. / Under ed. S.A. Ketlinskaya, N.M. Kalinina. -SPB., 1998.
7. Clinical immunology. / Under ed. A.V. Karaulova. - M., 1999.
8. Medical microbiology (textbook) / Ed . A.M. Korolyuk andV.B. Sboychakova. - SPb., 1999.
9. Microbiology for doctors / Under ed.A.N. Mayansky.-N.Novgorod., 1999.

III. Exercise for independent work on topic under study:
1. Transfer congenital factors non-specific anti-infectious protectionorganism.
2. Protective action intact skin and mucous shells.
3. Fill table.

BACTERICIDAL SUBSTANCES OF BLOOD SERUMAnd BIOLOGICAL LIQUIDS

Lysozyme	
Complement	
properdin	

Leukins	
Beta lysines	
Interferon	

4. Fill table

STAGES PHAGOCYTOSIS (describe)

Chemotaxis	
Adhesion	
Endocytosis	
Intracellular digestion	

5. Fill table

WAYS ACTIVATIONS COMPLEMENT (describe)

Classical way	
Alternative way	
Lectin way	

SELF-CONTROL.

Specify correct answers:

1. Non-specific body defense factors include:
A. Normal microflora organism;
B. Inflammatory reaction;
C.Phagocytosis;
D. The excretory function of the kidneys.

Specify one correct answer:

2. Humoral non-specific factors of body defense include:A. Phagocytosis;
B. Natural killers;
C.Complement;
G. Normal microflora organism.
3. Cellular non-specific factors of body defense include:A. Interferon;
B. Natural killers;
C.Complement;
G. Properdin.
4. The membrane attack complement complex is:
A. C3 fraction complement;

B. C1- fraction complement;
C. C5-C9 complement fractions;
G. C2 fraction of complement.

Specify three correct response:
5. Complement activation pathways:
A. Classical;
B. Non-classical;
B. Alternative;
G. Lectin.
6. Specify the stages of phagocytosis:
A. Chemotaxis;
B. Lysis;
B. Endocytosis;
D. Merger phagosomes With lysosome.
7. What cells are phagocytes?
A. Neutrophils;
B. Monocytes;
B. Eosinophils;
G. Lymphocytes.
8. What effect does interferon have?
A. Antitumor;
B. Antiviral;
C.Antibacterial;
G. Immunostimulating.
9. Intact skin covers:
A. Are mechanical barrier;
B. They are a factor in the nonspecific defense of the body;
C. Are factor specific protection organism;
G. hinder penetration alien in organism.

10. Complement has next properties:
A. it protein;
B. it enzyme;
C.Factions complement are secreted immunocompetent cells;
G. Activation complement maybe take place several ways: classic,alternative lectin;
D. Membrane attacking complex is C1-C2.
11. The humoral factors of nonspecific defense of the body include:
A. Lysozyme;
B. Complement;
B. Neutrophils;
G. macrophages;
D. Leukins.
12. The cellular factors of nonspecific defense of the body include:
A. macrophages;
B. Lysozyme;
C.Monocytes;
D. Neutrophils;
D. Complement.
Specify one correct answer:
13. Vs what microorganisms lysozyme most effective?

A. Gram negative bacteria;
B. Gram-positive bacteria;
C.Mushrooms;
G. Viruses.
14. Lysozyme - this is:
A. lipid;
B. Enzyme;
C.Carbohydrate;
G. Glycoprotein.
15. What are the major protein fractions of complement?
A. five;
B. 10;
C.nine;
G. 8

Occupation #13

THEME: PHYSIOLOGICAL MECHANISMS IMMUNITY. IMMUNE SYSTEM HUMAN. ANTIGENS And ANTIBODIES. HUMORAL And CELLULAR IMMUNITY.

Motivational characteristic of the topic: The study of physiological mechanismsimmunity. Structure, antigen properties and antibodies.

Required initial level of knowledge: Nonspecific resistance of the organismperson.

I. Questions for checks original (base) knowledge level:
1. Non-specific factors of body protection;2.
Immune system person;
1. Immunocompetent cells, immunogenesis;
2. What such antigens?
3. What antibodies?

II. Target tasks:

The student must know:
1.Definition immunity kinds immunity.
2. Organs immune systems person.
3. Immunocompetent cells. Immunogenesis.
4. Antigens. Gaptens. Antigens bacteria.
5. Physiological mechanisms immunity. Cooperation immunocompetent cells.
6. humoral and cellular immune answer.
7. Antibodies. Structure immunoglobulins, main classes, functions antibodies.
8. Immunological memory.
9. Immunological tolerance.

The student must be able to:
Determine the concentration of immunoglobulins of different classes in serum by the methodradial immunodiffusion on Mancini

Literature:

Main literature:

1. Medical microbiology, immunology and virology. / Ed.2.A.I. Korotyaeva, S.A. Babichev. - St. Petersburg, 1989.
3. Medical microbiology, virology and immunology. / Under. ed. A.A. Vorobyov. -M., 1999 2001 2004.
4. Medical microbiology. / Ed. acad. RAMS V.I. Pokrovsky. - M., 2001. 5. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, AM Rybakova. -M., Medicine, 2003.
6. Microbiology, virology and immunology. / Under ed. V.N. Tsareva, 2009.
7. Management to laboratory classes on microbiology. / Under ed. L.B. Borisov. - M.,1984.
8. Management to practical classes on medical microbiology, virology andimmunology. / Under. Ed. V.V. Teza, 2002.

Additional literature:

1. Brief terminological vocabulary microbiologist-biotechnologist. / Under ed. Yu.A. Ovchinnikov. - M.: An THE USSR, 1989.
2. Basics medical biotechnology. /Under ed. A.A. Vorobyov. - M., 1990.
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8. Medical microbiology (textbook) / Ed . A.M. Korolyuk andV.B. Sboychakova. - SPb., 1999.
9. Microbiology for doctors / Under ed.A.N. Mayansky.-N.Novgorod., 1999.

III. Exercise for independent work on topic under study:

1. Supplement diagram:

KINDS IMMUNITY

IMMUNITY

Natural (specific) | Acquired

2. Forms immunity (transfer).
3. Fill table.

PROPERTIES ANTIGEN (describe)

antigenicity	
Specificity	

4. Fill table

Antigens bacteria	**Antigens viruses**

5. Fill table

Central bodies immune system	Peripheral bodies immune systems

6. Fill table

GENERAL CHARACTERISTIC T- And AT – LYMPHOCYTES

T-lymphocytes	B-lymphocytes

7. Fill in the table:

Describe:

humoral immune answer	Cellular immune answer

8. Fill in the table:
Describe:

Immunological memory	Immunological tolerance

9. Fill table:

PROPERTIES IMMUNOGLOBULIN

Ig G	
Ig M	
Ig A	
Ig D	
Ig E	

10. Fill table:

TYPES ALLERGIC REACTIONS

Number type	Name type	Basic Mechanisms immunopathological reactions	Examples clinical manifestations
Type I	Anaphylactic		

Type II	Cytotoxic		
Type III	immunocomplex		
Type IV	Cellular		

SELF CONTROL

Specify three correct response:
1. What organs are classified as peripheral organs of the immune system? A. thymus;
B. Thymus gland;
B. Lymphoid tissue;
G. Bone brain;
D. Spleen;
E. Lymphatic nodes.
2. What organs are classified as organs of the immune system?
A. Spleen;
B. Bone marrow;
C.Lungs;
G. Lymphatic nodes.
3. What cells are classified as immunocompetent? A. T-lymphocytes;
B. red blood cells;
C.macrophages;
G. B-lymphocytes.
4. What cells have phagocytic activity?
A. macrophages;
B.B-lymphocytes;
B.T-lymphocytes;
G. Monocytes;
D. Neutrophils.

Specify one correct answer:
5.What kind cells respond per production humoral immune answer?
6.A. macrophages;
B. Neutrophils;
B. T-lymphocytes;
G. B-lymphocytes.
7.humoral immune answer accompanied by:
A. The production of antibodies against antigens;
B. Cellular forms protection;
B. Phagocytosis.
8.Immunoglobulin G - this is:
A. Monomer;

B. Dimer;
V. Trimmer;
G. Pentamer.
9.Which Class immunoglobulins able permeate through placenta?
A. Ig A;
B. Ig E;
C.Ig G;
G. Ig M;
D. Ig D.
10. What cells are responsible for generating a cellular immune response?
A. macrophages;
B. Neutrophils;
B. T-lymphocytes;
G. B-lymphocytes.
11. Specific phagocytosis is manifestation which forms immune answer?
A. humoral immune answer;
B. Cellular immune answer;
C.non-specific resistance organism.
12. How many main classes of immunoglobulins are known?
A. four;
B. five;
C.10;
G. 6.
13. At what diseases dominated cellular forms protection organism (T-linkimmunity)?
A. In acute bacterial infections;
B. At viral infections;
C.At bacterial infections, in pathogenesis which basic role play toxins.
14. At what diseases prevails humoral immune answer?
A. At viral infections;
B. When protozoan infections;
B. When acute bacterial infections;
G. At development antitumor immunity.
15. Antitoxic immune answer accompanied by:
A. Working out antibodies;
B. Phagocytosis;
C.Cellular cytotoxicity.
16. What class of immunoglobulins occurs in two forms: serum andsecretory?
A. Ig A;
B. Ig E;
C.Ig G;
G. Ig M;
D. Ig D.
17. Cellular cytotoxicity is manifestation which forms immune answer?A. humoral immune answer;
B. Cellular immune answer;
B. Nonspecific resistance organism

OCCUPATION #14

THEME: SEROLOGICAL METHOD LABORATORY DIAGNOSIS. SEROLOGICAL REACTIONS: REACTION AGGLUTINATION, REACTION INDIRECT HEMAGLUTINATION , PRECIPITATION REACTION . DIAGNOSTICS AND DIAGNOSTIC SERUM.

II. Questions for checks original (basic) level knowledge

1. What such immunity?
2. What is the structure immune systems?
3. What such immunocompetent cells?
4. What such antigens, them chemical composition?
5. What epitope antigen?
6. What such hapten?
7. Antibodies, definition, structure, classification
8. Forms immune response.

II. Target tasks:

Student should know: •Serological method laboratorydiagnostics •Serological reactions. •Serodiagnosis, seroindication (seroidentification) •diagnosticums, them receiving •Diagnostic serum, receipt,classification •Reaction agglutination, goal, mechanism, variety, ways productions •Reaction indirect (passive) hemagglutination (RPGA), Components, mechanism •Reaction braking hemagglutination (RTGA), Components, mechanism •Reaction precipitation, Components, mechanism, ways productions	**Literature:** 1. Immunology: Textbook for students medical universities / Under ed. Khaitova R.M., Ignatieva G.A., Sidorovich I.G. – M., 2000. 2. immunodeficiency states / Under ed. Smirnova V.S., Freidlin I.S. \ S-P, 2000. 3. Clinical Immunology and allergology / Under ed. G. lolora- Jr., T. Fischer, D. Adelman. – M., 2000. **Main literature:** 1. medical microbiology, immunology and virology. / Under ed. A.I. Korotyaeva, S.A. Babichev. - Saint - Petersburg, 1989. 2. Microbiology With virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - M., 1994. 3. Microbiology and immunology. / Under. ed. A.A. Vorobyov. -M., 1999. 4. Medical microbiology. / Ed. acad. RAMS IN A. Pokrovsky. - M., 2001. **5.** Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova,A.M. Rybakova. - M., Medicine, 2003. **Additional literature:** 1. Clinical immunology. / Under ed.A.V. Karaulova. - M., 1999. 2. Immunology for doctor. / Under ed. S.A. Ketlinskaya, N.M. Kalinina. - SPB., 1998.
The student must be able to:	**Literature:**

•Set up a response agglutination on subject glass •Put in a detailed reaction agglutination •Put reaction ring precipitation •Set reaction to passive hemagglutination	1. Immunology: Textbook for students medical universities / Under ed. Khaitova R.M., Ignatieva G.A., Sidorovich I.G. – M., 2000. 1. Management for laboratory work on microbiology. / Under ed. L.B. Borisov. –M., 1984. 2. Guide to paktícheskih studies on medical microbiology, virology and immunology. /Under. Ed. V.V. Teza, 2002. 3. Management to practical classes on microbiology / Under ed. Lebedev -M., 1980.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic under study:

1. Specify classification diagnostic sera?
2. Fill in table:

Serological reactions	Components	Mechanism	Ways productions
Reaction agglutination			
Reaction precipitation			

3. Fill in table:

Serological reactions	Components	Mechanism	sketch character draft
Reaction indirect (passive) hemagglutination (RPGA)			
Inhibition reaction hemagglutination (RTGA)			

4. Decide tasks:

a) At sick suspicion on chronic staphylococcal infection. Which methodlaboratory diagnostics most effective in this case?

b) To detect the amount of agglutinins in the serum of a patient with typhoid fever, whatserological reaction needed put?

5. Continue saying:Antigen is

_____

_____

_____
____

Main properties antigen:
1. _____2._____
_____3.
_____Immunogenicity -
_____
_____

Specificity-
_____
_____

6. Reply on questions:
1. For which goals use reactions AG+AT?
2. What serodiagnosis?
3. What seroindication (serotyping)?
7. Add missing intelligence in following text:
•When setting up an agglutination reaction for the purpose of seroindication (serotyping)diagnostic drug is
_____,
she contains famous _____.

•Adsorbed agglutinating serum
_____
_____
_____

•Non-adsorbed agglutinating serum
_____
_____
_____

6. Make up scheme receiving adsorbed agglutinating serum method exhaustion (adsorption) on Castellani.

9. Reply on questions:
• What kind Ingredients are used at serodiagnosis loose typhus?researched material

_____

contains_____
Diagnostic a drug

_____

contains_____
• What kind phases allocate in reactions AG+C.Describe these phases.

10. Continue statements:
•Reaction precipitation

_____
_____
_____

•AT first phase reactions precipitation going on

_____
_____

•In second phase reactions precipitation going on

_____
_____

•Antigen, participating in reactions precipitation

_____
_____

•precipitating serum receive

_____
_____
_____

SELF CONTROL:

Specify one correct answer:

1. What components are required for all serological reactions?
A. Antigens and antibodies;
B. Complement;
C.Erythrocytes.
2. Which antigen involved in reactions agglutination?
A. Soluble;
B. Insoluble;
C.Finely dispersed.
3. Which antigen involved in reactions precipitation?
A. Soluble;
B. Insoluble;
C.Corpuscular.
4. coarse cotton sediment formed, if in reactions agglutination involved:
A. Movable bacteria;
B. Non-motile bacteria;

C.Viruses.
5. fine-grained sediment formed, if in reactions agglutination involved:
A. Movable bacteria;
B. motionless bacteria.
6. What serodiagnosis?
A. Detection of unknown antibodies in the serum of the subject;
B. Detection unknown antigens in researched material;
7. What is the difference between a serological reaction and an immunological one?
A. Serological reaction held in vivo;
B. Serological reaction held in vitro;
B. The serological reaction is not specific;
G. Serological reaction is specific.
8. For which goals used diagnostic serum?
A. For serodiagnosis;
B. For seroindication;
B. For detection antibodies.
9. For which goals used diagnosticum?
A. For serodiagnosis;
B. For seroindication;
C.For detection antigens.
10. How much components involved in reactions braking hemagglutination (RTGA)?
A. 2;
B. 3;
C.four.
G. five.
11. How much components involved in reactions precipitation?
A. 2;
B. 3;
C.four;
G. five.
12. How much components involved in reactions passive hemagglutination (RPGA)?
A. 2;
B. 3;
C.four;
G. five.
13. How much components involved in reactions agglutination?
A. 2;
B. 3;
C.four;
G. five.
14. Which diagnostic serum involved at staging reactions agglutination Withgoal seroindication?
A. Precipitating;
B. lysing;
C.Hemolytic;
G. Agglutinating.
15. Which diagnostic serum involved at staging reactions precipitation Withgoal seroindication?
A. Precipitating;
B. lysing;
C.Hemolytic;
G. Agglutinating.

OCCUPATION #15

TOPIC: COMPLEMENT-DEPENDENT SEROLOGICAL REACTIONS. REACTIONS IMMUNE LYSIS (BACTERIOLYSIS, CYTOLYSIS, HEMOLYSIS). REACTION BINDINGS COMPLEMENT. MODERN SEROLOGICAL And NON-SEROLOGICAL METHODS DIAGNOSIS. ENZYME IMMUNO ANALYSIS (IFA), RADIOIMMUNE ANALYSIS (RIA), REACTION IMMUNOFLUORESCENCE (REEF). POLYMERASE CHAIN REACTION (PCR).

I. Questions for checks initial (basic) level knowledge

1. What is a serological reaction? What is the difference between a serological test andimmunological?
2. What kind Components participate in serological reactions?
3. What serodiagnosis?
4. What seroindication (serotyping)?

II. Target tasks:

Student should know:	**Literature:** 1. Immunology: Textbook for studentsmedical universities / Under ed. KhaitovaR.M., Ignatieva G.A., Sidorovich I.G. - M.,2000. 2. Immunodeficiency states / Ed. Smirnova V.S., Freidlin I.S. \ S-P, 2000. 3. Clinical immunology andallergology / Under ed. G. lolora- Jr., T. Fischer, D. Adelman. – M., 2000.
•Reactions immune lysis, Components, mechanism, varieties reactionsimmune lysis •Reaction binding complement (RSK), Components, mechanism, goal use •Serological reactions usinglabeled antibodies or antigens (reactionimmunofluorescence, enzyme immunoassay , radioimmune analysis) •Polymerase chain reaction	**Main literature:** 1. Medical microbiology, immunology and virology. / Ed. A.I. Korotyaeva, S.A. Babichev. - Saint -Petersburg, 1989. 3.Microbiology with virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - M., 1994. 4.Microbiology and immunology. / Under. ed. A.A. Vorobyov. -M., 1999. 5.Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. **Additional literature:** 1.Clinical immunology. / Under ed.A.V. Karaulova. - M., 1999. 2. Immunology for doctor. / Under ed. S.A. Ketlinskaya, N.M. Kalinina. - SPB., 1998.
The student must be able to:	**Literature:**
Put and take into account the reaction hemolysis Put and take into account reaction binding	1. Immunology: Textbook for students medical universities / Under ed. Khaitova

complement Take into account the results of enzyme immunoassayanalysis, reactions immunofluorescence.	R.M., Ignatieva G.A., Sidorovich I.G. – M., 2000. 1.Management to laboratory classes on microbiology. / Ed. L.B. Borisov. -M., 1984. 2.Guide to paktícheskih studies on medical microbiology, virologyand immunology. /Under. Ed. V.V. Teza, 2002.3. Guide to practical exercises onmicrobiology / Under ed. Lebedev - M., 1980.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Exercise for independent work on topic under study:

1. Fill in table:

Serological reactions	Components	Mechanism	Varieties
Reactions immune lysis			

2. Fill in table:

Serological reaction	Target use	Components	Mechanism	Result
Reaction binding complement (RSK)				

3. Fill in table:

Serological reactions	Target use	Components	Label	Mechanism	Result
Reaction immunofluorescence					
ELISA analysis					
radioimmune analysis					

4. Fill in table:

Non-serological reaction	Principle method	Method steps	Advantages method
Polymerase chain reaction (PCR)			

5. Decide task:

It is known that the isolation of a pure culture of tuberculosis pathogens takes several weeks, and microscopy of the studied material is rather ineffective. What method laboratory diagnostics allows you to make a diagnosis with the highest accuracy and through some hours?

6. What kind tasks decide at serodiagnosis infectious disease?
7. Draw up a scheme for setting up direct and indirect reaction methods immunofluorescence:

Straight method:

Indirect method:

8. Draw up a scheme for setting up direct and indirect methods of enzyme immunoassay:Straight method:

Indirect method:

9. Draw up a scheme for setting up direct and indirect methods of radioimmunoassay:Straight method:

Indirect method:

10.Decide task.
At carrying out enzyme immunoassay analysis With goal serodiagnosis syphilis what kindare used Ingredients?
researched material
_____contains_____
Diagnostic drugs:
1. _____contains
_____2.
_____contains_____

SELF CONTROL:

Specify one correct answer:

1.How much ingredients involved in reactions immune lysis?A. 2;
B. 3;
C.four;
G. five.
2. What kind antibodies participate in reactions binding complement (RSK)?
A. Agglutinins;
B. Precipitins;
C.Lysines;
G. Opsonins.
3. indicator system at staging reactions binding complement is:A. Agglutinating;
B. Hemolytic;
C.Precipitating.
4. Who is donor complement at staging RSK?A. Rabbit;
B. Guinea pig;

C.Donor;
G. White mice.
5. How to get rabbit hemolytic serum?
A. By immunizing a rabbit with rabbit erythrocytes;
B. way immunization ram erythrocytes ram;
B. By immunizing a rabbit with ram erythrocytes;
G. way sheep immunization erythrocytes a rabbit.
6. Which label used at staging enzyme immunoassay analysis (IFA)?
A. Radioisotope;
B. Enzyme (peroxidase);
C.Fluorochrome.
7. Which label used at staging radioimmune analysis (RIA)?
A. Radioisotope;
B. Enzyme (peroxidase);
C.Fluorochrome.
8. Which label used at staging reactions immunofluorescence (REEF)?
A. Radioisotope;
B. Enzyme (peroxidase);
C.Fluorochrome.
9. What reaction is non-serological?
A. ELISA
B. RIF
B. PCR
G. RIA
10. What is bacteriolysis?
A. Lysis of erythrocytes;
B. Lysis of bacteria;
C.Lysis cells.
11. What is cytolysis?
A. Lysis of erythrocytes;
B. lysis of bacteria;
C.Lysis cells.
12. What is hemolysis?
A. Lysis of erythrocytes;
B. lysis of bacteria;
C.Lysis cells.
13. Which component in reactions binding complement counts non-specific?
A. Hemolytic serum;
B. red blood cells ram;
C.Complement;
D. Serum subject.
14. As receive rabbit antiglobulin serum?
A. way rabbit immunization erythrocytes ram;
B. way immunization a rabbit human immunoglobulins;
C.By immunization a rabbit rabbit immunoglobulins.
15. Antiglobulin serum, labeled fluorochrome, used for productions:
A. ELISA analysis, direct method;
B. Enzyme immunoassay, indirect method;
C.Reactions immunofluorescence, direct method;
D. Immunofluorescence reactions, indirect method;
D. Radioimmune analysis, indirect method.

Occupation #17

TOPIC: INFECTION And INFECTIOUS PROCESS

Motivational characteristic themes: assimilation questions given themes provides knowledge, necessary for understanding pathogenesis infectious diseases, studying which carried out in special course microbiology, a same on departments pathological anatomy, epidemiology, infectious diseases and other clinical disciplines.

original knowledge level: Physiology microorganisms.

I. Questions for checks initial (basic) level knowledge

1. Determining the conditions for the occurrence of infection and the route of transmission of the pathogen. Formsinfections and them characteristic.
1. Periods infectious diseases: pathogenicity, virulence, toxicity.
2. Factors pathogenicity bacteria and them characteristic. Characteristic bacterialtoxins.
3. Genetic control virulence.
4. Give examples bacteria, generating exo- and endotoxins.
5. How way can receive exotoxin bacteria?

II. Target tasks:

The student must know:

1. Role microorganisms in development infectious process and terms occurrenceinfectious process.
2. Meaning properties microbes and condition macroorganism in development infectiousprocess.

The student must be able to:

2. Produce sowing on blood agar With goal determination of toxin formation.
3. cook smear and paint his on Burri Guinsu.

Literature:

Main literature:

1. Medical microbiology, virology and immunology. / Under. ed. A.A. Vorobyov. -M., 2004. Chapter 8.
2. Medical microbiology. / Under ed. acad. RAMS IN A. Pokrovsky. - M., 2001.
3. Microbiology, virology and immunology. / Under ed. V.N. Tsareva, 2009. Chapter 6, part6.2.
4. Management to laboratory classes on microbiology. / Under ed. L.B. Borisov. - M.,1984.
5. Management to practical classes on medical microbiology, virology andimmunology. / Under. Ed. V.V. Teza, 2002. Chapter nine.

Additional literature:

1. Nosocomial infections. / Under ed. V.P. Wenzel. - M., 1990.
2. Medical microbiology (educational allowance) / Ed. A.M. Korolyuk and V.B.Sboychakov. - SPb., 1999.
3. Microbiology for doctors / Under ed.A.N. Mayansky.-N.Novgorod., 1999.

III. Tasks for independent work on topic under study:

Exercise #1

Give concept about infections and infectious process.

Exercise #2
For the development of a specific infectious process, it is necessary:1.

2.

3.

Exercise No. 3
Fill in table.

Comparative characteristic infectious processes

Options	**infectious disease**	**Opportunistic disease**	**Toxicosis**
Pathogen			
Role microbe			
Infection			
Incubationperiod			
Danger infections surrounding			
Clinical painting			

Exercise #4
Give characteristic pathogenicity, virulence and toxigenicity.

1.

2.

3.

Exercise #5
Fill in table.

Protein bacterial toxins and them biological properties

Properties	Exotoxins	Endotoxins
Chemical nature		
Origin		
Attitude to temperature		
Degree toxicity		
Specificity actions		
Attitude to chemicalsubstances		

Exercise #6
Fill in table.

Mechanism, way and factors transmission infections for different groups infectious diseases

Localization pathogens in body	Mechanism transmission	Ways transmission	Factors transmission
gastrointestinal tract			
Respiratory tract			
Blood			
outdoor covers			

Exercise #7
Fill in table.

Main ways infections animals

Route of administration infectious material	Volume inoculum, ml		
	Mouse	Maritime piggy	Rabbit

self control

1.name four period diseases:
A) incubation
B) prodromal
B) the onset of
illness
G) Exodus
D) bacteriocarrier
E) hidden period
A) period disease
H) period recovery
2. Specify four distribution pathways pathogenic microbes in body known:
A) tissue
B) hemotagenic
C) lymphogenous
D) neurogenic
D) airborne
E) transmissible
A) parenteral
3. name 2 states, when pathogen be in blood:
A) bacteremia
B) viremia
B) septicopyemia
G) toxinemia
4.name 5 shapes infections:
A) monoinfections
B) mixed
B) superinfection
D) reinfection
D) relapse
E) acute and chronic
5. Name 5 methods for diagnosing bacterial infectious diseases:
A) bacterioscopic
B) bacteriological
B) serological
D) biological
D) allergic
E) viroscopy
G) immunological

H) toxicological
6. Name 2 types of allergic reactions:
A) immediate hypersensitivity
B) delayed-type hypersensitivity
C) immediate type hyposensitivity
D) hyposensitivity delayed type
7. Pathogenicity factors causing invasiveness
8. A) capsule
B) enzymes
B) flagella
G) toxins
9. Genetic control virulence carried out next structures
A) chromosomes
B) transposons
C) plasmids
G) ribosomes
10. To factors pathogenicity, conditioning adhesion and colonization, relate
A) receptors
B) villi
B) toxins FROM) ig A-protease

№ ЛД-21

COLLECTION METHODOLOGICAL DEVELOPMENT
ON MICROBIOLOGY, VIROLOGY AND IMMUNOLOGYFOR
INDEPENDENT STUDENT WORKS
MEDICAL FACULTY

AUTUMN SEMESTER

Vladikavkaz

STUDENTS To PRACTICAL OCCASION #1

THEME: Studying kind staphylococci. Morphology, classification, taxonomy, antigenic structure. Microbiological diagnosis of staphylococcal infection. Prevention epidemiology.

I. Questions for checks original (basic) level knowledge:

9. What such cocci?
10. What such staphylococci?
11. Taxonomy staphylococci: a) family; b) genus
12. causative agents what infectious diseases are staphylococci?
13. What maybe to be researched material at staphylococcal infections?

II. Target tasks:

Student should know:	**Literature:**
1. Morphology, cultural, tinctorial properties staphylococci. Enzymatic activity. 2. Factors pathogenicity and toxins. Them role in pathogenesis staphylococcal infections. 3. Main diseases calledstaphylococci. 4. Pathogenesis, features of immunity in staphylococcal infections. Sources and way transmission infections. 5. Principles microbiological diagnostics, the main method research, scheme classification isolated pure culture. Phage typing. 6. specific prevention and therapy staphylococcal infections.	**Main literature:** 1. Medical microbiology, immunology and virology. / Ed. A.I. Korotyaeva, S.A. Babichev. - Saint -Petersburg, 1989. 3.Microbiology with virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - M., 1994. 4.Microbiology and immunology. / Under. ed. A.A. Vorobyov. -M., 1999. 5.Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. 14. Medical microbiology. / Undered. acad. RAMS V.I. Pokrovsky. – M., 2001. **Additional literature:** 1.Clinical immunology. / Under ed. A.V. Karaulova. - M., 1999.
The student must be able to:	**Literature:**
1. Carry out bacteriologicalstudy (on scheme). 2. Keep records and interpretresults. 3. cook smear and coloring on Gram. 4. light microscopy drugs frompure cultures staphylococci.	1. Lab Guidemicrobiology. / Ed. L.B. Borisov. - M., 1984. 2. Guide to practical exercises on medical microbiology, virology and immunology. /Under. Ed. V.V. Teza, 2002. 3. Guide to practical exercises onmicrobiology / Under ed. Lebedev - M., 1980.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic under study:

1. To give microscopic characteristic morphology staphylococcus in smear from cleanculture

_____

2. Staphylococci on type breathing relate to_____

3. source infections at staphylococcal infections are:

_____
_____

4. Ways transmission staphylococcal infections:_____
_____

5. What media are used for bacteriological diagnosis of staphylococcal infections._____
_____

6. Fill in table:

sign	S. aureus	S. epidermidis	S. saprophyticus
Plasmocoagulase			
Anaerobic fermentation mannitol			
DNAase			
Sensitivity to penicillin			
Role in pathology human			

7. Fill in table major nosological forms staphylococcal infections:

Forms diseases	**Material for research**
LOCAL Purulent defeat skin (boils,carbuncles, abscesses phlegmon)	
Mastitis	
Angina, tonsillitis	
Pneumonia, bronchopneumonia	
Arthritis	
Conjunctivitis	
infections urinary ways	
food poisoning	
GENERALIZED Sepsis Endocarditis	
Meningitis	
Hemotogenic osteomyelitis	
Syndrome toxic shock	

8. Decide task:

a) A patient has a chronic staphylococcal infection. What methodlaboratory diagnostics most effective in this case?

_____
_____
_____
____

9. List factors pathogenicity staphylococci:

_____
_____
_____
____

10. Enzymes aggression staphylococci:

1. _____2._____
_____3.4 _____._____
_____

11. Describe main toxins, allocated staphylococci:

_____
_____
_____

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo PRACTICAL OCCASION #2

THEME: Studying kind streptococci. Morphology, classification, taxonomy, antigenic structure. Microbiological diagnosis of streptococcal infection. Prevention epidemiology.

I. Questions for checks original (basic) level knowledge:

1. What streptococci?
2. As they are located in smears from a pure culture?
3. causative agents what infectious diseases are streptococci?
4. What maybe to be researched material at streptococcal infections?

II. Target tasks:

Student should know:	**Literature:**
1. Morphology, cultural, tinctorial properties streptococci. Enzymatic activity. 3. Factors pathogenicity and toxins. Them role in pathogenesis streptococcal infections. 4. Main diseases, called streptococci. 5. Pathogenesis, features of immunity in streptococcal infections. Sources and way transmission infections. 6. Principles microbiological diagnostics, the main method research, scheme classification isolated pure culture. Phage typing. 7. specific prevention and therapy streptococcal infections.	**Main literature:** 1. Medical microbiology, immunology and virology. / Ed. A.I. Korotyaeva, S.A. Babichev. - Saint -Petersburg, 1989. 3. Microbiology with virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - M., 1994. 4. Microbiology and immunology. / Under. ed. A.A. Vorobyov. -M., 1999. 5. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. 6. Medical microbiology. / Under ed.acad. RAMS V.I. Pokrovsky. - M., 2001. **Additional literature:** 1. Clinical immunology. / Under ed. A.V. Karaulova. - M., 1999.

The student must be able to:	Literature:
1. Carrying out bacteriological research (on scheme). 2. Accounting and interpretation results. 3. Smear preparation and staining _Gram. 4. Luminous microscopy drugs frompure cultures streptococci.	1.Lab Guidemicrobiology. / Ed. L.B. Borisov. -M., 1984. 2.Guide to practical exercises on medical microbiology, virology and immunology. /Under. Ed. V.V. Teza, 2002. 3. Guide to practical exercises onmicrobiology / Under ed. Lebedev - M., 1980.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic under study:

1. By type respiratory streptococci relate to

_____

2. What kind substances required for growth majority streptococci:
1) _____2)_____
3. What kind nutritious environments are used for study cultural properties streptococci:

_____

_____

4. By antigenic properties polysaccharide cocci kind Streptococcus divide on 17 serogroups (on Lensfield):

_____

_____

5. At help what serological reactions define serogroups and serotypes streptococci? _____
6. List the pathogenicity factors of streptococci: Structural___

_____

Enzymes aggression_____

_____

Exotoxins _____

_____

7. Fill in table simplified classification streptococci, encountered athuman

Groups streptococci	Mainkinds	Hemolysis	Serogroup on Lensfield	Role in pathology human
streptococci groups AND				
streptococci groups AT				
Enterococci				
pneumococci				

Greening streptococci				

8. Which immunity formed after streptococcal infections?

_____

_____

INDEPENDENT EXTRACURRICULAR WORKSTUDENTS To PRACTICAL OCCASION No. 3

Theme: A family of intestinal bacteria. Microbiological diagnosis of intestinaldiseases. Escherichia coli - taxonomy, morphology, antigenic structure, laboratorydiagnostics, pathogenesis, prevention.

I. Questions for checks original level knowledge:

1. concept taxonomies microorganisms.
2. Ways transmission infections.
3. Definition pathogenesis.
4. What factors pathogenicity microorganisms?
5. difference pathogenic microorganisms from conditionally pathogenic.
6. Principles of laboratory diagnostics, treatment and prevention of infectiousdiseases.

II. Target tasks:

Student should know: 1. classification, morphology, cultural properties E. coli. 2. Antigenic structure, factors pathogenicity. 3 .Principles microbiological diagnostics, basic methods research. 4. Pathogenesis, peculiarities immunity. 5. Epidemiology, way penetration and sources prevention and therapy.	**Special literature:** 1. Microbiology, virology andimmunology. / Under. editorial V.N.Tsareva Moscow - 2009 2. Accelerated methods diagnostics infectious diseases. / Under editorial prof. V.M. Nikitin Chisinau -1974 3. Intestinal infections in young children age. / Ed. G.A. Kharchenko, A.V. Burkina Rostov - on - Don Phoenix2007 **Main literature:** 1.medical microbiology, virology and immunology./ Under editorial academician A.A. Vorobyov. Moscow - 2004 of the year. 2. Medical microbiology, virology and immunology./ Under editorial A.I. Korotyaeva, S.A. Babichev. -St. Petersburg, 1989 3. Microbiology With virology and Immunology / Under ed. L.B. Borisov, A.M. Smirnova - Moscow - 1994 4. Microbiology and virology and immunology. / Ed. A.A. Vorobiev, A.S. Bykov , E.I. Pashkova, A.M. Rybakova - Moscow Medicine - 2003. 5. Medical microbiology, virology and immunology. / Ed. Acad. RAMS V.I. Pokrovsky- M. - 2001 **Additional literature** 1. infectious illness. /Under
	editorial E.P. Shuvalova Medical microbiology. Und er editorial acad. V.I. Pokrovsky, prof. OK. Pozdeeva. 2. Accelerated methods diagnostics infectious diseases. / Under editorial prof. V.M. Nikitin Chisinau -1974 3. Intestinal infections at children early age. / Ed. G.A. Kharchenko, A.V. Burkina.

Student should be able to: 1. Carrying out bacteriological methodresearch (on scheme). 2.Cooking smear, coloring on Gram.3. Identify microorganisms intestinal groups	1.Medical and sanitary microbiology. / Under editorial A.A. Vorobyov, Yu.S. Krivonein, V.P. Shirobokov 2- e edition Moscow - 2006 1. Practice Guide on medical microbiology. /Under editorial M.N. Lebedeva Moscow - 1978 2. Practice Guide on medical microbiology, virology and immunology. / Underedited by V.V. Teza Edition second, recycled and augmented Moscow - 2002 year.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic being studied.

1. Add antigenic structure E. Coli:

1. type-specific antigen- _____;
2. Surface - _____antigen sensitive to temperature;
3. _____antigen defining serogroup

2. Highlight Class immunoglobulin at EICP at children 1 of the year life participating in passive transplacental immunity:

Iq A
Iq G
Iq D
Iq M
Iq E

3. Fill in table

decipher	Mechanism pathogenic actions With superficial intestinal epithelium
ETCP	
EICP	
EPKP	
EGKP	

4. Specify at intestinal ischerichiosis produced local immunity;Iq AND secretory
Iq E
Iq D
Iq AND humoral

5. Specify the biochemical feature of EHEC ability to produce an enzyme E. coliO157:H7;
a) B-D-galactosidase;
b) Lecithinase;
c) DNase;
G) B-D- glucuronidase

6. Specify serotype E. Coli - eye-catching in 1st year life children and producingshiga-like toxin O55, O111, O113, O26 , O18, O124, O114, O152

_____

7. E. Coli: cultural properties:
Levina colonies _____;
Ploskereva _____;
Poppy- Konki _____;
Asel-Lieberman _____;

8. From listed microorganisms lactose ferment:
1) E. coli O124; 3) S. flexneri;
2) S. Sonne; four) S. typhimurium

9. For allocation enteropathogenic intestinal sticks are held sowing bowel movements:
1. on Wednesday Endo; 3. Ploskereva;
2. Bismuth sulfite agar; four. Alkaline agar;

10. For identifying O antigen Escherichia in RA previously necessary:
1. extract O antigen acetone;
2. destroy In and - antigen boiling;
3. destroy TO - antigen boiling;
4. Neutralize In and - antigen serum

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTS TO PRACTICAL OCCASION No. four

Topic: Family of intestinal bacteria. Microbiological diagnosis of intestinal diseases. Genus salmonella. Morphology, classification, epidemiology, antigenic structure. Laboratory methods research, prevention and treatment.

I. Questions for checks original level knowledge:

1. concept taxonomies microorganisms.
2. Ways transmission infections.
3. Definition pathogenesis diseases.
4. What factors pathogenicity microorganisms?
5. Principles laboratory diagnostics, treatment and prevention infectiousdiseases.

II. Target tasks:

Student should know: 5. classification, morphology, cultural properties. 6. Antigenic structure, factors pathogenicity. 7. Principles microbiological diagnostics, basic methodsresearch. 8. Pathogenesis, features of immunity at abdominal typhus and paratyphoid. 9. Epidemiology, ways penetration and sources prevention and therapy abdominal typhus and paratyphoid.	**Special literature** 1. Microbiology, virology and immunology. / Under. edited by V.N.Tsareva Moscow -2009 2. Accelerated methods diagnostics infectious diseases. / Edited by prof. V.M. Nikitin Kishinev -1974 **3.** Intestinal infections at children early age. /Under ed. G.A. Kharchenko, A.V. Burkina Rostov-on-Don Phoenix 2007 **Main literature:** 1.medical microbiology, virology and immunology./ Under editorial academician A.A. Vorobyov. Moscow - 2004 of the year. 2. medical microbiology, virology and immunology./ Under editorial A.I. Korotyaeva, S.A. Babichev. -St. Petersburg, 1989 3. Microbiology With virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - Moscow - 1994 4. Microbiology and virology and immunology. / Under ed. A.A. Vorobiev, A.S. Bykov , E.I. Pashkova, A.M. Rybakova - Moscow Medicine - 2003. 5. medical microbiology, virology and immunology. / Under ed. Acad. RAMS V.I. Pokrovsky- Moscow - 2001 **Additional literature** 1. Infectious diseases. /Edited by E.P. Shuvalova Medical microbiology. Und er editorial acad. V.I. Pokrovsky, prof. OK. Podznev. Microbiology general part
	A.L. Alyonushkin M- 2005
The student must be able to: 1. Holding bacteriologicalmethod research (on scheme). 2. staging and taking into account the extended reactionagglutination Vidal. 3. staging and taking into account the extended reactionVi-hemagglutination.	1.Medical and sanitary microbiology. / Under editorial A.A. Vorobyov, Yu.S. Krivonein, V.P. Shirobokov 2- e edition Moscow - 2006 1. Guide to practical exercises on medical microbiology. /Under edited by M.N. Lebedev Moscow - 1978 2. Guide to practical exercises on medical microbiology, virology and immunology. / Edited by V.V. Teza. Edition second, recycled and augmented Moscow -2002 year.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic being studied.

1. Describe the cultural properties of typhoid bacillus on differentialdiagnostic and selective environments;

1) bismuth sulfite agar; 1) diffuse cloudiness;
2) Endo; 2) colorless colonies;
3) Rappoport; 3) black colonies

2. Specify what types of antibodies appear in the blood by the end of the 1st week abdominal diseases typhus:

a) agglutinins;b)
precipitins;
c) complement-fixing antibodies;G)
bacteriolysins

4 Indicate after which disease there is intense and prolongedimmunity at;

a) dysentery; b)
Typhoid fever;c)
Cholera;
d) Coli-enteritis

5. Specify what serological reaction should be performed atserodiagnosis of abdominal typhus;

a) Extended Wright agglutination reaction; b)
Extended Vidal agglutination reaction;c)
Reaction RSK;
G) lamellar reaction agglutination

7. Reply on question: at microscopy pathogens abdominal typhus in dark fieldnotes:

1) Movement microorganisms
2)Absence mobility microorganisms
3) Coloring microorganisms in pink Colour
4) clouding solution

8. Specify diagnostic titer at abdominal typhus and paratyphoid in reactionspassive Vi- agglutination;

From 1:10 _____to 1: 1280

10. What kind vaccines are used for specific prevention abdominal typhus:

1 Typhoid adsorbed vaccine;2 TABte;
3 Enriched Vi antigen;
4 Typhoid alcohol vaccine

11. At bacteria carriers with typhoid fever, antibodies are constantly presentclass _____.

12. Add material for research at abdominal typhus:

- first sick days_____
- 2nd a week diseases_____
- 3-4 a week diseases_____

INDEPENDENT EXTRA-CURRICULUM JOB STUDENTS
To PRACTICAL OCCASION No. five

Theme: A family of intestinal bacteria. Microbiological diagnosis of intestinal diseases. Vibrio cholerae - morphology, antigenic structure, laboratory diagnostics, prevention, epidemiology.

I. Questions for checks original level knowledge:

1. concept taxonomies microorganisms.
2. Ways transmission infections.
3. Definition pathogenesis diseases.
4. What factors pathogenicity microorganisms?

5. Principles laboratory diagnostics, treatment and prevention infectiousdiseases.
6. concept about especially dangerous infections.
7. Mode work laboratories at diagnostics especially dangerous infections.

II. Target tasks:

Student should know: 1. classification, morphology, cultural properties. 2. antigenic structure, factors pathogenicity. 3. Principles of microbiological diagnostics, basic methodsresearch. 4. Pathogenesis, peculiarities immunity at cholera vibrio. 5. Epidemiology, way penetration and sources, prevention and therapy at cholera vibrio.	**Special literature** 1. Microbiology, virology andimmunology. / Under. editorial V.N. Tsareva Moscow - 2009 2. Accelerated methods diagnostics infectious diseases. / Edited by prof. V.M. Nikitin Kishinev -1974 **3.** Intestinal infections at children early age. /Under ed. G.A. Kharchenko, A.V. Burkina Rostov-on-Don Phoenix 2007 **Main literature:** 1. medical microbiology, virology and immunology./ Under editorial academician A.A. Vorobyov. Moscow - 2004 of the year. 2. medical microbiology, virology and immunology./ Under
	editorial A.I. Korotyaeva, S.A. Babichev. -St. Petersburg, 1989 3. Microbiology With virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - Moscow - 1994 4. Microbiology and virology and immunology. / Under ed. A.A. Vorobiev, A.S. Bykov , E.I. Pashkova, A.M. Rybakova - Moscow Medicine - 2003. **5.** medical microbiology, virology and immunology. / Under ed.Acad. RAMS V.I. Pokrovsky - M. - 2001 **Additional literature** 1. infectious illness. /Under editorialE.P. Shuvalova Medical microbiology. Under editorial acad. V.I. Pokrovsky, prof. OK. Podznev. 2. Accelerated methods diagnostics infectious diseases. / Edited by prof. V.M. Nikitin Kishinev -1974 3. Intestinal infections at children early age. /Under ed. G.A. Kharchenko, A.V. Burkina Rostov - on - Don Phoenix 2007

Student should be able to: 1.Carrying out bacteriological method research (on scheme). 2. Statement of the accelerated method diagnostics with cholera vibrio. 3. Think result.	1.Medical and sanitary microbiology. / Under editorial A.A. Vorobyov, Yu.S. Krivonein, V.P. Shirobokov 2- e edition Moscow - 2006 1. Practice Guide on medical microbiology. /Under editorial M.N. Lebedeva Moscow – 1978 2. Practice Guide on medical microbiology, virology and immunology. / Under editorial V.V. Teza Edition second, recycled and augmented Moscow -2002 year.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic being studied.

1. Vibrio cholerae - enzymes that determine the ability to adhesion andcolonize intestines_____
toxin defiant profuse diarrhea_____

2. Specify chemical activity at cholera vibrio

MALTOSIS AND	DULCY T	ARABINOSIS AND	MANNY T	lactose AND	SUCKAROS E AND	GLUCOSE AND

3. Check in table differential signs cholera vibrio

BIOVARS	SIGNS		
	Hemolysis erythrocytes ram	Agglutination chicken erythrocytes	Sensitivity to polymyxin AT
V cholerae			
Veltor			
Serovar O139 (Bengal)			
"-" - negative reaction; " +» - positive reaction; "+-" irregular positive reaction			

4. Specify proteolytic properties cholera vibrio;
1) Gelatin education " funnels";
2) decomposes squirrels up ammonia and indole;
3) Forms hydrogen sulfide;
4) Hydrolyzes casein;
5) Not liquefies folded serum
5. AT case carriage with cholera vibrio more often comes to light biovar;
1) biovar El Tor;
2) biovar cholerea
6. Fill in table accelerated method diagnostics at cholera

Sowing bowel movements in 3 test tubes	results
peptonic water	

Peptone water and agglutinating O-serum	
peptonic water and 0.5% solution starch	

7. Specify method indications cholera vibrio:
1. agglutinability With O- cholera serum;
2. character fermentation carbohydrates;
3. sensitivity to cholera bacteriophages;
4. sensitivity to polymyxin
8. At bacterial diagnostics cholera sowing in _____
Spend on _____agar and _____.

9. Delivered in laboratory excreta sick have view rice decoction. itcharacteristically for ___.

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo
PRACTICAL OCCASION No. five

Theme: A family of intestinal bacteria. Microbiological diagnosis of intestinal diseases. Shigella- classification, morphology, cultural properties, antigenic structure, factors pathogenicity, laboratory diagnosis, pathogenesis.

I. Questions for checks original level knowledge:

1. concept taxonomies microorganisms.
2. Ways transmission infections.
3. Definition pathogenesis diseases.
4. What factors pathogenicity microorganisms?
5. Principles laboratory diagnostics, treatment and prevention infectiousdiseases.

II. Target tasks:

The student must know:	**Special literature** 1. Microbiology, virology andimmunology. / Under. editorial V.N.Tsareva Moscow - 2009 2. Accelerated methods diagnostics infectious diseases. / Under editorial prof. V.M. Nikitin Chisinau -1974 3. Intestinal infections in young children age. / Ed. G.A. Kharchenko, A.V. Burkina Rostov - on - Don Phoenix2007 **Main literature** 1.medical microbiology, virology and immunology./ Under editorial academician A.A. Vorobyov. Moscow - 2004 of the year. 2. Medical microbiology, virology and immunology./ Under editorial A.I. Korotyaeva, S.A. Babichev. -St. Petersburg, 1989 3. Microbiology With virology and Immunology / Under ed. L.B. Borisov, A.M. Smirnova - Moscow - 1994 4. Microbiology and virology and immunology. / Ed. A.A. Vorobiev, A.S. Bykov , E.I. Pashkova, A.M. Rybakova - Moscow Medicine - 2003. 5. Medical microbiology, virology and immunology. / Under ed. Acad. RAMS V.I. Pokrovsky- M. - 2001 **Additional literature** 1. infectious illness. /Under editorial E.P. Shuvalova Medical microbiology. Und er editorial acad. V.I. Pokrovsky, prof.
1.Classification, morphology, cultural properties. 2.Antigenic structure, factors pathogenicity. 3. Principles microbiological diagnostics, basic methods research. 4.Pathogenesis, features of immunity at dysentery. 5.Epidemiology, way penetration and sources, prevention and therapy	

	OK. Podznev. 2. Accelerated methods diagnostics infectious diseases. / Under editorial prof. V.M. Nikitin Chisinau -1974 3. Intestinal infections in young children age. / Ed. G.A. Kharchenko, A.V. Burkina Rostov - on - Don Phoenix 2007
Student should be able to: 1. Carrying out bacteriological method research (on scheme). 2. staging and accounting accelerated method diagnostics dysentery. 3. Spend differentiation variousspecies shigella.	1.Medical and sanitary microbiology. / Edited by A.A. Vorobyov, Yu.S. Krivonein, V.P. Shirobokov 2- e edition Moscow - 2006 1. Management to practical medical _ _ microbiology. /Under editorial M.N. Lebedeva Moscow - 1978 2. Management to practicalmedical _ _ microbiology, virology and immunology. / Under editorial V.V. Teza Edition second, recycled and augmented Moscow -2002 year.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic being studied.

1. Main biochemical signs identification clean culture shigella;

1) Absence products hydrogen sulfide;
2) Fermentation glucose, gas formation;
3) Absence fermentation lactose in flow 48 hours.

2. Specify way shigella transmission;

a) S. Dysenteriae; a) alimentary
b) S. sonne; b) contact household
c) S. flexneri; c) water

3. Specify biological and biochemical properties pathogen dysentery

View microorganism	Glucose	lactose	mannitol	indole	mobility
Grigorieva-Shiga					
Sonne					
Flesner					
Newcastle					

4. Add factors pathogenicity shigella providing invasion to M- cells _____; _____intracellular distribution.

5. Which from species shigella _____causes a mild form of the disease, or oftenappears in form bacteriocarrier.

6. Add what kind biological properties shigella on nutritional environments;

- Wednesday bactoagar G _____;
- Wednesday Levin _____;
-Wednesday Ressel_____

7. Specific prevention disinteria (specify correct answers):
1. Salmonella polyvalent bacteriophage;
2. Coliproteic bacteriophage;
3. Pyobacteriophage;
4. Dysenteric polyvalent bacteriophage

8. Most heavy clinical forms dysentery cause:
1) S. typhi; four) E. coli O124;
2) S. Sonne; five) S. flexneri;
3) S. paratyphi A; 6) Y. enterocolitica

9. Material for research at dysentery 1- 3 days:
a) blood; c) food;b) fecoculture;
G) vomit

10. Classification shigella:
1 _____; 3 _____;
2 _____; 4 _____;

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTS TO PRACTICAL LESSON #6

TOPIC: The study of pathogenic anaerobes. Morphology, classification, taxonomy, antigenic structure. Microbiological diagnostics anaerobic diseases. specific prevention, epidemiology.

I. Questions for checks original (basic) level knowledge:

1. As called bacteria, which form disputes?
2. What such spore?
3. A spore inside a bacterial cell can be located:1)_____
   2)_____
   3) _____
4. What kind diseases cause pathogenic anaerobes?

II. Target tasks:

Student should know:	**Literature:**
• Modern representation about etiology anaerobic infections. Clostridial, non-clostridialanaerobic infection. • Morphology, cultural, tinctorial properties pathogenic anaerobes: Clostridium (gas gangrene,tetanus, botulism) peptostreptococci, bacteroides, fusobacteria, anaerobic vibrios, campylobacter and spirilla. Enzymatic activity.	1. Microbiology, virology and immunology /Under ed. Tsareva V.N.-Moscow, 2009. **Main literature:** 1. Medical microbiology, immunology and virology. / Under ed. A.I. Korotyaeva, S.A. Babichev. - Saint - Petersburg, 1989. 3.Microbiology With virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - M., 1994. 4.Microbiology and immunology. / Under.

• Factors pathogenicity and toxins. • Them role in pathogenesis anaerobic infections. • Pathogenetic aspects of anaerobicinfections: primary exogenous and secondary, endogenous. Mechanisms occurrence. Opportunistic anaerobic and mixed infections. • Main diseases called pathogenic anaerobes. • . Sources and way transmission infections. • Principles of microbiological diagnostics, the main method research, scheme classification dedicated clean culture. • Bioassays. Specific prevention and therapy anaerobic infections.	ed. A.A. Vorobyov. -M., 1999. 5. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova,A.M. Rybakova. - M., Medicine, 2003. 6. Medical microbiology. / Under ed.acad. RAMS V.I. Pokrovsky. - M., 2001. **Additional literature:** 1.Clinical immunology. / Under ed.A.V. Karaulova. - M., 1999.
The student must be able to: • Microscopic method diagnostics anaerobes. Smear from a purulent wound, staining his on Gram. • Stages bacteriological method diagnostics anaerobic infections. • Definition of sensitivity anaerobic bacteria to antibiotics. • Description of drugs for specific prevention of clostridial anaerobic infections: serum, vaccines, toxoids.	**Literature:** 1.Lab Guidemicrobiology. / Ed. L.B. Borisov. -M., 1984. 2.Management to practical classes onmedical microbiology, virologyand immunology. /Under. Ed. V.V. Teza, 2002. 3.Manual to practical classes onmicrobiology / Under ed. Lebedev - M.,1980.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic under study:

1. pathogens clostridial anaerobic infections:_____
_____

2. pathogens non-clostridial anaerobic infections_____
_____

3. Pathogen tetanus applies to kind _____,
on Gramu _____, form capsule: yes) _____no _____) have the form of "drum sticks, So How disputes at them are located _____, on type breathing_____
4. AT translation With Greek kloster _____

5. Describe the exotoxins of the causative agent of tetanus:a)
_____
_____

b)_____

_____
_____

6. A source infections at Cl. tetani:_____
7 Mechanism transmission::_____
8 Mechanism actions Cl. tetani on person:_____
_____

on lab. animal:_____
_____

7. Main clinical manifestations tetanus:_____
_____

10. Preparations for specific therapy tetanus:_____
_____

11. Preparations for specific prevention:Advance
prevention:
tetanus toxoid - contains - _____
\received _____
_____

_____included in composition ADS, DPT.
Emergency Prevention:a)
b) _____
Explain why for emergency prophylaxis of tetanus, bothtoxoid and antitoxic serum?
_____
_____

Immunity after transferred tetanus_____

12. The causative agent of tetanus belongs to the Genus family

_____

13. Most often meet in quality pathogens:
_____
_____

14. on Gramu _____, form capsule: yes) _____no _____)

15. By type breathing _____

16. Factors virulence:
Exotoxins_____
_____
_____

Enzymes aggression:_____
_____
_____

17. Mechanism actions exotoxin Cl. Perfringens:_____
_____
_____

18. For laboratory diagnostics pathogens gas gangrene use nextmaterial:_
_____

19. Cultural properties pathogens gas gangrene study on
_____

20. Main clinical manifestations gas gangrene:
_____
_____
_____

21. Preparations for specific prevention:_____
_____

22. What such opportunistic infection?_____
_____

23. Which group of granaerobic bacteria are the most important potentialpathogens odontogenic infections:_____

_____

24. Anaerobic non-spore-forming Gr- with a pointed end of a stick (fusiform forms), which, along with bacteroids and peptostreptococci, are considered pathogens various purulent-inflammatory processes in the oral cavity, abscesses of the lungs, liver and etc: _____

_____

25. What kind bacteria, representing yourself obligate anaerobic Gr- small coccobacteria, immotile. They do not form spores, on lact agar they give smooth, convex, lenticular or diamond-shaped , yellow-white colonies, neutralize sour products metabolism others bacteria and this is allows consider them How antagonists of cariogenic streptococci and the most important factor in human resistance to caries teeth:_____

_____

Describe the taxonomic position of the pathogenbotulism_____

_____

26. Specify antigenic structure pathogenic for human serovars pathogenbotulism____

_____

27. Specify basic factor pathogenicity pathogen botulism_____

_____

_____

INDEPENDENT EXTRA-CURRICULUM JOB STUDENTS
To PRACTICAL OCCASION No. 7
THEME: PATHOGENS SPECIAL DANGEROUS DISEASES: BRUCELLOSIS: morphology,

physiology, antigens, ecology and Spread, pathogenesis brucella and pathogenesis brucellosis, immunity. Laboratory diagnostics. Prevention and treatment. TULAREMIA: morphology, physiology, antigens, ecology and Spread, pathogenesis diseases human and immunity. laboratory diagnostics. Prevention and treatment.

I. Questions for checks original (basic) level knowledge:

1. Properties pathogen brucellosis.
2. Properties pathogen tularemia.
3.Methods laboratory diagnostics pathogens brucellosis and tularemia.
4. Preparations for specific prevention, diagnostics and treatment brucellosis andtularemia.

II. Target tasks

Student should know:	Main literature:
1. Properties pathogens brucellosis, tularemia. 2. Methods diagnostics brucellosis, tularemia: microscopic, bacteriological, express methods, bioassay, skin-allergic try. 3. Treatment and prevention brucellosis, tularemia.	1. Microbiology, virology and immunology./Under. ed. V.N. Tsareva. - M., 2009. With. 333-377 2. medical microbiology, virology and immunology./Under. ed. A.A. Vorobyov. M. 2004. With. 391- 395 3. Microbiology./Under ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova, A.M. Rybakova.- M., Medicine, 2003. 4. Medical microbiology./Under Ed. Acad. RAMS IN A. Pokrovsky.-M.,2001.
The student must be able to:	**Additional literature:**
1. microscoping and sketch immersion system pathogens zoonotic infections. 2. Put reaction Wright. 3. Record the Wright reaction and make conclusion. 4. Put reaction Heddelson. 5. Spend accounting reactions Heddelson and do conclusion. 6. Design protocol research.	1. Workshop laboratory works With illustrated situational assignments in microbiology, immunology and virology./ Under. ed. A.A. Vorobiev, V.N. Tsareva. M., 2008. 2.Guide to practical exercises on medical microbiology, virology and Immunology./Under ed. V.V. Teza, 2002.

Replenish missing knowledge will help studying special literature specifiedhigher

III. Tasks for independent work on topic under study:

1. Serological diagnosis brucellosis
staging reactions Wright held With goal_____
_____

Components reactions:
A._____
B. _____
2. staging reactions Heddelson
Reaction put at
_____
With using
_____
Components reactions:
A._____
B._____

3. Fill table:

Cultural properties:

Pathogen brucellosis	Pathogen tularemia

4. Fill table:

Sustainability in environmental environment

Pathogen brucellosis	Pathogen tularemia

5. Fill table:

Antigenic structure

Pathogen brucellosis	Pathogen tularemia

6. Fill table:

Factors pathogenicity

Pathogen brucellosis	Pathogen tularemia

7. Fill table:

Specific prevention

Pathogen brucellosis	Pathogen tularemia

8. The causative agents of brucellosis in cattle are_____ _____

_____,

small horned livestock _____,

pigs _____,

deer _____,

dogs _____,
sheep _____

9. Immunity at brucellosis _____

10. Allergic method applied for identifying HRT to brucella, observable at _____

11. Allergic tests for tularemia are used to _____

Per positive result accept result not less than _____mm.

12. Immunity at tularemia_____
_____

SELF CONTROL

1. For serological diagnostics brucellosis apply: (select two correctanswer)

1. reaction Wright
2. reaction Coombs
3. reaction Heddleson
4. reaction Wasserman

2. Killed vaccines are used to treat chronic forms: (select onecorrect answer)

1. plagues
2. Tularemia
3. Siberian ulcers
4. brucellosis

3. Brucellosis transmitted: (select three correct answer)

1. At contact With sick animals
2. Through milk and dairy products
3. Through postpartum allocation animals
4. At contact With sick people

4. Bacteria showing virulence in the R-form: (choose two correctanswer)

1. Yersinia *3. Anthrax bacilli*
2 .Francisella *4. Brucella*

5. Properties pathogen tularemia: (select one correct answer)

1. Large cells With "chopped off" ends
2. Gram negative sticks
3. mobile
4. dispute not form

6. Allergens for productions skin-allergic samples at bacterial zoonoses:(select three correct answer)

1. Brucellin
2. Anthraxin
3. Tulyarin
4. Colicin

7. Factors pathogenicity pathogen tularemia: (select two correct answer)

1. Capsule (shell antigenic complex)

2. exotoxin
3. Endotoxin
4. Flagella

8. For productions samples Burne apply: (select one correct answer)

1. Pestin *3. Tulyarin*
2. Brucellin *4. Anthraxin*

9. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER

1. Gram negative sticks
2. motionless
3. form disputes
4. Bipolar coloring
5. located chain

A. The causative agent of brucellosis
B. The causative agent of anthraxC.Both
G. Neither neither other

10. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER

1. Aerobes
2. cultivated in chicken embryo
3. Psychrophiles
4. Optional anaerobes
5. grow up not less 3 weeks

A. Brucella
B. yersinia
C.Both
G. Neither neither other

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTS TOPRACTICAL OCCASION No. 8

THEME: PATHOGENS SPECIAL DANGEROUS DISEASES. ANTHRAX:

morphology, physiology, antigens, ecology and distribution, pathogenesis of the pathogen and anthrax pathogenesis, immunity. Laboratory diagnostics. Prevention and treatment. PLAGUE: morphology, physiology, antigens, ecology and Spread, pathogenesis pathogen and pathogenesis Siberian ulcers immunity. laboratory diagnostics. Prevention and treatment.

I. Questions for checks original (basic) level knowledge:

1. Properties pathogen Siberian ulcers.
2. Properties pathogen plague.
3.Methods laboratory diagnostics pathogens plague and Siberian ulcers.
4. Preparations for specific prevention, diagnostics and treatment plague and Siberianulcers.

II. Target tasks

Student should know:	**Main literature:<u>Main literature:</u>**
1. Properties pathogens plague, Siberian ulcers. 2. Methods diagnostics Siberian ulcers and plague: microscopic,	1. Microbiology, virology and immunology./Under. ed. V.N. Tsareva. - M., 2009. pp.146-373

bacteriological, express methods, bioassay, skin-allergic try. 3. Treatment and prevention of plague and Siberian ulcers.	2. medical microbiology, virology and immunology./Under. ed. A.A. Vorobyov. M. 2004. FROM. 368-419 3. Microbiology./Under ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova, A.M. Rybakova.- M., Medicine, 2003. 5. Medical microbiology./Under Ed. Acad. RAMS IN A. Pokrovsky.-M., 2001. 6. Microbiology With virology and immunology./Under ed. L.B. Borisov, A.M. Smirnova-M., 1994. With. 286-305
The student must be able to: 1. Microscopic immersion system, sketch drugs. 2. Put reaction thermoprecipitationon Askoli. 3. Record the reaction and makeconclusion.	**<u>Additional literature:</u>** 1. Workshop laboratory works With illustrated situational assignments in microbiology, immunology and virology./ Under. ed. A.A. Vorobiev, V.N. Tsareva. M., 2008. 2.Guide to practical exercises on medical microbiology, virology and Immunology./Under ed. V.V. Teza, 2002. 3. Management to laboratory classes on Microbiology./Under ed. L.B. Borisov.- M., 1984.

Replenish missing knowledge will help studying special literature specifiedhigher

III. Tasks for independent work on topic under study:

1. reaction precipitation according to Ascoli put at _____

_____

Components reactions:

A._____

B._____

2. Write staging reactions precipitation on Ascoli:

_____

_____

3. Fill table:

Cultural properties:

Pathogen Siberian ulcers	Pathogen plague

4. Fill table:

Sustainability in environmental environment

Pathogen Siberian ulcers	Pathogen plague

5. Fill table:

Antigenic structure

Pathogen Siberian ulcers	Pathogen plague

Fill table:

Factors pathogenicity

Pathogen Siberian ulcers	Pathogen plague

7. Fill table:

Specific prevention

Pathogen Siberian ulcers	Pathogen plague

8. material for research at anthrax are:

_____

_____

9. Material for research at plague are:

_____

_____

10. At plague bioassay put on: (specify laboratory animals)

_____

11. When plague is used as an express diagnostic _____, allowingput preliminary diagnosis already through 2h.

12. For the retrospective diagnosis of anthrax in epidemiological studies put allergy skin tests with

_____.

sample I think positive in the presence of hyperemia diameter more_mm.

SELF CONTROL

1. Are stained bipolar: (select one correct answer)

1. Brucella
2. Anthrax bacilli
3. francisella
4. Yersinia

2. arthropods - carriers plague: (select one correct answer)

1. Ticks
2. Lice
3. bedbugs
4. Fleas

3. Nutrient media for the cultivation of the plague agent: (select onecorrect answer)

1. JSA
2. Wednesday Clauberg
3. Alkaline agar
4. agar With gentian violet

4. Properties anthrax bacilli: (select three correct answer)

1. Gram positive sticks
2. Not form capsule
3. form disputes
4. located in chains

5. **The thermoprecipitation reaction is commonly used to find anthrax antigen in: (select one correct answer)**

1. urine
2. Feces
3. Liquor
4. wool and animal skins

6. **Preparations for prevention and treatment plague: (select two correct answer)**

1. Antibiotics2.
Anthraxin
3. live vaccine
4. Anatoxin

7. **Test "pearl necklaces" on environment With penicillin applyfor identification: (select one correct answer)**

1. Yersinia
2. franciselle
3. Brucella
4. Anthrax bacilli

8.**Immunobiological drugs for prevention and treatment Siberian ulcers:(select one correct answer)**

1. Pestin1
2. Immunoglobulin
3. Anatoxin
4. Vaccine STI

9. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER

1. Streptobacilli
2. Bipolar coloring
3. Movable
4. Gram positive
5. form disputes

A. Pathogen plague

B. The causative agent of anthraxC.Both

G. Neither neither other

10. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER

1 Aerobes
2. cultivated on MPA
3. Psychrophiles
4. Optional anaerobes
5. grow up not less 3 weeks

A. Brucella

B. yersinia

C.Both

G. Neither neither other

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo PRACTICAL OCCASION No. nine

TOPIC: RICKETTIA: RICKETTIA OF EPIDEMIC TYPHUS AND DISEASES BRILL-ZINSSER: morphology, physiology, antigens, ecology and Spread, pathogenesis loose typhoid, immunity. laboratory diagnostics.Prevention and treatment.

I. Questions for checks original (base) level knowledge

1.Classification rickettsia and them main biological properties
2. What general at rickettsia With bacteria and what properties bring together them With viruses?
3. Mechanism infections and peculiarities pathogenesis loose typhus
4. Biological method diagnostics loose typhus
5. Serodiagnostics rickettsiosis
6. Prevention rickettsiosis.

II. Target tasks

Student should know:	Literature
1. Rickettsia classification and theirmain biological properties. 2. Methods applied for cultivation rickettsia.	1. infectious illness. Textbook. M.:Medicine, 2003. 2. Differential diagnosis infectious diseases.-M.: Binomial, 2003. **Main literature:** 1. Microbiology, virology and immunology./Under. ed. V.N. Tsareva. - M., 2009. 2. medical microbiology, virology and immunology./Under. ed. A.A. Vorobyov. M. 2004. 3. Microbiology./Under ed. A.A. Vorobiev, A.S. Bykov, E.P. Pashkova, A.M. Rybakova.- M., Medicine, 2003. 4. medical microbiology, immunology and virology. / under. ed. A.I. Korotyaeva, S.A. Babicheva. St. Petersburg. 2002.
	5. Medical microbiology./Under Ed. Acad. RAMS IN A. Pokrovsky.-M., 2001. 6.Microbiology and immunology./ Ed. A.A. Vorobiev.-M., 1999. 7. Microbiology With virology and immunology./Under ed. L.B. Borisov, A.M. Smirnova-M., 1994. **Additional literature:** 1. Sanitary microbiology and Virology./Under ed. Z.N. Kochemasova, S.A. Efremova, A.M. Rybakova.-M., 1987. 2. Fundamentals of Medical biotechnology./Under ed. A.A. Vorobiev.- M., 1990. 3. Nosocomial infection.Under ed. V.P. Venzela.-M., 1990. 4. Ecological immunology ./Under ed. R.M. Khaitova, B.V. Pinegina, H.I. Istamova.-M.: Publishing House VNIIRO, 1995. 5. Clinical Immunology./Ed. A.V. Karaulova.- M., 1999. 6. Immunology for doctors./Ed. S.A. Ketlinskaya, N.M. Kalinina.-SPB., 1998. 7. Brief terminological vocabulary microbiologist-biotechnics./Under ed. Yu.A. Ovchinnikova.-M.: An THE USSR, 1989. 8. Basics biotechnologies.-spb.: Publishing house firm " Science. -1995.
The student must be able to: 1. Take material for _ research.	1. infectious illness. Textbook. M.: Medicine, 2003. 2. . Practicum laboratory work with

2. Conduct infection biological models with subsequent identification. 3. cook smear and paint his on Romanovsky-Giemsa methods or Zdrodovsky.	illustrated situational assignments on microbiology, immunology and virology./ Under. ed. A.A. Vorobiev, V.N. Tsareva. M., 2008. 1..Manual to practical classes on medical microbiology, virology and Immunology./Under ed. V.V. Teza, 2002. 2. Guide to laboratory work on Microbiology./Under ed. L.B. Borisov.- M., 1984.

Replenish missing knowledge will help studying special literature specifiedhigher

III. Tasks for independent work on topic under study:

1. will fill table

CHARACTERISTIC SOME RICKETSIOSIS

Group	Pathogen	Place breedingin cage	carriers pathogen	A source infections	Disease
Group loose typhus	R.prowa-zeka				
Group loose typhus	R.typhi				

2. laboratory diagnosis of typhus in conventional laboratories is carried outserological method. List reactions:

_____

_____

3. Fill table

ECOLOGY And SPREAD

Epidemic loose typhus	endemic rash typhus

4. As differentiate epidemic rash typhus from disease Brill-Zinser?

_____
_____

5. differentiation epidemic from endemic loose typhus carry out
_____
_____

6. Pathomorphology and pathophysiology disease Brill-Zinser
_____
_____

7. Name the causative agents of North Asian rickettsiosis, Marseilles fever,
spotted fever rocky mountains, fever Tsutsugamushi.

_____
_____

8. That is material for research at loose typhus?
_____
_____

9. Material for research is cells from culture cells, infected material from sick.
A. List signs germ, allowing do conclusion.
_____
_____

B. What methods and tests necessary take advantage for confirmation diagnosis?
_____
_____

10. Material for research is blood (smear from blood sick, processed immune luminous serum.A. Which method
research applied?
_____

B. List signs germ, allowing do conclusion.
_____

C.What methods and tests necessary take advantage for confirmation diagnosis.
_____

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTS TOPRACTICAL OCCASION #11

TOPIC: LABORATORY DIAGNOSIS OF DIPHTHERIA, PERTUSSIS AND PARACCOUSHA. DIPHTHERIA: morphology, physiology, antigens, ecology and Spread, pathogenesis pathogen and pathogenesis Siberian ulcers immunity. Laboratory diagnostics. Prevention and treatment. Whooping cough: morphology, physiology, antigens, ecology and distribution, pathogenesis of the pathogen and pathogenesis of anthrax, immunity. laboratory diagnostics. Prevention and treatment. PAROCLUSH: morphology, physiology, antigens, ecology and distribution, pathogenesis of the pathogen and pathogenesis Siberian ulcers immunity. laboratory diagnostics. Prevention and treatment.

I. Questions for checks original (base) level knowledge:

1. Taxonomy pathogens diphtheria, whooping cough and parapertussis.
2. Morphology, cultural, biochemical antigenic properties of pathogens:diphtheria, whooping cough parapertussis.
3. Methods laboratory diagnostics pathogens diphtheria, whooping cough, parapertussis.
4. Preparations for specific prevention, diagnosis and treatment .

II. Target tasks

Student should know:	**Main literature:**
1. Taxonomy, morphology, cultural properties - corynobacteria diphtheria, whooping cough and parapertussis. 2. Main laboratory methods diagnostics: bacteriological,express methods, bioassay,serodiagnosis. 3. Treatment and prevention, epidemiology.	1. Microbiology, virology and immunology /Under redu Tsareva V.N.- Moscow, 2009. FROM. 272-281 2. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2004. 3. Medical microbiology. / Under ed.acad. RAMS IN A. Pokrovsky. - M., 2001. 4. Microbiology with virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - M., 1994.
The student must be able to:	**Additional literature**
1. Microscopic immersion system, sketch drugs. 2. Put reaction on Ouchterlony. 3. Record the reaction and makeconclusion.	1. Workshop laboratory works With illustrated situational assignments in microbiology, immunology and virology./ Under. ed. A.A. Vorobiev, V.N. Tsareva. M., 2008. 2.Guide to practical exercises on medical microbiology, virology and Immunology./Under ed. V.V. Teza, 2002. 3. Lab Guide Microbiology./Under ed. L.B. Borisov.- M., 1984.

Replenish missing knowledge will help studying special literature specifiedhigher

III. Tasks for independent work on studied topic:

1. At which nosology define toxigenicity on Ouchterlony

_____

_____

_____

____

2. Fill table:

PROPERTIES	Gravis	Mitis	Intermedius	Belfanti
Cultural properties				
Biochemical properties				
Antigenic structure				
Factors pathogenicity				

3. List way diphtheria transmission:_____

4. Disease diphtheria are called:
a) toxigenic strains;
b) non-toxigenic strains;c) and
topics and others
5. Which type breathing corynobacteria diphtheria:
a) fermentative;
b) respiratory;c)
mixed
6. Histotoxin is synthesized toxigenic or non-toxigenic strain?_____

7. Describe method sowing researched material in diagnosis whooping cough and parapertussis:

_____

8. Enter in table distinctive signs pathogens whooping cough and parapertussis

Properties	Bordetella pertussis	Bordetella parapertussis
Cultural properties		
Antigenic structure		
Factors pathogenicity		
Biochemical properties		

9. grains volutin define on method:
1) Gram;
2) Neisser;
3) Ozheshko;
4) Storms-
Guinsa

10. In the formation of antidiphtheria immunity , the leading role belongs_____

SELF CONTROL

1. What form can the causative agent of diphtheria have? (choose one correct answer)
A. coccoid
B. Polymorphic rods
B. Curly (2-3 curls)
G. branching
2. Microscopy pathogen diphtheria carry out: (select one correct answer)
A. When stained according to Ziehl -
NelsenB. AT dark field vision
B. When stained according to
NeisserG. negative way
3. By type breathing clostridia: (select one correct answer)
A. obligate anaerobes
B. Optional anaerobes
C.obligate aerobes
D. Facultative aerobes
D. Microaerophiles.
4. Sequence stages bacteriological method research atdiphtheria:
A. Definition toxicity
B. Sowing the test material on special media
C. The study of biochemical properties
G. Reseeding colonies for receiving clean culture.
5. Toxicity diphtheria sticks define by using reactions: (choose onecorrect answer)
A. Agglutinations on glass
B. Hemagglutination
B. Ring precipitation
D. Precipitation in gel
6. name main methods microbiological diagnostics diphtheria: (selecttwo correct answer)
A. Microscopic
B. Biological
B. Bacteriological
G. Allergic
7.Methods microbiological diagnostics whooping cough (select two correctanswer)
A. Bacterioscopic
B. Bacteriological
C.Allergic
G. Serological
8. What morphological structures does the causative agent of diphtheria have? (selectone correct answer)
A. Agglutinations on glassA.
disputes
B. saws
C.flagella
G. grains volutin
9. Compose logical couples: question answer

1. split urea	A. Pathogen diphtheria
2. Not possess cystinase	b. Conditionally pathogenic corynebacteria
3. Not have urease	B. Both
4. Work out cystinase	G. Neither then, not another

10 **. Describe move research at diphtheria**

1. 1 stage A. Reseeding suspicious colonies on folded serum
2. 2 stage B. Sowing test material on Wednesday Clauberg
3. 3 stage B. Identification dedicated clean culture

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo
PRACTICAL OCCASION No. 12

THEME: PATHOGENIC MYCOBACTERIA.

Mycobacterium tuberculosis and leprae : morphology, physiology, antigens, ecology and Spread, pathogenesis pathogen and pathogenesis, immunity. laboratory diagnostics. Prevention and treatment.

I. Questions for checks original (basic) level knowledge:

1. Taxonomy pathogens tuberculosis and leprosy.
2.Morphological, cultural, biochemical and antigenic properties pathogenstuberculosis and leprosy.
3.Methods laboratory diagnostics pathogens tuberculosis and leprosy.
4. Preparations for specific prevention, diagnostics and treatment.

II. Target tasks

Student should know: 1. Taxonomy, morphology, cultural properties - tuberculosis andleprosy. 2.Main laboratory methods diagnostics: bacteriological,express methods. 3.Treatment and prevention, epidemiology.	**Main literature:** 1. Microbiology, virology and immunology /Under redu Tsareva V.N.- Moscow, 2009. With. 288-294. 2. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. 3. Microbiology with virology and immunology / Under ed. L.B. Borisov, A.M. Smirnova - M., 1994. 4. Medical microbiology. / Under ed.acad. RAMS IN A. Pokrovsky. - M., 2001.
The student must be able to: 1. cook smear and paint on methodZiel-Nielsen, sketch drugs. 2. Inoculation of the test material onnutritious environment. 3.Definition of sensitivity mycobacteria to antibiotics. 4. Record the reaction and makeconclusion.	**Additional literature:** 1. Workshop laboratory works With illustrated situational assignments in microbiology, immunology and virology./ Under. ed. A.A. Vorobiev, V.N. Tsareva. M., 2008. 2.Guide to practical exercises on medical microbiology, virology and Immunology./Under ed. V.V. Teza, 2002. 3. Lab Guide Microbiology./Under ed. L.B. Borisov.- M., 1984.

Replenish missing knowledge will help studying special literature specifiedhigher

III. Tasks for independent work on topic under study:

1. To highlight clean culture pathogen tuberculosis necessary certainterms:

1) 1-3 day;
2) 5-7 day;
3) 30-45 day

2. For treatment tuberculosis use:
1) antibiotics and chemotherapy drugs;
2) bacteriophages;
3) medicinal serum
3. AT clinical practice for diagnostics leprosy use:
1) bacteriological method;
2) bacteriological
4. Try mantoux used for diagnostics -
1) tuberculosis;
2) diphtheria;
3) Selection persons subject vaccination vaccine BCG;
4) Selection persons subject vaccination vaccine DTP

5. Transfer laboratory methods diagnostics tuberculosis

---

6. Enter distinctive signs:

Properties	Mycobacterium tuberculosis	Mycobacterium bovis	Mycobacterium avium
Cultural properties			
Antigenic structure			
Biochemical properties			

7. feature laboratory diagnostics are:
1) Treatment material front research acid for eliminate accompanyingflora;
2) warming up for eliminate accompanying flora;
3) Sowing material "at bed sick";
4) Absence elective nutritional environments for selection clean culture, in connections With how use biological method.

8. For detection pathogen in pathological material use methodcoloring on:
1. Ziel-Nielsen;
2. Zdrodovsky;
3. Gram;
fo Ozheshko
ur.
ni Describe morphological and tinctorial properties mycobacteria
ne
.
tuberculosis_____
_____
_____
_____

10. Describe epidemiology, pathogenesis and way transmission mycobacteria leprosy

SELF CONTROL

1. Ways transmission pathogen tuberculosis: (select two correct answer)
A. Airborne
B. Sexual
B. Air and dust
G. Transmissible
2.name main sources tuberculosis: (select two correct answer)
A. Patients with an open form of tuberculosis
B. Sick With closed form tuberculosis
B. Patients farm animals
G. Marine pigs
3. What material take on study at pulmonary forms tuberculosis?(select three correct answer)
A. Sputum
B. Pleural liquid
B. Flushing water of the
bronchiG. ascitic fluid
4. diseases, called mycobacteria: (select two correct answer)
A. actinomycosis
B. Tuberculosis
B. Deep mycoses
G. Leprosy
5. Try mantoux set for: (select two correct answer)
A. Selection persons, subject revaccination
B. Therapeutic goals
C.Prevention tuberculosis
G. Control efficiency treatment
6. What kind drugs use for specific prevention tuberculosis?(choose two correct answer)
A. ZhKSV-
EB. BCG-M
C.DTP
G. BCG
7. What kind methods "enrichment » apply at microscopic diagnosticstuberculosis? (select two correct answer)
A. Homogenization and
precipitation
B. Price method
C.Method flotation
G. Method deep cultivation
8. What kind epidemiological peculiarities characteristic for leprosy? (select twocorrect answer)
A. The source is a sick person
B. Contact way transmission
C.Airborne way transmission

G. A source - rodents

9. Make up brain teaser couples: question answer

1. M. leprae A. They are located intracellularly, forming balls
2. M. bovis B. Gram negative cocci
3. M. tuberculosis B. Long thin sticks
   G. Short thick sticks

10. Compose brain teaser couples: question answer

1. M. leprae A. Leprosy
2. M. kansasii B. Mycobacteriosis
3. M. africanum B. Tuberculosis
4. M. Avium

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo PRACTICAL OCCASION No. 13

THEME: PATHOGENIC SPIROCHAETES: treponema, BORRELI, LEPTOSPIRA.

PALE TREPONEMA: morphology, physiology, antigens, ecology and distribution, pathogenesis pathogens and pathogenesis syphilis, immunity. laboratory diagnostics. Prevention and treatment. BORRELIA EPIDEMIC And ENDEMIC relapsing fever: morphology, physiology, antigens, ecology and distribution, pathogenesis of pathogens and pathogenesis of epidemic and endemic relapsing fever, immunity. laboratory diagnostics. Prevention and treatment. LEPTOSPIRA: morphology, physiology, antigens, ecology and distribution, pathogenesis of pathogens and pathogenesis leptospirosis, immunity. laboratory diagnostics. Prevention and treatment.

I. Questions for checks original (basic) level knowledge:

1. Characteristic pathogen syphilis.
2. A source infections and way transmission pathogen
3. Clinical stages of syphilis.
4.Laboratory diagnostics syphilis.
5. Morphological and biological properties pathogens lousy and tick-bornereturnable typhus.
6. laboratory diagnostics returnable typhus.
7. Morphological and biological properties pathogen leptospirosis.
8. Laboratory diagnosis of leptospirosis.
9.Specific prevention spirochetosis.

II. Target tasks

Student should know: 1. Classification of spirochetes and theirbasic biological properties. 2. Methods applied for diagnostics spirochetes.	**Main literature:** 1. Microbiology, virology and immunology./Under. ed. V.N. Tsareva. - M., 2009.s. 344-349. 2. Medical microbiology, virology and immunology./Under. ed. A.A. Vorobyov. M. 2004.p. 477-484. 3. Microbiology./Under ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova.-M., Medicine, 2003. 4. Medical microbiology./Under Ed. Acad. RAMS IN A. Pokrovsky.-M.,2001. 5.Microbiology and immunology./ Undered. A.A. Vorobiev.-M., 1999. 6. Microbiology With virology and immunology./Ed. L.B. Borisov, A.M. Smirnova-M., 1994. With. 341-346
Student should be able to: 1. Take material for _ research. 2. Master diagnostic methods syphilis.	**Additional literature:** 1 . Workshop laboratory works With illustrated situationaltasks in microbiology, immunology and virology./ Under. ed. A.A. Vorobiev, V.N. Tsareva. M., 2008.
	2.Practice Guide on medical microbiology, virology and Immunology./Under ed. V.V. Teza, 2002. 3. Management to laboratory classes on Microbiology./Under ed. L.B. Borisova.-M., 1984.

Replenish missing knowledge will help studying special literature specifiedhigher

III. Tasks for independent work on topic under study:

1. staging reactions Wasserman.

For productions reactions binding complement on Wasserman at suspicion onsyphilis needed the following Components:

1.
2.
3.
four.

2. Compose table: *SCHEME STATEMENTS REACTIONS WASSERMAN*

3. Serological method, reaction microprecipitation (list Components. Whatformed at positive reaction? Through How many minutes reacts?)

4. At syphilis use non-specific or reaginic tests.A. What use in as an antigen?

B. What kind reactions here relate?

5. Specific or trepanemal tests founded on _____

_____

_____

_____

AT quality antigen can be used:
A. Trepanema Reiter (explain that this is per antigen) _____

_____

_____

_____

B. Trepanema Nichols or tissue trepanema (explain what this is per antigen)

_____

_____

_____

6. Of the trepanemal tests , the most commonly used is
immunofluorescent adsorbed test (IFC) and trepanema microhemagglutination.
A. AT quality antigen in IFAT use _____

_____

B. AT quality antigen in microhemagglutination use _____

_____

_____

7. Reaction microhemagglutination (staging).

_____

_____

_____

8. Fill table

ECOLOGY And SPREAD

Epidemic returnable typhus	Endemic returnable typhus

9. Fill table

PREVENTION And TREATMENT

Epidemic returnable typhus	Endemic returnable typhus

10. differentiation epidemic from endemic relapsing fever carry out(add) __

_____

_____

11. laboratory diagnostics leptospirosis (transfer methods)

_____

_____

_____

12. Immunity at leptospirosis.

_____

SELF CONTROL

1. Pathogen syphilis: (select two correct answer)

1. S LABO PERCEIVES COLORING

2. ABOUT DYED ON R OMANOVSKY- G IMZE AT PURPLE COLOUR

3. HISLO _ PRIMARY ZAVITKOV - 8-12

4. HISLO _ PRIMARY ZAVITKOV - 5-6

2. Pathogen leptospirosis: (select two correct answer)

1. THIN _ VINTAGE CELLS FROM CURVED ENDS

2. ABOUT DYED AT PURPLE COLOUR ON R OMANOVSKY- G IMZE

3. HISLO _ ZAVITKOV 20-40

4. ABOUT FORM CYSTS

3. Peculiarities Borrelia: (select two correct answer)

1. AND GROWN BACTERIA FROM 3-8 curls

2. THIN _ VINTAGE CELLS FROM CURVED ENDS

3. ABOUT DYED ON R OMANOVSKY- G IMZE AT PURPLE COLOUR

4. S LABO PERCEIVE ANILINE DYES

four. Secondary syphilis characterized by: (select two correct answer)

1. M SCISSOR RASHES

2. ABOUT EDUCATION GUMM

3. DEFEAT _ INTERNAL BODIES

4. ABOUT EDUCATION SOLID SHANKRA

***5.* Terms cultivation leptospira** : **(select two correct answer)**

1. IN ONE - SERUM WEDNESDAY

2. T EMPERATURE +28-30°

3. MPA

4. T EMPERATURE +40

6. Conditions cultivation Borrelia: (select three correct answer)

1. T EMPERATURE +35°

2. WITH REDA , CONTAINING SERUM , ASCITIC LIQUID

3. A TMOSPHERE five% CO2
4. T EMPERATURE +28-30°
7. With leptospirosis are affected: (select three correct answer)
1. P RICH
2. POINTS _
3. M OZG
4. TO INTESTINAL
8. Immunity at disease Lima: (select two correct answer)
1. D HIMORAL ANTIBACTERIAL
2. A NTITOXIC
3. IN IDOSPECIFIC
4. S TERILE
9. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER
1. Epidemic returnable typhus
2. Syphilis
3. Disease Lyme
4. Leptospirosis

IN ALARMS :
A. B.
BURGDORFERI
B. L.
INTERROGANS
B. B.
RECURRENTIS
G. T. PALLIDUM

10. COMPOSE BRAIN TEASER COUPLES: QUESTION ANSWER
1. Badly perceives aniline dyes
2. Cultivated in environment, containing serum ascitic liquid
3. Good perceives aniline dyes
4. form cysts

A. The causative agent of epidemic relapsing feverB.
IN ALARM SYPHILIS
C.About BA
G. N I THAT , NONE OTHER

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTO THE PRACTICAL OCCASION #14

THEME: PRINCIPLES LABORATORY DIAGNOSIS, PREVENTION AndTREATMENT OF VIRAL INFECTIONS.

I. Questions for checks original level knowledge:

1. Why viruses are intracellular parasites?
2. What kind biological models use for cultivation viruses?
3. What kind exist methods indications viruses?
4. AT how is serological method diagnostics infectious diseases?
5. What kind Components participate in serological reactions?
6. What serodiagnosis infectious diseases?
7. What seroindication (serotyping)?
8. What mechanism development antiviral immunity?

II. Target tasks:

Student should know:	Literature: 1. Medical microbiology. / Ed.acad. RAMS IN A. Pokrovsky. - M., 2001. 2. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003.
•Methods identification viruses •Methods of laboratory diagnostics viral infections •Principles of prevention and treatmentviral diseases	
Student should be able to:	**Literature:**
•Take into account the results of the reaction immunofluorescence, delivered With goal seroidentification influenza •Take into account the results of the neutralization reaction color samples •Take into account results reactions braking hemagglutination	1. Management to practical classesin medical microbiology, virology and immunology. /Under. Ed. V.V. Teza, 2002. 2. Management to practical classeson microbiology / Under ed. Lebedev - M., 1980.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic under study:

1. Specify correct answers:

1. Where are viruses cultivated?a)
in MPA
b) in a chicken embryo
c) in environment 199
G) on tissue cultures
e) in laboratory animals

2. For identification viruses usea) color test
b) reaction braking hemagglutination
c) reaction neutralization cytopathic actions viruses
G) binding reaction complement
e) reaction passive hemagglutination

3. For indications viruses use
a) colored sample
b) reaction neutralization
c) reaction hemagglutination
G) reaction braking haemadsorption

4. For diagnostics viral infections use
a) bacteriological method
b) virological method
c) viroscopy method
G) mycological method
e) serological method

5. What components are involved in the hemadsorption inhibition reaction?
a) monolayer cells
b) test material with virus
c) erythrocytes
d) bacteria
e) diagnostic antiviral serum
e) diagnostic antibacterial serum

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo PRACTICAL OCCASION #14

THEME: PRINCIPLES LABORATORY DIAGNOSIS, PREVENTION AndTREATMENT OF VIRAL INFECTIONS.

I. Questions for checks original level knowledge:

9. Why viruses are intracellular parasites?
10. What kind biological models use for cultivation viruses?
11. What kind exist methods indications viruses?
12. AT how is serological method diagnostics infectious diseases?
13. What kind Components participate in serological reactions?
14. What such serodiagnosis infectious diseases?
15. What seroindication (serotyping)?
16. What mechanism development antiviral immunity?

II. Target tasks:

Student should know:	**Literature:** 1. Medical microbiology. / Ed.acad. RAMS IN A. Pokrovsky. - M., 2001. 2. Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003.
•Methods identification viruses •Methods of laboratory diagnostics viral infections •Principles of prevention and treatmentviral diseases	
Student should be able to:	**Literature:**
•Take into account the results of the reaction immunofluorescence, delivered With goal seroidentification influenza •Take into account the results of the neutralization reaction color samples •Take into account results reactions braking hemagglutination	1. Management to practical classesin medical microbiology, virology and immunology. /Under. Ed. V.V. Teza, 2002. 2. Management to practical classeson microbiology / Under ed. Lebedev - M., 1980.

Replenish missing knowledge will help studying special literature, specifiedhigher

III. Tasks for independent work on topic under study:

1. Specify correct answers:

2. Where are viruses cultivated?a)
in MPA
b) in a chicken embryo
c) in environment 199
G) on tissue cultures
e) in laboratory animals

2. For identification viruses use
a) color test
b) reaction braking hemagglutination
c) reaction neutralization cytopathic actions viruses
G) binding reaction complement
e) reaction passive hemagglutination

3. For indications viruses use
a) color test
b) reaction neutralization
c) reaction hemagglutination
G) reaction braking haemadsorption

4. For diagnostics viral infections use
a) bacteriological method
b) virological method
c) viroscopy method
G) mycological method
e) serological method
5. What kind Components participate in reactions braking haemadsorption?
a) monolayer cells
b) test material with virus
c) erythrocytes
d) bacteria
e) diagnostic antiviral serum
e) diagnostic antibacterial serum
6. What kind drugs use for specific prevention viral infections?a) antibiotics
b) vaccines
c) γ-globulins
G) vitamins
7. What is the effect of interferon?
a) antitumor
b) antiviral
c) antiprotozoal
d) immunostimulating
e) antibacterial
8. Reply on questions:
As held reaction inhibition of hemagglutination (RTGA) at identification viruses?Describe principle method:

_____
_____
researched material:__

_____

Diagnostic a drug:_____
_____
_____

Additional Ingredients_____
_____
_____

9. At staging reactions immunofluorescence (REEF), ongoing With goalserodiagnosis viral infections:
researched material:_____
_____

Diagnostic a drug:_____
_____
_____

10. In the serodiagnosis of viral infections using RTGA researched material:
___Diagnostic a drug:_____
Additional Ingredients_____

11. What are methods laboratory diagnostics viral infections?

_____
_____

_____

12. Reply on questions:
1. What is the difference between a color test and a color neutralization reaction ? samples?_____
_____

2. List Ingredients, involved:
in reactions hemagglutination _____
in reactions braking hemagglutination_____

3. What kind Ingredients involved:
in reactions haemadsorption?
_____
in reactions braking haemadsorption?_____

13. What are principles treatment viral infections?

_____
_____
_____

14. What are principles prevention viral infections?

_____
_____
_____
_____
_____

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo
PRACTICAL OCCASION #15

THEME: pathogens acute respiratory viral infections (viruses flu, parainfluenza, measles, mumps, rubella, smallpox, chickenpox smallpox, adenoviruses, Coxsackie, ECHO; pathogenesis, clinical picture, laboratory diagnostics, treatment and prevention infections, caused these viruses)

I. Questions for checks original level knowledge:

1. Definition viruses, them structure and classification
2. Why viruses are intracellular parasites?
3. What kind exist methods cultivation viruses?
4. AT how difference between methods indications and identification viruses?
5. What kind exist methods identification viruses?
6. What kind you you know methods laboratory diagnostics viral infections?
7. name principles prevention and treatment viral infections.

II. Target tasks:

Student should know:	**Literature:**
1. Biological properties of influenza viruses, parainfluenza, measles, epidemic mumps, rubella, natural smallpox, wind smallpox, coxsackie, echo, adenoviruses 2. Pathogenesis and clinical picture diseases, caused studied viruses 3. Methods laboratory diagnostics diseases, caused studied viruses 4. Principles prevention and treatment diseases caused considered viruses	1. Flu - way solutions Problems. Kamyshentsev M.V., Stefanov V.E. - St. Petersburg, 2002. 2. Influenza and other acute respiratory infections diseases. Deryagin Yu.P. - "Felix", 2006. **Main literature:** 1. Medical microbiology. / Under ed.acad. RAMS IN A. Pokrovsky. - M., 2001. **2.** Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. **Additional literature:** 1. Flu. Benefit for doctors. Small V.Kh., Sologub T.V.- St. Petersburg-Kharkov,2007
The student must be able to:	**Literature:**
1. Take into account the results of the braking reaction hemagglutination, delivered With goal serodiagnosis influenza 2. Take into account results reactions immunofluorescence, delivered With goal seroidentification virus influenza 3. Assess the cytopathic effect of the virus influenza in cell culture Hella	1.Flu - way solutions Problems. Kamyshentsev M.V., Stefanov V.E. - St. Petersburg, 2002. 2.Flu and other sharp respiratory diseases. Deryagin Yu.P. - "Felix", 2006. 3. Management to practical classes on medical microbiology, virology and immunology. /Under. Ed. V.V. Teza, 2002.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic under study:

1. Specify correct answers:

1. Viruses influenza
refer to family

a) coronaviruses
b) adenoviruses
c) paramyxoviruses
G) orthomyxoviruses
2. Measles virus by structure
a) simple virus
b) complicated virus
c) It has supercapsid
d) does not have a supercapsid
e) has nucleocapsid
3. For specific prevention epidemic mumps use:
a) DTP
b) BCG
c) a live vaccine received by Smorodintsev A.A. and collaborators
G) rimantadine
4. Virus avian influenza applies to:
a) to the influenza virus type C
b) to the influenza virus type A
c) to the influenza virus type B
G) to virus influenza type D
5. What type of nucleic acid does the varicella-zoster virus contain?
a) RNA
b) DNA
c) DNA and RNA
G) not contains nucleic acid
6. For virus natural smallpox characteristic:
a) RNA-containing virus
b) DNA-containing virus
c) simple virus
G) complicated virus
e) contains hemagglutinin
e) not contains hemagglutinin
7. For diagnostics natural smallpox use:
a) detection of Guarnieri bodies in the cytoplasm of affected cells
b) body detection Babesha Negri in affected cells
c) RTGA
G) RSK
e) reaction precipitation
8. Viruses parainfluenza include:
a) to the genus Paramyxavirus
b) to kind Lyssavirus
c) to the genus Pneumovirus
G) to kind Morbillivirus

2. Give brief characteristic viruses flu:
Shape _____
_____Di
mensions_____
Availability supercapsid
_____T

ype nucleic acids_____
_____A
ntigens _____
_____H
emagglutinin _____
_____N
euraminidase_____

3. Reply on questions:
Methods cultivation viruses influenza_____
_____

Localization viruses influenza in body human_____
_____

A source infections_____
_____

Ways transmission_____
Pathogenesis influenza_____
_____
_____

4. List drugs for etiotropic therapy flu:
_____
_____
_____
_____
_____
_____

5. name drugs for specific prevention flu:
_____
_____
_____
_____
_____

6. Immunofluorescence reaction as a method for express diagnostics of influenza:
researched material
__Diagnostic a drug_____

7. Write down step by step virological method diagnostics flu:

_____
_____
_____
_____
_____
_____
_____
_____

8. Give brief characteristic adenoviruses:
Shape _____
_____Siz
e_____
Availability supercapsid_____
_____Ty
pe nucleic acids_____
Antigens _____
_____Pr
esence serovars and serotypes_____
_____M
ethods cultivated_____
_____Lo
calization in body human_____
_____A
source infections_____
Ways transmission_____
Clinical forms adenovirus infections_____

---

9. laboratory diagnostics adenovirus infections:
1. RIF - as a method of rapid diagnosis of adenovirus infections: researched material
___Diagnostic a drug_____
2. Cytoscopic method:
Principle method_____

_____
_____

10. Give brief characteristic viruses parainfluenza:

Shape _____
_____Siz
e_____
Availability supercapsid_____
Type nucleic acids_____
_____An
tigens _____
_____Pre
sence serovars and serotypes_____
_____Me
thods cultivation_____
_____Lo
calization in body human_____
_____A
source infections_____
Ways transmission_____
Clinical forms parainfluenza infections_____
_____
_____

11. Give brief characteristic viruses coxsackie and ECHO:

Shape _____
_____Si
ze_____
Availability supercapsid_____
_____T
ype NK_____
Antigens_____

Availability serovars and serotypes
_____
Methods cultivation_____
_____
Localization in body human_____
A source infections_____
Ways transmission_____
Clinical forms_____

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo
PRACTICAL OCCASION #16
TOPIC: Viruses - causative agents of parenteral infections (viruses of hepatitis B, C, D, G,

HIV infection; pathogenesis, clinical picture, laboratory diagnostics, treatment and prevention diseases, caused these viruses)

I. Questions for checks original level knowledge:

Viruses, their definition and structure
Methods cultivation viruses
Methods for laboratory diagnosis of viral infections
Principles of treatment and prevention of viral infections
Ways transmission viral infections

II. Target tasks:

Student should know:	**Literature:**
1. Biological properties viruses hepatitis AT, FROM, D, g, HIV infections 2. Pathogenesis and clinical picture diseases, caused studied viruses 3. Methods laboratory diagnostics diseases, caused studied viruses 4. Principles prevention and treatment diseases caused considered viruses	1. HIV infection and AIDS / Ed.Pokrovsky V.V. - M., 2007. **Main literature:** 7. Medical microbiology. / Under ed.acad. RAMS IN A. Pokrovsky. - M., 2001. **8.** Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. **Additional literature:** 1. Sanitary microbiology and virology. / Under ed. Z.N. Kochemasova,S.A. Efremova, A.M. Rybakova. - M., 1987. 2. Nosocomial infections. / Under ed.V.P. Wenzel. - M., 1990. 3. Chronic viral hepatitis /Undered. Serov B.V. –M. "Medicine", 2002.
The student must be able to:	**Literature:**
1. Take into account results reactions indirect (passive) hemagglutination, delivered With goal serodiagnosis hepatitis A AT 2. Take into account the results of enzyme immunoassay analysis (IFA), delivered With goalserodiagnosis HIV infections	1.Hepatitis and effects hepatitis A. MayerK.P.- Moscow, 1999. 2.HIV infection and AIDS /Under ed. Pokrovsky V.V. - M., 2007. 3. Management to practical classes on medical microbiology, virology and immunology. /Under. Ed. V.V. Teza, 2002.

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for independent work on topic under study:

1. Specify correct answers:

1. Presence in serum blood what antibodies is indicator acute periodviral hepatitis A AT?
a) anti-HBc IgM
b) anti-HBs IgG
c) anti-HBe IgM
G) anti-HBc IgG

2. What is the main way of transmission of hepatitis B, C, D, G?
a) fecal-oral
b) parenteral
c) airborne
G) contact

3. What material taken from a patient is examined in the diagnosis of hepatitis C, D, G?
a) feces
b) urine
c) blood
G) sputum
4. Which type nucleic acids contains virus hepatitis A AT?
a) RNA
b) DNA
c) DNA and RNA
5. Pathogen what viral hepatitis A has oncogenic properties?
a) AND
b) C
c) FROM
e) D
e) G
6. What family does the causative agent of HIV infection belong
to?
a) rhabdoviruses
b) Togaviruses
c) Coronaviruses
d) Retroviruses
e) poxviruses
7. The human immunodeficiency virus is characterized by the following properties?
a) DNA containing
b) RNA containing
c) contains DNA and RNA
G) simple virus
e) complicated virus
8. HIV is transmitted in the following ways:
a) sexual
b) airborne
c) fecal-oral
G) parenteral
e) transplacental
9. More often Total become infected and get sick HIV infection face, owned to groupsrisk:
a) homosexuals
b) drug addicts
c) prostitutes
G) sick hemophilia
10. What methods are used to diagnose HIV infection?
a) virological method
b) serodiagnosis
c) express diagnostic methods: immunochemical and molecular biological
G) viroscopy
e) bacteriological

2. Fill in table:
Comparative characteristic viral hepatitis

Viruses hepatitis	AT (HVB)	C (HVC)	D(HVD)
taxonomic position pathogen			
Type NK			

A source infections			
Ways transmission			
Methods diagnostics:			
Express diagnostics (yes or not)			
Virological method (Yes or No)			
Serodiagnostics (Yes or No)			

3. Make up situational task, from which would should have what at the patient is acuteform of hepatitis AT (on results laboratory research)

_____
_____
_____
_____
_____

4. When setting up a passive hemagglutination reaction (RPHA) in order toserodiagnosis hepatitis A AT:

researched material

_____

Diagnostic a drug_____

5. Give brief characteristic virus immunodeficiency human (HIV):

taxonomic position_____
Shape _____
_____S
ize _____
_____T
ype HK_____
Availability supercapsid_____
_____A
vailability serovars and serotypes_____
Methods cultivation
_____L
ocalization in body human_____
A source infections_____
_____
Way transmission_____
Leading link in pathogenesis infections_____

6. Make up scheme laboratory diagnostics HIV infections:

_____
_____
_____
_____
_____
_____
_____

7. Specify principles treatment HIV infections:

_____
_____
_____
_____
_____

8. Specify principles prevention HIV infections

_____
_____
_____
_____
_____

9. List serological reactions, which are used at diagnostics hepatitis FROM and D_____

_____
_____
_____
_____
_____

INDEPENDENT EXTRACURRICULAR WORK OF STUDENTSTo
PRACTICAL OCCASION #17

THEME: pathogens enteroviral infections (viruses poliomyelitis, echo, Coxsackie, hepatitis A and E; pathogenesis, clinical picture, laboratory diagnostics, prevention and treatment diseases, caused higher listed viruses)

I. Questions for checks original level knowledge:

1. viruses, them definition and structure
2. Methods cultivation viruses
3. Methods laboratory diagnostics viral infections
4. Principles treatment and prevention viral infections

II. Target tasks:

Student should know:	**Main literature:**
1. Biological properties viruses poliomyelitis, echo, coxsackie, hepatitis AND and E 2. Pathogenesis and clinical picture diseases, caused studied viruses 3. Methods laboratory diagnostics diseases, caused studied viruses 4. Principles prevention and treatment diseases caused considered viruses	1.Medical microbiology. / Ed.acad. RAMS IN A. Pokrovsky. - M., 2001. **2.** Microbiology. / Under. Ed. A.A. Vorobiev, A.S. Bykova, E.P. Pashkova, A.M. Rybakova. - M., Medicine, 2003. **Additional literature:** 1. Nosocomial infections. / Under ed. V.P. Wenzel. - M., 1990. 2.Chronic viral hepatitis /Under ed.Serov B.V. –M. "Medicine", 2002.
The student must be able to:	**Literature:**
1. Take into account results reactions color sample neutralization , delivered With goal serodiagnosis poliomyelitis 2. Take into account the results of the braking reaction hemagglutination, delivered With goal serodiagnosis diseases, caused viruses coxsackie	1. Virology, 3 volumes / Ed. B. Fields, D. Knight- M. "Peace", 1989. 2. Management to practical classes on medical microbiology, virology and immunology. /Under. Ed. V.V. Teza, 2002. .

Replenish missing knowledge will help studying special literature, specifiedhigher.

III. Tasks for self work on topic under study:

1. Specify correct answers:

1. Poliomyelitis viruses belong to the familya)
caliciviruses
b) retrovirusesc)
poxviruses
G) picornaviruses

2. Viruses poliomyelitis - this is
a) DNA containing viruses b)
simple viruses
c) RNA-containing virusesG)
complex viruses

3. What kind reactions can use for diagnostics enteroviral infections?
a) RTGA
b) RPGA
c) ELISA
d) RIF e) PCR

4. Which Class immunoglobulins serum blood sick hepatitis AND testifiesabout activity (sharpness) process?
a) IgG
b) IgA
c) Ig M
G) Ig E
5. What kind reactions can use for diagnostics hepatitis A E?
a) ELISA
b) RIA
c) PCR
G)
RSK
6. For specific prevention poliomyelitis use:
a) BCG
b) DTP
c) a live vaccine received by Smorodintsev A.A. and Chumakov M.P.
G) rabies vaccine
7. How much serotypes have viruses polio?
a) five
b) 7
c) 3
G) 2
8. Basic way transmission hepatitis A
a) parenteral
b) airbornec) fecal-oral
G) contact

9. What type of nucleic acid do hepatitis A and E viruses contain?
a) DNA
b) RNA
c) DNA and RNA

2. Fill in table:

	Viruses poliomyelitis	Viruses coxsackie	ECHO viruses	Virus hepatitis A AND
Ways cultivation: - chicken embryo; - culture cells; - organism laboratory animals				
Availability serovars				
A source infections				
Ways transmission				
Role in pathology human				

3. Give brief characteristic Picornaviruses:
Shape _____
_____Si
ze_____
Availability supercapsid_____
_____T
ype NK_____
Sustainability in external environment_____
_____
_____

4. Specific prevention poliomyelitis:
Vaccine Salk
_____
Vaccine Sabin_____
_____
_____

5. List clinical forms poliomyelitis:
_____
_____

6. Describe step by step the virological method of laboratory diagnostics poliomyelitis:_____
_____
_____
_____

7. At serodiagnosis poliomyelitis carry out reaction neutralization (PH) on color Salk test:
researched material
_____
Diagnostic a drug_____
_____
Additional Ingredients reactions_____
_____
_____

8. Write complete title viruses ECHO
_____
_____

9. Fill in table:
Comparative characterization of viruses hepatitis AND and E

Viruses hepatitis	A(HVA)	E(HVE)
taxonomic position pathogen		
Type nucleic acids		
A source infections		
Ways transmission		
Methods diagnostics:		
Express diagnostics (yes or not)		
Virological method (Yes or not)		
Serodiagnosis (yes or No)		