



MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION
Federal state autonomous educational institution
of higher education
«Far Eastern Federal University»
(FEFU)

SCHOOL OF BIOMEDICINE

«AGREED»

Head of education program
«General medicine»



(signature) Khotimchenko Yu.S.
(Full name)
«09» of July 2019

«APPROVED»

Director of the Department of Clinical
Medicine



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«09» of July 2019



WORKING PROGRAM OF ACADEMIC DISCIPLINE (WPAD)

«Ophthalmology»

Education program

Specialty 31.05.01 «General medicine»

Form of study: full time

year 6, semester B
lectures 18 hours
practical classes 36 hours
laboratory works not provided
total amount of in-classroom works 54 hours
independent self-work 54 hours
including preparation to exam 27 hours
control works ()
pass-fail exam is not provided
exam year 6, semester B

The working program is drawn up in accordance with the requirements of the Federal state educational standard of higher education (level of training), approved by the order of the Ministry of education and science of the Russian Federation from 09.02.2016 № 95.

The working program of the discipline was discussed at the meeting of the Department of fundamental and clinical medicine. Protocol No. 8, 09 of July 2019

Authors: d.m.sc., professor Usov V.V., senior teacher Guseva E.V.

ANNOTATION

Discipline "Ophthalmology "is purposed for students enrolled in the educational program 31.05.01"General medicine".

Discipline is implemented in the 6 year as a basic discipline.

Development of the working program of the discipline was made in accordance to the Federal state educational standard of higher education in the specialty 31.05.01 "Medicine" and curriculum of the student trainings.

The total complexity of the discipline is 108 hours, 3 credits.

The course program is based on the basic knowledge gained by students:

- the ability and willingness to implement the ethical and deontological principles in professional activities (GPC – 4)
- the readiness for medical use of drugs and other medical substances and their combinations in solving professional problems (GPC – 8)
- the capacity for the assessment of morphological and physiological states and pathological processes in the human body for solving professional tasks (GPC – 9)
- the readiness to collect and to analyze patient complaints, data of its history, the results of laboratory, instrumental, postmortem and other examinations to recognize the incidence or the absence of diseases (PC – 5)

the readiness for educational activities to eliminate the risk factors and promote healthy lifestyles (PC – 16)

Goal of the course: is mastering the special methods of diagnostics and treatment of diseases of the visual organ, formation of the medical thinking basics and skills providing solutions for professional problems and the use of the algorithm of medical activity to provide first aid in emergency and life-threatening situations, prevention, diagnostics, treatment and rehabilitation of patients with eye disease and its subordinate apparatus.

Objectives:

1. to teach students the ability to examine adult patients with pathology of the vision organ and to identify the symptoms of their disorders;

2. to give students up-to-date knowledge of etiology, pathogenesis, symptoms, diagnostics, treatment, prevention and expert evaluation of major ophthalmic diseases;

3. to form clinical thinking in students, ability to establish and justify independently the diagnosis of the most common ophthalmic diseases, to carry out their differential diagnostics, to provide first aid, to prescribe treatment for emergency conditions in accordance with the list of pathological conditions and diseases of the qualification characteristics of the specialty " Ophthalmology " and to make a plan of measures for the prevention of this category of diseases;

4. to instill in students the skills of deontology, moral and ethical legal culture as well as communication skills with the patient, his relatives and friends, taking into account the legal foundations of medical law.

As a result of the learning of this discipline, students form the following general professional and professional competences:

Code and formulation of competence	Stages of competence formation	
the readiness for medical use of drugs and other medical substances and their combinations in solving professional problems (GPC – 8)	Knows	Basic principles of surgical and conservative treatment in patients with diseases of the organs of vision
	Is able to	To determine the tactics of treatment of patients with diseases of the organs of vision
	Possesses	Skills to work with guidance documents, standards, defining approaches to the treatment of patients with diseases of the organs of vision
the readiness to collect and to analyze patient complaints, data of its history, the results of laboratory, instrumental, postmortem and other examinations to recognize the incidence or the absence of diseases (PC – 5)	Knows	General and special methods of research in the main sections of medicine in patients with diseases of the organs of vision
	Is able to	Get information about the development and course of the disease; apply objective methods of examination of the patient, to identify general and specific signs of the disease; assess the severity of the patient; determine the need and consistency of applying special research methods (laboratory, x-ray, endoscopic, functional), interpret the data obtained in patients with diseases of the organs of vision.
	Possesses	Skills to establish the diagnosis and provide qualified assistance to patients with diseases of

		the organs of vision
the ability of determining the patient's basic pathological conditions, symptoms, syndromes, diseases in accordance with the International Statistical Classification of Diseases and problems related to health, the 10th review. (PC – 6)	Knows	modern classification of diseases in accordance with the International Statistical Classification of Diseases and Problems Related to Health and Problems, X revision; clinical picture of the main pathological conditions, symptoms, syndromes, features of the course and possible complications of the most common eye diseases
	Is able to	Identify in patients the main pathological conditions, symptoms, syndromes of eye diseases in accordance with the International Statistical Classification of Diseases and Health Related Problems, X view
	Possesses	Conducting a clinical examination of the patient's organs of vision; an assessment of the changes identified during the examination and the formulation of the preliminary diagnosis; drawing up a survey plan based on a preliminary diagnosis; formulating a diagnosis according to the International Statistical Classification of Diseases and Related Health Problems, X revision
the ability to determining the tactics of patient surveillance with different nosological entities. (PC – 8)	Knows	Basics of management of patients with acute and chronic diseases of the organs of vision
	Is able to	To draw up a program of diagnostic and therapeutic measures for chronic and acute diseases of the organs of vision.
	Possesses	Make a treatment plan in accordance with the standards of patients with diseases of the organs of vision.

The following methods of active/ interactive training are used to form the above mentioned competencies within the discipline "Ophthalmology":

1. Execution of practical training with the use of computer training programs is supposed.
2. For organization of the independent self-work it is proposed to prepare essays and reports for presentation in the group and at the student conference; as well as preparation for practical classes, work with additional literature, preparation of essays and lesson-conference.

The share of practical training conducted in interactive forms is 10% of the whole classroom time; independent extracurricular self-work – 50% of the whole time.

I. THE STRUCTURE AND CONTENT OF THE THEORETICAL PART OF THE COURSE (18 HOURS)

Module I Anatomy and physiology of the vision organ

Theme. 1 Anatomy of the vision organ. The concept of blindness

Lacrimal organs. Conjunctiva. Oculomotor apparatus. Eyeball. Outer (fibrous) shell of the eye: Choroid. Lens. Vitreous. Anterior and posterior chamber of the eye. Retina. Structure and functions. Visual pathway. Orbit. Structure, content, functions. Anatomy of the retina. Four neurons of the visual analyzer of the blindness concept.

Theme 2. Physiology of the vision organ.

The mechanism of visual action. Optical system of eye. The concept of physical and clinical refraction. Three types of clinical refraction. Mechanism of accommodation. Modern understanding of the origin of myopia. Correction of myopia. Symptoms, treatment and prevention of myopia. Central, peripheral and binocular vision, light and color perception.

Module II. Methods of examination of vision organ

Theme 1. Methods of examination of vision organ

External examination of eye and its appendages (study of the orbit and surrounding tissues, eyelids, conjunctiva and lacrimal organs). Examination under side lighting. Research in transmitted light. Ophthalmoscopy. Biomicroscopy. Ophthalmotometry

Module III. Diseases and injuries of the vision organ

Theme 1. Inflammatory diseases of eyelids, conjunctiva and cornea (adenovirus and chlamydial eye diseases).

Inflammatory diseases of eyelids. Anatomy of the lacrimal apparatus; symptoms and treatment of dacryocystitis, phlegmon of the lacrimal sac.

Brief anatomy of the conjunctiva, common symptoms of acute conjunctivitis. Symptoms and treatment: conjunctivitis of chlamydial etiology, pneumococcal, monastery gonorrhoea in newborns and adults.

Theme 2. Clinic and surgical treatment of cataracts. Implantation of intraocular lenses.

Structure and chemical composition of lens. Classification of lens diseases: congenital and acquired cataracts. Cataract in general diseases, professional, traumatic, etc. Four stages of senile cataracts. Surgical treatment of cataracts: extra-and intracapsular cataract extraction, cryoextraction. Correction of aphakia. Implantation of intraocular lenses.

Theme 3. Inflammatory diseases of vascular tract and optic nerve.

Blood supply to the eye vascular tract. Classification of uveitis. Common symptoms and complications of anterior uveitis. Symptoms and treatment of metastatic hematogenous and toxic-allergic uveitis. Chorioiditis clinic.

Theme 4. Disturbances of the eye hydrodynamics. Primary and secondary glaucoma.

Exchange of intraocular fluid. The main symptoms of glaucoma. Classification of primary glaucoma. Glaucoma clinics. The principle of tonography. Gonioscopy. Medical and surgical treatment of glaucoma.

Theme 5. Diseases of the retina, optic nerve and orbit

Normal ocular fundus. Fundus in hypertensive disease, nephropathy of pregnant women, diabetes. Symptoms and treatment of acute obstruction of central retinal vessels. Stagnant nipple of the optic nerve (symptoms, etiology, outcome, treatment). Primary and secondary of the optic nerve atrophy (symptoms and treatment). Symptoms, stages, treatment of melanoblastoma of the vascular tract. Orbit phlegmon: etiology, symptoms, treatment.

Theme 6. Injury to the vision organ. Injury prevention.

Classification of perforated eye injury. Signs of the penetrating wounds of cornea and sclera. Complications of penetrating wounds, first aid, primary surgical

treatment of penetrating wounds. Symptoms, pathological anatomy, ethiology and prevention of sympathetic inflammation. Prevention of eye injuries

I. THE STRUCTURE AND CONTENT OF THE PRACTICAL PART OF THE COURSE (36 HOURS)

Theme 1. Anatomy of the vision organ. The concept of blindness (4 hours)

Lacrimal organs. Conjunctiva. Oculomotor apparatus. Eyeball. Outer (fibrous) shell of the eye: Choroid. Lens. Vitreous. Anterior and posterior chambers of eye. Retina. Structure and functions. Visual pathway. Orbit. Structure, content, functions. Anatomy of the retina. Four neurons in the visual analyzer.

Theme 2. Methods of the vision organ examination. The scheme of examination of patient and filling medical history (4 hours)

External (general) inspection. Examination of complaints and anamnesis. External examination of eyes of his appendages. Study of the orbit and surrounding tissues. Eyelid research. Study of the connective membrane (conjunctiva). The study of the lacrimal organs. Study at lateral (focal) illumination. Research in transmitted light. Ophthalmoscopy in direct form. Biomicroscopy. Analysis of intraocular pressure. Medical history chart

Theme 3. Visual functions and methods of their examination (4 hours)

Definition of visual acuity, examination of color perception at the Rabkin polychromatic tables and Yustova threshold tables, determination of the fields of view with control method and with perimeter of the Förster objects and white and colored objects, conduction of campimetria to identify scotomas and a blind spot, rough determination of binocular vision and using sweetest, determination and evaluation of data sensitivity on adaptometry.

Theme 4. Visual acuity, refraction, presbyopia (4 hours)

Study of visual acuity, Snellen's formula. Familiarity with the Rotta device and a set of optical lenses for the glass selection. The concept of physical and clinical refraction: emmetropia, myopia, hypermetropia. Symptoms and complications of myopia, issues of treatment and prevention, selection of glasses and prescription.

Theme 5. Diseases of eyelids, lacrimal organs, conjunctiva (2 hours)

Pathology of eyelids: blepharitis, neoplasms, dermatitis of eyelids, anomalies of position and shape of eyelids. Symptoms and treatment of diseases of lacrimal organs: abnormalities, Sjögren's syndrome, diseases of lacrimal apparatus, dacryocystitis etc. Patency test of lacrimal passages (collargol), probing and irrigation of lacrimal ducts. Signs and treatment of acute conjunctivitis. Diphtheria. Denotational fever, epidemic keratoconjunctivitis. Their treatment.

Theme 6. Diseases of cornea, sclera, orbit, vascular tract of the eye (2 hours)

Keratitis. Classification of keratitis. Symptoms and treatment of certain types of keratitis. Scleritis and episcleritis. Uveitis and other diseases of the vascular tract. Symptoms, diagnostics, treatment.

Theme 7. Diseases of lens (2 hours)

Cataracts, classification and signs. Conservative and operative surgery. The aphakia and pseudophakia.

Theme 8. Pathology of retina and optic nerve (2 hours)

Retinal detachment, causes, symptoms, diagnostics, treatment. Signs and treatment of retinal detachment. Diseases of optic nerve, neuritis, stagnant nipple, optic nerve atrophy. Maculodystrophy. Ophthalmoscopy in the pathology of the optic nerve.

Theme 9. Injuries of the vision organ (4 hours)

Ocular trauma. Types of injuries of the vision organ and subsidiary organs.

Emergency care for penetrating and non-penetrating eye injuries, eye burns. Radiation methods of foreign body localization in the eye cavity and principles of surgical treatment of patients with various types of penetrating wounds.

Theme 10. Glaucoma (2 hours)

Methods of tonometry and tonography, gonioscopy. Glaucoma: symptoms, diagnostics, classification, treatment and prevention.

Theme 11. Ophthalmology (2 hours)

Oncological processes of eyelids and orbits. Melanoblastoma of the vascular tract and retinoblastoma. Diagnostics and treatment of ophthalmological patients.

Theme 12. Credit. (4 hours)

III. TRAINING AND METHODOLOGICAL SUPPORT INDEPENDENT SELF-WORK OF STUDENTS

The main content of the topics, evaluation tools are presented in the WPAD: terms and concepts necessary for mastering the discipline.

During the mastering the course “Ophthalmology”, the student will have to do a large amount of independent self-work, including preparation for seminars and writing an essay.

Practical classes help students to deeper learn the material, to acquire the skills of creative work on documents and primary sources.

Plans for practical classes, their topics, recommended literature, the purpose and objectives of its study are communicated by the teacher at the introductory classes or in the curriculum for the discipline.

Before starting to study the topic, it is necessary to familiarize yourself with the basic questions of the practical training plan and the list of recommended literature.

Starting the preparation for the practical lesson, first of all it is necessary to refer to the lecture notes, sections of textbooks and teaching aids in order to get a general idea of the place and significance of the topic in the course being studied. Then work with additional literature, make notes on the recommended sources.

In the process of studying the recommended material it is necessary to understand the construction of the topic being studied, highlight the main points, trace their logic and thereby get into the essence of the problem being studied.

It is necessary to keep records of the material being studied in the form of an outline, which, along with the visual, includes the motor memory and allows you to accumulate an individual fund of auxiliary materials for a quick repetition of what you read, to mobilize accumulated knowledge. The main forms of writing: a plan (simple and detailed), extracts, theses.

In the preparation process, it is important to compare the sources, think over the material being studied and build an algorithm of actions, carefully consider your oral presentation.

At a practical lesson, each participant should be ready to speak on all the questions posed in the plan, to be as active as possible in their consideration. The speech should be convincing and reasoned, and simple reading of an essay is not allowed. It is important to show own attitude to what is being said, express your personal opinion, understanding, substantiate it and draw the right conclusions from what has been said. Student can refer to notes of references and lectures, directly to primary sources, use the knowledge of monographs and publications, facts and observations of modern life, etc.

A student who did not have time to speak at a practical lesson can present a prepared summary to the teacher for verification and, if necessary, answer the teacher's questions on the practical lesson to get a credit score on this topic.

The teaching and methodological support of students' independent work in the discipline "Anesthesiology, resuscitations, intensive therapy" is presented in Appendix 1 and includes:

- characteristics of tasks for independent self-work of students and methodological recommendations for their implementation;
- requirements for the reports and presentation of the results of independent self-work;
- criteria for assessment of execution of the independent self-work.

IV MONITORING THE ACHIEVEMENT OF THE COURSE

OBJECTIVES

Competence and its code		Stages of competence formation			
No.	Controlled sections / topics of disciplines	Codes and stages of the formation of competencies	Evaluation tools		
			Current control	Intermediate certification / exam	
1	Module I Anatomy and physiology of the vision organ Module II. Methods of examination of vision organ Module III. Diseases and injuries of the vision organ	the readiness for medical use of drugs and other medical substances and their combinations in solving professional problems (GPC – 8)	Knows	EO-1 Interview	Questions of final control A semester - 1-36
			Is able to	PW-1 Test	PW-1 Test
			Possesses	EO-3 Report	EO2 Colloquium
	Module I Anatomy and physiology of the vision organ Module II. Methods of examination of vision organ Module III. Diseases and injuries of the vision organ	the readiness to collect and to analyze patient complaints, data of its history, the results of laboratory, instrumental, postmortem and other examinations to recognize the incidence or the absence of diseases (PC – 5)	Knows	EO-1 Interview	Questions of final control A semester - 1-38
			Is able to	PW-1 Test	PW-1 Test
			Possesses	EO-3 Report	EO2 Colloquium
	Module I Anatomy and physiology of the vision organ Module II. Methods of examination of vision organ Module III. Diseases and injuries of the vision organ	the ability of determining the patient's basic pathological conditions, symptoms, syndromes, diseases in accordance with the International Statistical Classification of Diseases and problems related to health, the 10th review. (PC – 6)	Knows	EO-1 Interview	Questions of final control A semester - 36-110
			Is able to	PW-1 Test	PW-1 Test
			Possesses	EO-3 Report	EO2 Colloquium
	Module I Anatomy and physiology of the vision organ Module II. Methods of examination of vision organ Module III. Diseases and injuries of the vision organ	the ability to determining the tactics of patient surveillance with different nosological entities. (PC – 8)	Knows	EO-1 Interview	Questions of final control A semester - 1-38
			Is able to	PW-1 Test	PW-1 Test
			Possesses	EO-3 Report	EO2 Colloquium

Approximate types of assessment tools: interview on situational tasks, written or computer testing, standard calculations, individual tasks, abstract, essay, etc.

Control and methodological materials as well as criteria and indicators necessary for the assessment of knowledge and skills and characterizing the stages of the formation of competencies in the process of mastering the educational program are presented in Appendix 2.

V. A LIST OF TEXTBOOKS AND METHODOLOGICAL SUPPORT OF THE DISCIPLINE

Main literature

1. Atlas of Ocular Anatomy / Mohammad Wakeel Ansari, Ahmed Nadeem / Springer International Publishing Switzerland 2016
<https://link.springer.com/book/10.1007/978-3-319-42781-2#authorsandaffiliationsbook>
2. Manual of Retinal Diseases / Carlos A. Medina, Justin H. Townsend, Arun D. Singh / Springer International Publishing Switzerland 2016
<https://link.springer.com/book/10.1007/978-3-319-20460-4#editorsandaffiliations>

Additional literature

1. Common Eye Diseases and their Management / Nicholas R. Galloway, Winfried M. K. Amoaku, Peter H. Galloway, Andrew C Browning / Springer International Publishing 2016
<https://link.springer.com/book/10.1007/978-3-319-32869-0#authorsandaffiliationsbook>

LIST OF INFORMATION TECHNOLOGIES AND SOFTWARE

The location of the computer equipment on which the software is installed, the number of jobs	List of licensed software
<p>Multimedia auditorium Vladivostok Russian island, Ayaks 10, building 25.1, RM. M723 Area of 80.3 m2 (Room for independent work)</p>	<p>Windows Seven enterprice SP3x64 Operating System Microsoft Office Professional Plus 2010 office suite that includes software for working with various types of documents (texts, spreadsheets, databases, etc.); 7Zip 9.20 - free file archiver with a high degree of data compression; ABBYY FineReader 11 - a program for optical character recognition; Adobe Acrobat XI Pro 11.0.00 - software package for creating and viewing electronic publications in PDF; WinDjView 2.0.2 - a program for recognizing and viewing files with the same format DJV and DjVu.</p>

In order to provide special conditions for the education of persons with disabilities all buildings are equipped with ramps, elevators, lifts, specialized places equipped with toilet rooms, information and navigation support signs

VI. GUIDELINES FOR LEARNING OF THE DISCIPLINE

In the process of studying the discipline "Ophthalmology" various methods and tools for learning the educational content are offered: lecture, practical exercises, tests, testing, independent work of students.

The lecture is the main active form of performing the classroom studies, explaining the fundamental and most difficult theoretical sections of human anatomy, which involves intense mental activity of student and this is especially difficult for first-year students. A lecture should always be informative, educational, and organizing. Lecture notes help to learn the theoretical material of the discipline. Listening to a lecture it is necessary to take note of the most important and preferably by student's own formulations, which allows to memorize the material better. Synopsis is useful when it is written by a student. Student can develop his/her own word reduction scheme. The name of the paragraphs can be highlighted with colored markers or pens. In a lecture the teacher gives only a small fraction of the material on one or other topics that are given in textbooks. Therefore, when working with the lecture notes, it is always necessary to use the main textbook and additional literature that are recommended in this discipline. It is such serious work of a student with lecture material that allows him to achieve success in mastering new knowledge. For the presentation of the lecture course on the discipline "Ophthalmology", the following forms of active learning are used: lecture-conversation, lecture-visualization, which are made on the basis of knowledge obtained by students in interdisciplinary disciplines: "Human Anatomy", "Normal Physiology" "Pathological anatomy", "Pathological physiology". Presentations, tables, charts on a blackboard are used to illustrate the verbal information. In the course of the presentation of the lecture material posed questions or questions with elements of discussion.

Lecture – visualization

Lecture is accompanied by tables, slideshows, which contributes to a better perception of the material. Lecture - visualization requires certain skills - verbal

presentation of the material must be accompanied and combined with visual form. The information presented in the form of diagrams on the board, tables, slides, allows you to form problematic issues, and contributes to the development of professional thinking of future specialists.

Lecture - conversation.

Lecture-conversation, or it is also called in pedagogy a form of education “dialogue with the audience,” is the most common form of active learning and allows you to involve students in the learning process, as there is direct contact with the teacher audience. Such contact is achieved in the course of the lecture, when students are asked questions of a problem or informational matter, or when invite students to ask the questions themselves. Questions are offered to the entire audience, and any of the students can offer their own answer, another can complement it. At the same time, from lecture to lecture it is possible to identify more active students and try to activate students who are not participating in the work. This form of lecture allows teacher to engage students in work, increase their attention, thinking, gain collective experience, learn how to formulate questions. The advantage of the lecture-conversation is that it allows to attract the attention of students to the most important issues of the topic, to determine the content and pace of presentation of educational material.

Lecture - press conference

At the beginning of the lesson, the teacher announces the topic of the lecture and invites students to ask him in writing questions on this topic. Each student must formulate the most interesting questions on the topic of the lecture within 2-3 minutes, write them on a piece of paper and pass the note to the teacher. The teacher within 3-5 minutes sorts the questions according to their semantic content and begins to give a lecture. The presentation of the material is presented in the form of a coherent disclosure of the topic, and not as an answer to each question asked, but during the lecture the corresponding answers are formulated. At the end of the lecture, the

teacher conducts a final assessment of the questions, revealing the knowledge and interests of the students.

Practical classes in the discipline "Ophthalmology"

Practical classes is a collective form of consideration of educational material. Seminars, which are also one of the main types of practical classes designed for in-depth study of the discipline, held interactively. At the workshop on the topic of the seminar, questions are sorted out and then, together with the teacher, they hold a discussion, which is aimed at consolidating the material under discussion, developing skills to debate, develop independence and critical thinking, the students' ability to navigate through large information flows, develop and defend their own position on problematic issues academic disciplines. As active learning methods are used in practical classes: a press conference, a detailed conversation, a dispute. A detailed conversation involves preparing students for each issue of the lesson plan with a uniform list of recommended and additional literature recommended for all. Reports are prepared by students on pre-proposed topics.

Dispute in the group has several advantages. The dispute may be called by the teacher during the course of the lesson or planned by him in advance. In the course of the controversy, students form resourcefulness, quick thinking reaction.

Press conference. The teacher instructs 3-4 students to prepare short reports. Then one of the participants from this group makes a report. After the report, students ask questions that are answered by the speaker and other members of the expert group. Based on the questions and answers, a creative discussion takes place along with the teacher.

VII. LOGISTICS DISCIPLINE

For practical work, as well as for the organization of independent work, students have access to the following laboratory equipment and specialized classrooms that meet the current sanitary and fire regulations, as well as safety requirements during training and scientific and industrial works:

Name of the equipped rooms and rooms for independent work	List of main equipment
The computer class of the School of biomedical AUD. M723, 15 work placts	<p>Screen, electrically 236*147 cm to trim the screen; Projector DLP technology, 3000 ANSI LM, WXGA with 1280x800 resolution, 2000:1 Mitsubishi EW330U; Subsystem of specialized mounting equipment course-2007 Tuarex; Subsystem of videocommunity: matrix switch DVI and DXP 44 DVI Pro advertising; extension cable DVI over twisted pair DVI 201 TX/RX advertising; Subsystem of audiocommentary and sound; speaker system for ceiling si 3ct LP Extron on from; digital audio processor DMP 44 LC the Extron; the extension for the controller control IPL T CR48; wireless LAN for students is provided with a system based on 802.11 a/b/g/N 2x2 MIMO(2SS) access points.</p> <p>Monoblock HP Loope 400 all-in-one 19.5 in (1600x900), core i3-4150t, 4GB DDR3-1600 (1x4GB), 1TB HDD 7200 SATA, and a DVD+ / -RW, GigEth, Wi-Fi and BT, the USB port of roses/MSE, Win7Pro (64-bit)+Win8.1Pro(64-bit), 1-1-1 Wty</p>
Multimedia audience	<p>Monoblock Lenovo C360G-i34164G500UDK; projection Screen Projecta Elpro Electrol, 300x173 cm; Multimedia projector, Mitsubishi FD630U, 4000 ANSI Lumen 1920 x 1080; Flush interface with automatic retracting cables TLS TAM 201 Stan; Avervision CP355AF; lavalier Microphone system UHF band Sennheiser EW 122 G3 composed of a wireless microphone and receiver; Codec of videoconferencing LifeSizeExpress 220 - Codeconly - Non-AES; Network camera Multipix MP-HD718; Two LCD panel, 47", Full HD, LG M4716CCBA; Subsystem of audiocommentary and sound reinforcement; centralized uninterrupted power supply</p>
Reading rooms of the Scientific library of the University open access Fund (building a - 10)	<p>Monoblock HP Loope 400 All-in-One 19.5 in (1600x900), Core i3-4150T, 4GB DDR3-1600 (1x4GB), 1TB HDD 7200 SATA, DVD+/-RW,GigEth,wifi,BT,usb kbd/mse,Win7Pro (64-bit)+Win8.1Pro(64-bit),1-1-1 Wty Speed Internet access 500 Mbps. Jobs for people with disabilities equipped with displays and Braille printers.; equipped with: portable reading devices flatbed texts, scanning and reading machines videovelocity with adjustable color spectrums; increasing electronic loops and ultrasonic marker</p>
Accreditation-simulation center of the school of Biomedicine	



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SCHOOL OF BIOMEDICINE

**TRAINING AND METHODOLOGICAL SUPPORT OF INDEPENDENT
WORK OF STUDENTS
on discipline «Ophthalmology»**

**Direction of training (specialty) 31.05.01 General medicine
Form of training: full-time**

Vladivostok
2018

Independent self-work includes:

- 1) library or homework with educational literature and lecture notes,
- 2) preparation for practical classes,
- 3) preparation for testing and control interview (credit)

The procedure for the performance of independent self-work by students is determined by the schedule for the performance of independent self-work on the discipline.

Schedule of independent work on the discipline

No.	Date / Deadline	Type of independent work	Estimated norms of time for execution (hour)	Form of control
1	2-3 week	Essay	9	OR-3-Report
2	4-15 week	Presentation on the essay topic	18	POA-3-Report
3	17-18 week	Preparation for exam	27	OA-1-Interview PW-1 - Test

Topics for reports and essays

There are 54 hours of independent work within the discipline, within the framework of these hours 2 oral reports are must be carried out on the proposed topics.

1. Founders of Russian ophthalmology.
2. Development of ophthalmology in the USSR and the Russian Federation.
3. Anatomy of eyelids, blood supply, innervation, function, research methods.
4. The structure of the conjunctiva, blood supply, innervation, function, research methods.

5. Eye socket, the walls, holes in it, its vessels and nerves. The ratio of the orbit to the paranasal sinuses of nose and skull cavity.
6. Outer capsule of the eye, structural features, innervation, nutrition, function, examination methods.
7. Vascular tract (lat.), its compartments, structural features, innervation, blood supply, function, examination methods.
8. Iris (lat.). Structure, blood supply, innervation, function, examination methods.
- 9 Ciliated body (lat.). Structure, blood supply, innervation, function, examination methods.
10. Proper choroid (lat). Structure, blood supply, innervation, function. Method of examination.
11. Retina (lat.). Structure, blood supply, innervation, function, features of the structure of the yellow spot. Methods of examination.
12. Optic nerve (lat.), anatomy of the shell.
13. Normal ocular fundus. Optic disc, retinal vessels, yellow spot.
14. The contents of eyeball (lens, vitreous, intraocular fluid), anatomy, chemical composition, function, examination methods.
15. Tear-producing apparatus of eye. Structure, blood supply, innervation, function, examination methods.
16. Tear-removing apparatus of eye. Structure, blood supply, innervation, function, examination methods.
17. Pathways of visual analyzer. Act of vision, examination methods.
18. Oculomotor muscles. Places of attachment, blood supply, innervation, function, examination methods.
19. Eye chambers, intraocular fluid (anatomy, chemical composition).
20. The structure of the iris-corneal angle. Function, examination methods.

Guidelines for writing and design of an essay

Essay is a creative activity of the student reproducing in its structure the research activities to solve theoretical and applied problems in a particular branch of scientific knowledge. That is why the course certification work is an essential component of the educational process in higher education.

The essay is a model of scientific research, independent self-work in which a student solves a problem of a theoretical or practical nature, applying the scientific principles and methods of a given branch of scientific knowledge. The result of this scientific search may have not only subjective, but also objective scientific novelty, and therefore can be presented for discussion by the scientific community in the form of a scientific report or presentation at scientific-practical conferences, as well as in a form of research article.

Essay involves the acquisition of skills for building business cooperation, based on ethical standards of scientific activity. Purposefulness, initiative, disinterested cognitive interest, responsibility for the results of their actions, conscientiousness, competence - personality traits that characterize the subject of research activities corresponding to the ideals and norms of modern science.

The essay is an independent educational and research activity of the student. The teacher assists in a consultative manner and assesses the process and the results of the activity. Teacher provides an approximate topic of the essay work, specifies the problem and topic of research with a student or intern, helps to plan and organize research activities, assigns time and a minimum number of consultations.

The teacher receives the text of the essay for verification at least ten days before the defense.

Generally there is a certain structure of the essay, the main elements of which in order of their location are the following:

1. Title page.
2. Goal.
3. Table of Contents

4. List of abbreviations, symbols and terms (if necessary).
5. Introduction.
6. Main part.
7. Conclusion.
8. Reference list.
9. Appendixes.

The title page contains educational institution, graduating department, author, teacher or supervisor, research topic, place and year of the essay.

The title of the essay should be as short as possible and fully consistent with its content.

The table of contents (content) reflects the names of the structural parts of the essay and the pages on which they are located. The table of contents should be placed at the beginning of work on one page.

The presence of a detailed introduction - a mandatory requirement for the abstract. Despite the small volume of this structural part, its preparation causes considerable difficulties. However, this is a qualitatively executed introduction that is the key to understanding the entire work, which testifies to the professionalism of the author.

Thus, the introduction is a very crucial part of the essay. The introduction should start with a justification of the relevance of the chosen topic. As applied to the essay, the concept of "relevance" has one feature. From how the author of the essay can choose a topic and how correctly he understands and evaluates this topic from the point of view of modernity and social significance, characterizes his scientific maturity and professional preparedness.

In addition, in the introduction it is necessary to isolate the methodological basis of the essay, name the authors, whose works constituted the theoretical basis of the study. A review of the literature on the topic should show the author's thorough acquaintance with special literature, his ability to systematize sources, critically examine them, highlight the essential and determine the most important in the up-to-date state of knowledge of the topic.

The introduction reflects the importance and relevance of the chosen topic, defines the object and subject, purpose and objectives, and the chronological framework of the study.

The introduction ends with a statement of the general conclusions about the scientific and practical significance of the topic, the degree of its knowledge and sources, and the hypothesis being put forward.

The main part describes the essence of the problem, reveals the topic, determines the author's position, factual material is given as an argument and for display of further provisions. The author must demonstrate the ability to consistently present the material while analyzing it simultaneously. Preference is given to the main facts, rather than small details.

The essay ends with the final part called "conclusion". Like any conclusion, this part of the essay serves as a conclusion due to the logic of the study which is a form of synthesis accumulated in the main part of scientific information. This synthesis is a consistent, coherent presentation of the results obtained and their relation to a common goal and specific tasks set and formulated in the introduction. At this place there is a so-called "output" knowledge, which is new in relation to the original knowledge. The conclusion may include suggestions of practical matter, thereby increasing the value of theoretical materials.

So, the conclusion of the essay should contain: a) presents the conclusions of the study; b) theoretical and practical significance, novelty of the essay; c) indicated the possibility of applying the results of the study.

After conclusion it is acceptable to place the reference list of the literature used throughout. This list is one of the essential parts of the essay and reflects the independent creative work of the author of the essay.

The list of sources used is placed at the end of the work. It is made either in alphabetical order (by the name of the author or the name of the book), or in the order in which the references appear in the text of the prepared work. In all cases, the full title of the work, the names of the authors or the editor of publication are indicated if the writing team involved a group of authors, data on the number of

volumes, the name of the city and publisher in which the work was published, year of publication, number of pages.

Methodical recommendations for the presentation preparation

For preparation of presentation it is recommended to use: PowerPoint, MS Word, Acrobat Reader, LaTeX-bev package. The simplest program for creation of presentations is Microsoft PowerPoint. To prepare a presentation, it is necessary to process the information collected while writing the essay.

The sequence of preparation of the presentation:

1. Clearly state the purpose of the presentation.
2. Determine what the presentation format will be: live presentation (then how long it will be) or e-mail (what will be the context of the presentation).
3. Select the entire content of the presentation and build a logical chain of presentation.
4. Identify key points in the content of the text and highlight them.
5. Determine the types of visualization (pictures) to display them on slides in accordance with the logic, purpose and specificity of the material.
6. Choose the design and format the slides (the number of pictures and text, their location, color and size).
7. Check the visual perception of the presentation.

The types of visualization include illustrations, images, charts, tables. The illustration is a representation of a real-life visual. The images - as opposed to illustrations - are metaphor. Their purpose is to cause an emotion and create an attitude towards it, to influence the audience. With the help of well-designed and presented images, information can remain permanently in a person's memory. Chart is visualization of quantitative and qualitative relationships. They are used for convincing data demonstration, for spatial thinking in addition to the logical one. Table is a specific, visual and accurate data display. Its main purpose is to structure information, which sometimes facilitates the perception of data by the audience.

Practical hints on preparing a presentation

- printed text + slides + handouts are prepared separately;
- slides -visual presentation of information that should contain a minimum of text and maximum of images that bring a meaning, to look visually and simply;
- textual content of the presentation - oral speech or reading, which should include arguments, facts, evidence and emotions;
- recommended number of slides 17-22;
- mandatory information for the presentation: the subject, surname and initials of the speaker; message plan; brief conclusions from all that has been said; list of sources used;
- handouts should be provided with the same depth and coverage as the live performance: people trust more what they can carry with them than disappear images, words and slides are forgotten, and handouts remain a constant tangible reminder; handouts are important to distribute at the end of the presentation; Handouts should be different from slides, should be more informative.

Methodical instructions on preparation for practical classes

Control of the results of the independent self-work is performed in the course of practical training, oral interviews, interviews, solving case study tasks, control work, including testing.

1. For practical training student must prepare: repeat the lecture material, read the desired section on the topic in the textbook.
2. The lesson begins with a quick frontal oral questioning on a given topic.
3. In classroom students work with lecture notes, slides.
4. For classes it is necessary to have a notebook for writing theoretical material, a textbook.
6. At the end of the lesson the homework is given on a new topic and is invited to make tests on the material just studied in the classroom (summary).

7. Performances and activity of students are evaluated by the current assessment.

Guidelines for the preparation of the report

1. Students have independent choice of the topic of the report.
2. Selection of literary sources on the selected topic from the recommended main and additional literature is offered in the working program of the discipline, as well as work with the resources of the information and telecommunication network "Internet" specified in the working program.
3. Working with the text of scientific books textbooks must not be reduced to the reading of material, it is also necessary to analyze the selected literature, compare the presentation of the material on the topic in different literary sources, choose materials, so that the disclose the topic of the report.
4. The analyzed material is to be summarized, the most important thing is that it should not be just a conscientious rewriting of the source texts from selected literary sources without any comments and analysis.
5. On the base of analysis and synthesis of literature data, student makes a plan of the report, on the base of which the text of the report is prepared.
6. The report should be structured logically, the material is presented integrally, coherently and consistently, conclusions must be made. It is desirable that the student could express his/her opinion on the formulated problem.
7. The report takes 7-10 minutes. The report is told, not read on paper.

Guidelines for working with literature

1. We need to make an initial list of sources. The basis can be a list of literature recommended in the working program of the course. For convenience, you can create your own card file of selected sources (author's name, title, characteristics of the publication) in the form of a working file in the computer. This electronic file has the advantage, because it allows you to add sources, replace the need for one to the other, to remove those that were not relevant to the subject. The initial list of

literature can be supplemented using the electronic catalogue of the FEFU library, and do not hesitate to ask for help from the library staff.

2. Working with literature on a particular topic, it is necessary not only to read, but also to learn the method of its study: to make a brief summary, algorithm, scheme of the read material, which allows you to understand it faster, remember. It is not recommended to rewrite the text verbatim.

Criteria for evaluation of the oral report

Oral report on the discipline "Ophthalmology" are evaluated by the grade system: 5, 4, 3.

"grade 5" is given to a student if he expressed the opinion on the formulated problem, reasoned it, having its contents and components precisely defined, able to analyze, generalize material and draw correct conclusions using the main and additional literature, freely answers questions that testifies that he knows and owns material.

"grade 4" is designated to a student, if he/she presents material on the chosen topic coherently and consistently, gives arguments to prove a particular position in the report, demonstrates the ability to analyze the main and additional literature, but admits some inaccuracies in the wording of concepts.

"grade 3" is given to the student if he/she had performed independent analysis of the main and additional literature, however those or other provisions of the report are not always enough reasoned, mistakes are allowed at the presentation of material and not always fully answers additional questions on the subject of the report.

Evaluation criteria for essays.

The stated understanding of the essay as a holistic copyright text defines the criteria for its evaluation: the novelty of the text; the validity of the source choice;

the degree of disclosure of the issue essence; compliance with the requirements for registration.

Essay novelty: a) the relevance of the research topic; b) novelty and independence in the problem formulation, formulation of a new aspect of the well-known problem in the establishment of new connections (interdisciplinary, intra-subject, integration); c) ability to work with research and critical literature, systematize and structure research material; d) the appearance of the author's position, independence of assessments and judgments; d) stylistic unity of the text, the unity of genre features.

The degree of disclosure of the question essence: a) the plan compliance with an essay; b) compliance with the content of topic and plan of an essay; c) completeness and depth of knowledge on the topic; d) the validity of the methods and techniques of work with the material; e) ability to generalize, draw conclusions, compare different points of view on one issue (problem).

The validity of the source choice: a) evaluation of the used literature: whether the most famous works on the research topic are involved (including recent journal publications, recent statistics, reports, references, etc.)

Compliance with the requirements for registration: a) How true are the references to the used literature, quotes; b) assessment of literacy and presentation culture (including spelling, punctuation, stylistic culture), knowledge of terminology; c) compliance with the requirements for the volume of essay.

The reviewer should clearly state the remarks and questions, preferably with references to the work (possible on specific pages of the work), to research and evidence that the author did not take into account.

The reviewer may also indicate: whether student has addressed the topic earlier (essays, written works, creative works, olympic works, etc.) and whether there are any preliminary results; how the graduate has conducted the work (plan, intermediate stages, consultation, revision and processing of the written or lack of a clear plan, rejection of the head recommendations).

The student submits an essay for review no later than a week before the defense. The reviewer is the teacher. Experience shows that it is advisable to acquaint the student with the review a few days before the defense. Opponents are appointed by the teacher from the students. For an oral presentation a student needs about 10–20 minutes (approximately as long as he answers with tasks for the exam).

Grade 5 is given if all the requirements for writing and defending an essay are fulfilled: the problem is indicated and its relevance is justified, a brief analysis of different points of view on the problem under consideration is made and one's own position is logically presented, conclusions are formulated, the topic is fully disclosed, the volume is met, external requirements are met design, given the correct answers to additional questions.

Grade 4 is given if the basic requirements for the essay and its defense are met, but there are some shortcomings. In particular, there are inaccuracies in the presentation of the material; or there is no logical sequence in the judgments; not sufficient volume of the essay; there are omissions in the design; additional questions for the defense are accompanied with incomplete answers.

Grade 3 is given if there are significant deviations from the requirements for referencing. In particular: the topic is covered only partially; factual errors in the content of an essay or when answering additional questions; there is no output c.

Grade 2 - the topic of an essay is not disclosed, a significant misunderstanding of the problem is found.

Grade 1 - student's essay is not presented.



MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION
Federal state autonomous educational institution
of higher education
« **Far Eastern Federal University** »
(FEFU)

SCHOOL OF BIOMEDICINE

ASSESSMENT FUND
on discipline «Ophthalmology»
Direction of training (specialty) 31.05.01 General medicine
Form of training: full-time

Vladivostok
2018

Passport of assessment fund

Completed in accordance with the Regulations on the Funds of Evaluation Assets of Educational Programs of Higher Education - Bachelor's Programs, Specialties, FEFU Magistrates, approved by order of the Rector No. 12-13-850 of May 12, 2015.

Code and formulation of competence	Stages of competence formation	
the readiness for medical use of drugs and other medical substances and their combinations in solving professional problems (GPC – 8)	Knows	Basic principles of surgical and conservative treatment in patients with diseases of the organs of vision
	Is able to	To determine the tactics of treatment of patients with diseases of the organs of vision
	Possesses	Skills to work with guidance documents, standards, defining approaches to the treatment of patients with diseases of the organs of vision
the readiness to collect and to analyze patient complaints, data of its history, the results of laboratory, instrumental, postmortem and other examinations to recognize the incidence or the absence of diseases (PC – 5)	Knows	General and special methods of research in the main sections of medicine in patients with diseases of the organs of vision
	Is able to	Get information about the development and course of the disease; apply objective methods of examination of the patient, to identify general and specific signs of the disease; assess the severity of the patient; determine the need and consistency of applying special research methods (laboratory, x-ray, endoscopic, functional), interpret the data obtained in patients with diseases of the organs of vision.
	Possesses	Skills to establish the diagnosis and provide qualified assistance to patients with diseases of the organs of vision
the ability of determining the patient's basic pathological conditions, symptoms, syndromes, diseases in accordance with the International Statistical Classification of Diseases and problems related to health, the 10th review. (PC – 6)	Knows	modern classification of diseases in accordance with the International Statistical Classification of Diseases and Problems Related to Health and Problems, X revision; clinical picture of the main pathological conditions, symptoms, syndromes, features of the course and possible complications of the most common eye diseases
	Is able to	Identify in patients the main pathological conditions, symptoms, syndromes of eye diseases in accordance with the International Statistical Classification of Diseases and Health Related Problems, X view
	Possesses	Conducting a clinical examination of the patient's organs of vision; an assessment of the changes identified during the examination and the formulation of the preliminary diagnosis; drawing up a survey plan based on a preliminary diagnosis; formulating a diagnosis according to the International Statistical Classification of

		Diseases and Related Health Problems, X revision
the ability to determining the tactics of patient surveillance with different nosological entities. (PC – 8)	Knows	Basics of management of patients with acute and chronic diseases of the organs of vision
	Is able to	To draw up a program of diagnostic and therapeutic measures for chronic and acute diseases of the organs of vision.
	Possesses	Make a treatment plan in accordance with the standards of patients with diseases of the organs of vision.

MONITORING THE ACHIEVEMENT OF THE COURSE OBJECTIVES

Competence and its code		Stages of competence formation			
No.	Controlled sections / topics of disciplines	Codes and stages of the formation of competencies	Evaluation tools		
			Current control	Intermediate certification / exam	
1	Module I Anatomy and physiology of the vision organ Module II. Methods of examination of vision organ Module III. Diseases and injuries of the vision organ	the readiness for medical use of drugs and other medical substances and their combinations in solving professional problems (GPC – 8)	Knows	EO-1 Interview	Questions of final control A semester - 1-36
			Is able to	PW-1 Test	PW-1 Test
			Possesses	EO-3 Report	EO2 Colloquium
	Module I Anatomy and physiology of the vision organ Module II. Methods of examination of vision organ Module III. Diseases and injuries of the vision organ	the readiness to collect and to analyze patient complaints, data of its history, the results of laboratory, instrumental, postmortem and other examinations to recognize the incidence or the absence of diseases (PC – 5)	Knows	EO-1 Interview	Questions of final control A semester - 1-38
			Is able to	PW-1 Test	PW-1 Test
			Possesses	EO-3 Report	EO2 Colloquium
	Module I Anatomy and physiology of the vision organ Module II. Methods of examination of vision organ Module III. Diseases and injuries of the vision organ	the ability of determining the patient's basic pathological conditions, symptoms, syndromes, diseases in accordance with the International Statistical Classification of Diseases and problems related to health, the 10th review. (PC – 6)	Knows	EO-1 Interview	Questions of final control A semester - 36-110
			Is able to	PW-1 Test	PW-1 Test
			Possesses	EO-3 Report	EO2 Colloquium
	Module I Anatomy	the ability to determining	Knows	EO-1	Questions of final

and physiology of the vision organ Module II. Methods of examination of vision organ Module III. Diseases and injuries of the vision organ	the tactics of patient surveillance with different nosological entities. (PC – 8)		Interview	control A semester - 1-38
		Is able to	PW-1 Test	PW-1 Test
		Possesses	EO-3 Report	EO2 Colloquium

The scale of assessment the level of formation of competences

Code and formulation of competence	Stages of the formation of competencies		Criteria	Indicators	Points
GPC-8: the readiness for medical use of drugs and other medical substances and their combinations in solving professional problems	Knows (the threshold level)	Basic principles of surgical and conservative treatment in patients with diseases of the organs of vision	Knowledge of the basic principles of surgical and conservative treatment in patients with diseases of the organs of vision	Formed and structured systematic knowledge of the basic principles of surgical and conservative treatment in patients with diseases of the organs of vision	65-71
	Is able to (advanced)	To determine the tactics of treatment of patients with diseases of the organs of vision	Ability to determine the tactics of treatment of patients with diseases of the organs of vision	Ready and able to determine the tactics of treatment of patients with diseases of the organs of vision	71-84
	Possesses (high)	Skills to work with guidance documents, standards, defining approaches to the treatment of patients with diseases of the organs of vision	Formed skills of working with guidance documents, standards, defining approaches to the treatment of patients with diseases of the organs of vision	Skills surely to work with guidance documents, standards, defining approaches to the treatment of patients with diseases of the organs of vision	85-100
PC-5: the readiness to collect and to analyze patient complaints, data of its history, the results of laboratory, instrumental, postmortem and other examinations to recognize the incidence or the absence of diseases	Knows (the threshold level)	General and special methods of research in the main sections of medicine in patients with diseases of the organs of vision	Knowledge of general and special methods of research in the main sections of medicine in patients with diseases of the organs of vision	Formed and structured systematic knowledge of general and special methods of research in the main sections of medicine in patients with diseases of the organs of vision.	65-71
	Is able to (advanced)	Get information about the development and course of the disease; apply objective methods of examination of the patient, to	Ability to get information about the development and course of the disease; apply objective methods of examination of the patient, to identify	Ready and able to get information about the development and course of the disease; apply objective methods of examination of the patient, to identify	71-84

		identify general and specific signs of the disease; assess the severity of the patient; determine the need and consistency of applying special research methods (laboratory, x-ray, endoscopic, functional), interpret the data obtained in patients with diseases of the organs of vision.	general and specific signs of the disease; assess the severity of the patient; determine the need and consistency of applying special research methods (laboratory, x-ray, endoscopic, functional), interpret the data obtained in patients with diseases of the organs of vision.	general and specific signs of the disease; assess the severity of the patient; determine the need and consistency of applying special research methods (laboratory, x-ray, endoscopic, functional), interpret the data obtained in patients with diseases of the organs of vision.	
	Possesses (high)	Skills to establish the diagnosis and provide qualified assistance to patients with diseases of the organs of vision	Formed skills to establish the diagnosis and provide qualified assistance to patients with diseases of the organs of vision .	Skills surely to establish the diagnosis and provide qualified assistance to patients with diseases of the organs of vision	85-100
PC-6: the ability of determining the patient's basic pathological conditions, symptoms, syndromes, diseases in accordance with the International Statistical Classification of Diseases and problems related to health, the 10th review.	Knows (the threshold level)	modern classification of diseases in accordance with the International Statistical Classification of Diseases and Problems Related to Health and Problems, X revision; clinical picture of the main pathological conditions, symptoms, syndromes, features of the course and possible complications of the most common eye diseases	Knowledge of modern classification of diseases in accordance with the International Statistical Classification of Diseases and Problems Related to Health and Problems, X revision; clinical picture of the main pathological conditions, symptoms, syndromes, features of the course and possible complications of the most common eye diseases	Formed and structured systematic knowledge of modern classification of diseases in accordance with the International Statistical Classification of Diseases and Problems Related to Health and Problems, X revision; clinical picture of the main pathological conditions, symptoms, syndromes, features of the course and possible complications of the most common eye diseases	65-71
	Is able to (advanced)	Identify in patients the main pathological conditions, symptoms, syndromes of eye diseases in accordance with the International Statistical Classification of Diseases and Health Related Problems, X view	Ability to identify in patients the main pathological conditions, symptoms, syndromes of eye diseases in accordance with the International Statistical Classification of Diseases and Health Related Problems, X view	Ready and to identify in patients the main pathological conditions, symptoms, syndromes of eye diseases in accordance with the International Statistical Classification of Diseases and Health Related Problems, X view	71-84

	Possesses (high)	Conducting a clinical examination of the patient's organs of vision; an assessment of the changes identified during the examination and the formulation of the preliminary diagnosis; drawing up a survey plan based on a preliminary diagnosis; formulating a diagnosis according to the International Statistical Classification of Diseases and Related Health Problems, X revision	Formed skills of conducting a clinical examination of the patient's organs of vision; an assessment of the changes identified during the examination and the formulation of the preliminary diagnosis; drawing up a survey plan based on a preliminary diagnosis; formulating a diagnosis according to the International Statistical Classification of Diseases and Related Health Problems, X revision	Skills surely clinically to conduct a clinical examination of the patient's organs of vision; an assessment of the changes identified during the examination and the formulation of the preliminary diagnosis; drawing up a survey plan based on a preliminary diagnosis; formulating a diagnosis according to the International Statistical Classification of Diseases and Related Health Problems, X revision	85-100
PC-8: the ability to determining the tactics of patient surveillance with different nosological entities.	Knows (the threshold level)	Basics of management of patients with acute and chronic diseases of the organs of vision	Knowledge of basics of management of patients with acute and chronic diseases of the organs of vision	Formed and structured systematic knowledge of basics of management of patients with acute and chronic diseases of the organs of vision	65-71
	Is able to (advanced)	To draw up a program of diagnostic and therapeutic measures for chronic and acute diseases of the organs of vision.	Ability to draw up a program of diagnostic and therapeutic measures for chronic and acute diseases of the organs of vision.	Ready and able to draw up a program of diagnostic and therapeutic measures for chronic and acute diseases of the organs of vision.	71-84
	Possesses (high)	Make a treatment plan in accordance with the standards of patients with diseases of the organs of vision.	Formed skills to make a treatment plan in accordance with the standards of patients with diseases of the organs of vision	Skills surely to make a treatment plan in accordance with the standards of patients with diseases of the organs of vision	85-100

Questions to assess preliminary competencies

1. Anatomy.

Anatomy of the orbit, anatomy of eyeball and its appendages, age-related features of the vision organ since birth to adulthood. Anatomical elements of refraction,

accommodation, presbyopia.

2. Histology, embryology, Cytology.

Embryogenesis of the eyeball. Histology of visual analyzer and additional apparatus.

3. Normal physiology.

Physiological features of the cornea. The mechanism of accommodation. Circulation of chamber moisture. Physiology of the visual analyzer, visual functions. Dynamics of formation of visual functions depending on age.

4. Pathological anatomy, clinical pathological anatomy.

Pathological anatomy and histology of inflammatory and degenerative diseases and tumors of eye membranes. Cytodiagnostics. Biopsy.

5. Biochemistry.

The role of biochemical changes in the pathogenesis of eye diseases and interpretation of laboratory parameters. Biochemistry of peripheral nervous system and sensory organs. Composition of intraocular fluid, tears, cornea, lens, vitreous. Production and quantity of intraocular fluid, outflow. Examination methods for some metabolic disorders.

6. Microbiology, virology and immunology.

The influence of different microflora on the state of eyes. Monastery gonorrhoea, its prevention, the causative agent of trachoma, adenoviral and other viral diseases of eye. Eye symptoms of botulism. Normal microflora of conjunctiva. Age peculiarities of the production of interferons, interferonogens used to improve tissue immunity.

7. Otolaryngology.

The structure of the paranasal sinuses. The role of acute and chronic inflammatory diseases of the nasopharynx and paranasal sinuses in the occurrence of ocular pathology (conjunctivitis, dacryocystitis, orbit phlegmon, uveitis, optic neuritis, etc.).

8. Oncology, radiation therapy.

Methods and techniques for bone, boneless observation and localization of images

of the orbit area. X-ray. Computer tomography. Radiation therapy of eye tumors.

9. Neurology, medical genetics.

Structure and functions of the visual analyzer. Terms of formation of the visual analyzer. Eye pathology induced by diseases of central nervous system. Methods of eye examination for topical diagnosis of the nervous system pathology.

Innervation of the eye structures and its appendages.

10. Dermatovenerology.

Pathology of eyes in erythematous lupus (uveitis). Herpetic keratitis, shellfish blepharitis and conjunctivitis. Eye lesions in Dering's dermatosis, Stevens-Johnson disease. Ocular manifestations of syphilis. Monastery gonorrhoea.

11. Traumatology and orthopedics. Changes in the orbital tissue at the fracture of the skull bases.

12. Propedeutics of internal diseases, radiation diagnosis.

Ophthalmic signs of hypertension, atherosclerosis, kidney disease, metabolic disorders.

13. Phthisiopulmonology. Tuberculosis-allergic and tuberculosis-hematogenous eye diseases. Principles of general and local treatment of eye tuberculosis. Methods tuberculinization of tuberculosis of the eye.

Control tests are designed for students studying the course "Anesthesiology, resuscitations, intensive care". Tests are necessary for both the control of knowledge in the process of the current interim certification, and for the assessment of knowledge, the result of which can be set off.

When working with tests, the student is asked to choose one answer out of three or four proposed. At the same time, the tests vary in their complexity. There are tests among the proposed ones containing several options for correct answers. The student must provide all correct answers.

Tests are designed for both individual and collective solutions. They can be used in the process and classroom, and independent self-work. The selection of

tests necessary for the control of knowledge in the process of interim certification is made by each teacher individually.

Results of performance of the test tasks are evaluated by a teacher using a five-grade scale for certification or on system "credit" - "no credit". Grade "excellent" is given if the number of correct answers is more than 90% of the tests offered by the teacher. Grade "good" is given if the number of correct answers is more than 70% of the tests. Grade "satisfactory" is given if the number of correct answers is more than 50% of the tests offered to the student.

Questions for credit in the discipline

1. The general structure of the vision organ: eyeball, pathways, subcortical centers, higher visual centers.
2. Eyeball shell. The eyeball: the outer shell of cornea and sclera.
3. Middle shells of eye (vascular or uveal tract): iris, ciliary body (ciliary body), choroid (choroid).
4. The inner shell of eye is retina. Optic nerve. Chiasm. Optic tract.
5. Clinical anatomy of lacrimal tract. Methods of their examination.
6. Eye chamber. Aqueous humor. Lens. Vitreous.
7. Eye hydrodynamics: intraocular fluid, its production and outflow. The angle of the anterior chamber as the main way of outflow of intraocular fluid.
8. Anatomy of the subordinate and auxiliary apparatus of eye.
9. Retina. The mechanism of visual perception. Optic nerve and visual pathways.
10. The orbit (eye socket), wall of the orbit. Eye hole and channel of the optic nerve, the top orbital cleft, the inferior orbital fissure.
11. Oculomotor muscles, their place of origin and attachment, innervation, function.
12. Conjunctiva. Three its compartments, particular the histological structure of each of them.
13. Eyelids: their shape, position, structure. Features of eyelid skin in adults and

- children. Cartilage, meibomian glands, eyelid edges, eyelashes and their position.
14. Lacrimal organs: their location, structure, functions. The mechanism of absorption and conduction of tears.
 15. Physical refraction of eye. Clinical refraction of eye. Types of clinical refraction, their characteristics.
 16. Objective and subjective methods for determination of clinical refraction.
 17. The orbit (eye socket), wall of the orbit. Eye hole and the channel of the optic nerve, the top orbital cleft, the inferior orbital fissure.
 18. Central vision. The concept of angle of view. The principle of constructing a table to determine visual acuity. Methods of determination.
 19. The optical system of eye, its constituent parts. The concept of physical refraction. Units of optical power measurement.
 20. Eye optical system. The concept of diopter.
 21. Subjective method for determination of the clinical refraction type.
 22. Accommodation. Presbyopia. Causes, correction.
 23. Myopia. Characteristic. Possibilities of optical correction. Principles of prevention of progression.
 24. Up-to-date treatment methods. The possibility of prevention.
 25. Accommodation. Mechanism. Age change. Correction of presbyopia.
 26. Progressive myopia. Clinical course. Diagnostics. Possibilities of optical correction.
 27. Biomicroscopy. Clinical features of the method.
 28. Pathology of lens. Modern methods of surgical treatment of cataracts.
 29. Congenital cataracts, classification, indications for surgical treatment, methods of surgical treatment.
 30. Keratitises. Herpetic keratitis. Symptoms, diagnostics, treatment.
 31. Diseases of the cornea. Etiology, pathogenesis, clinical symptoms.
 32. Dacryocystitis of newborns. Diagnostics, treatment.
 33. Retinal detachment. Symptoms, diagnostics, treatment.

34. Paralytic strabismus. Etiology, pathogenesis, principles of treatment.
35. Congenital glaucoma. Principles of treatment of congenital and juvenile glaucoma.
36. Hailstone/ chalazion / age. Symptoms, differential diagnostics, principles of treatment.
37. Age-related cataracts. Diagnostics, signs, treatment. Optical correction of aphakia.
38. Acute obstruction of the central retinal artery. Etiology, symptoms, treatment. Forecast.
39. Anterior uveitis. Etiology, symptoms, treatment.
40. Acute bacterial conjunctivitis. Symptoms, treatment, prevention.
41. Central retinal vein thrombosis. Etiology, diagnostics, symptoms, complications, treatment, outcomes.
42. Acute dacryocystitis (lacrimal sac abscess). Symptoms, course, outcomes. Principles of treatment and prevention.
43. Clinical course of primary open-angle glaucoma. Diagnostic method. Early diagnosis of glaucoma. Treatment.
44. Clinical course of primary angle-closure glaucoma. Diagnostic method. Glaucoma attack relief.
45. Congenital glaucoma. Clinical classification.
46. Optic neuritis. Etiology. Diagnostics, symptoms, treatment.
47. Surface forms of herpetic keratitis. Symptoms, treatment.
48. Retinal detachment. Etiology. Diagnostics, symptoms. Treatment.
49. Penetrating wounds to the eyeball.
50. Sympathetic inflammation. Dispensary observation of patients with penetrating wounds.
51. Burns to the eyeball and the appendage. The provision of first aid.

Case study tasks for credit

1. Employee, 45 years, complains on decreased vision of the left eye within the last 3 months. Visual impairment has nothing to do with it. Objectively: VOD=1.0; VOS=0.001 n / K. Right eye calm, O5: in the cornea at 5 o'clock near the limb is visible scar with 5 mm length, respectively, a small defect in the iris. Anterior camera is of medium depth, moisture is transparent. The iris is slightly darker than the right, the pupil is round, 4 mm, poorly reactive to light. Lens evenly turbid, gray, under the front capsule brownish sediments. There is no reflex from the fundus.

Choose the correct diagnosis.

- a) age-related cataracts
- b) Central chorioretinitis
- c) metals of the eye, traumatic cataracts
- d) iridocyclitis
- e) non-penetrating eye injury

2. Patient, 23 years old complains on sharp decrease in the vision of the right eye, slight pain during movement of the eyeball. Complaints appeared the night before. Just had the flu, treated at home. Objectively: VOD=0.08 n / C T=20 mm Hg. V., VOS-1.0 T=20 mm Hg. Right eye is calm, when pressed on it - has slight pain deep in the orbit. The optical medium is transparent. Fundus: the optic disk is pale pink with clear boundaries, physiological excavation, the course and caliber of the vessels is not changed, the macula and periphery of the retina without the disease. Central scotoma is in the field of vision. Left eye's healthy. Your diagnosis:

- a) cellulitis of the orbit
- b) trigeminal neuralgia
- c) papillitis
- d) iridocyclitis
- e) retrobulbar neuritis

3. Adjuster, 40 years old, addressed the ophthalmologist with complaints on sudden loss of vision in the right eye, noticed 2 days ago. A week ago, he suffered acute right-sided sinusitis. Objectively: VOS=0.2 n / K T=22 mm Hg. V., VOD=1.0 T=23 mm Hg. Right eye is calm, optical media is transparent. Fundus: optical nerve disk is hyperemic, its borders are shaded, swollen, somewhat prominate into the vitreous body, the arteries are dilated, the veins are twisted, the vascular funnel is filled with exudate. The macula and periphery without pathology. Left eye is healthy. Choose a diagnosis:

- a) papillitis
- b) central chorioretinitis
- c) retrobulbar neuritis
- d) congestion of the optic disc
- d) atrophy of the optic nerve

4. A 45-year-old patient complains of constant tearing from her right eye, especially outside. The lacrimation has been bothering for 2 years. Objectively: AOO=1.0 T=21 mm Hg, UO8=1,0 T=21 mm Hg. Right, the position of eyelids and lacrimal points is correct, when pressing on the area of the lacrimal sac there is no discharge. There are tears staying. The color, lacrimal test is negative, when washing the lacrimal pathways, the liquid does not pass into the nose, it returns through the upper lacrimal point. Optical medium is transparent, fundus is without pathology. The left eye is healthy, color tear test is positive, when washing the liquid passes freely into the nose, Select the diagnosis:

- a) eversion of the lower eyelid
- b) chronic conjunctivitis
- c) chronic dacryocystitis
- d) phlegmon of the lacrimal SAC
- e) trichiasis

5. The ophthalmologist was visited by a 60-year-old patient with complaints of pain and decreased vision of the right eye. From anamnesis: 3 days ago accidentally got a branch on the eye, did not attend a doctor and was not treated. Objectively: VOD=0.1 n / a, VOS=0.5 GRP + 1.0=1.0. Right: the eye slit is sharply narrowed, a pronounced mixed injection of the eyeball, in the center of the cornea is a grayish-yellow infiltrate with 4-5 mm diameter with a visible loose surface. A whitish strip of pus is in the anterior chamber, 2 mm high, the pattern of the iris is shaded, the pupil is narrow. Reflex from the fundus is not visible, intraocular pressure palpation is normal. Left eye is healthy. Diagnosis:

- a) penetrating injury to the eyeball
- b) viral keratitis
- c) purulent conjunctivitis
- d) corneal ulcer
- e) iridocyclitis

6. A 65-year-old patient complains of a gradual decrease in the vision of both eyes, the right one is more. Noticed a year ago. Objectively: UOO=0.02 I / C T=19 mm Hg. 708=0,1 5rg1 + 2,0=0,7 T=1E mm Hg. Right - cornea transparent, spherical, anterior chamber is of medium depth, moisture is transparent. Iris color and pattern are not changed, lens are with a grayish tinge. After dilation of the pupil diffuse opacification of the central and lower parts of the lens is seen, the rest of the periphery of the reflex is clearly visible. The visible part of the fundus is without pathology. Left eye is calm. Choose a diagnosis.

- a) primary open-angle glaucoma
- b) senile macular degeneration
- c) clouding of the vitreous body
- d) retinal detachment
- e) immature cataract

7. The ophthalmologist was visited by the patient with complaints of a sharp decrease in the vision of right eye, distortion of shape and size of objects. These complaints appeared 2 days ago, did not attend doctor. Objectively, VOD=0.08 n / a, T=23 mm Hg., VOS=1.0 T=21 mm Hg. Right eye is calm. Cornea is transparent and spherical, anterior chamber is of medium depth, moisture is transparent. Iris color and pattern is not changed, the pupil has correct shape, responds well to light. The lens is transparent. Fundus: the optic nerve disk is pale pink with clear boundaries, physiological excavation, the artery is slightly expanded. In the macular zone, a roundish focus of yellowish-grayish color, 0.5 mm in size with fuzzy boundaries and reddish rim around is visible. The retina around the hearth is slightly swollen. Make a diagnosis.

- a) optic neuritis
- b) hypertensive angioretinopathy
- c) diabetic angioretinopathy
- d) central chorioretinitis
- e) central retinal rupture

8. Engineer 50 years old has addressed on reception to the ophthalmologist with complaints of decreased vision in his left eye. These complaints appeared about 2 months ago, did not do anything. Objectively: VOD=1.0 T=24 mm Hg., VOS=0,1 n / K, T=24 mm Hg. Left eye is calm, the anterior compartment without pathology. With ophthalmoscopy a narrow pupil in the lower inner quadrant of the eye the presence of dark formation is detected. After dilation of the pupil in the same zone is a large, brown prominant formation with clear boundaries and foci of hemorrhage on its surface, retinal edema in the area of the yellow body was found. Right eye is healthy. Choose diagnosis:

- a) primary retinal detachment
- b) partial hemophthalmos
- c) choroidal melanoblastoma
- d) vitreous cysticercus

e) organized subretinal hemorrhage

9. Patient 70 years old complains on lack of vision in the right eye and a sharp decrease in vision of the left eye. Vision decreased gradually within 2 years, did not attend doctor. Objectively: VOD= 0.01. certa, T=20 mm Hg., VOS=0.04 n / a, T=20 mm Hg. Right: conjunctiva is calm, cornea is transparent, spherical. Front camera is of medium depth, moisture is transparent. Iris is subatrophic, pigmented border is noted, and the pupil reacts to light. The lens is unevenly cloudy, gray with a pearl tint. Reflex from the fundus is absent. Left: cornea is transparent, anterior chamber is of medium depth, moisture is transparent. Iris is subatrophic, the pigmented border is saved, and the pupil reacts to light. The lens is cloudy in the Central parts, the pink reflex is visible on the periphery. In this area of the eye. No pathology. Prescribe treatment.

- a) biodegradable enzymatic therapy
- b) vitamin therapy
- c) surgical treatment of the right eye
- d) dehydration therapy
- e) follow-up

10. The 60-year-old patient complained on a sharp deterioration of vision and severe pain in the left eye and left half of the head, which appeared at night with nausea and vomiting. A few days ago she had a heavy emotional stress. Eyes never hurt before. Objectively: VOD=0.5 sph-2.00=1.0 T=19 mm Hg., VOS=0 04 n / a, T=47 mm Hg. Left: the eye slit is narrowed, pronounced stagnant injection of the eyeball, the cornea is edematous, the anterior chamber is very small, pupil is expanded to 5 mm, irregular oval shape, the reflex from the fundus is dull pink, the optic nerve disc is visible in the fog. Right eye within the age limit. Choose a diagnosis:

- a) hypertensive crisis
- b) acute attack of glaucoma

- c) acute conjunctivitis
- d) acute iridocyclitis
- e) swelling cataract

11. The 55-year-old patient appealed to the ophthalmologist with complaints on periodic pain in both eyes, the appearance of fog and rainbow circles when looking at the light source, especially when tilting the head. For the first time noticed such feelings 1.5 years ago, but within recent months they have become more frequent. Objectively: VOD=0.3 sph+1.5 D= 0.5 T=35 mm Hg., VOS=0.7 sph +1.00 =1.0 T=34 mm Hg. The eyes are calm, there is an extension of the anterior ciliary vessels, the anterior chamber is small, the iris is subatrophic. Pupil is 4 mm round, sluggishly reactive to light. The reflex from the fundus is pink, there is a marginal excavation with the inflection of the vessels along the edge of the disc on the right, There is a shift of the vascular bundle to the nasal side of the Macular zone and the periphery of the retina without pathology on the left. Vision field in the right eye is narrowed in the upper quadrant to 25°. in the left - within normal limits. Choose a diagnosis:

- a) bilateral trigeminal neuralgia
- b) congestion of the optic nerves of both eyes
- c) hypertensive sclerosis of the retina of both eyes
- d) sub-acute attack of glaucoma in both eyes
- e) closed-angle uncompensated glaucoma of both eyes.

12. Driver 32 years old came to ophthalmologist with complaints on pain in the left eye, photophobia, redness of the eye. According to him, 2 hours ago, the windshield of the car broke and a shard got into the eye. Objectively: VOD =1.0 VOS =0.7 n / K. Right eye is without pathology. In left eye - moderate narrowing of the eye slit, photophobia, lacrimation, moderate mixed injection of the eyeball in the cornea for 3 hours, closer to the limb is visible a small linear wound, 3-4 mm long, not reaching the deep layers of the anterior chamber of medium depth, the

pupil is round located in the center, reflex from the fundus is pink, ocular fundus is without pathology. Intraocular pressure measured by palpation is normal. Choose a diagnosis.

- a) penetrating corneal injury
- b) non-penetrating corneal wound
- c) corneal ulcer
- d) iridocyclitis
- e) foreign body of the cornea

Criteria for the assessment of "credit" at the end of the semester:

1. No missed lectures and practical classes
2. Active work in the classroom.
3. Preparation of a presentation and reports on the proposed topic
4. Passes test credit

Criteria for evaluation of oral response, colloquia

"grade 5" is given to student if he/she gives the correct answers to the discussed questions with difference in depth and completeness of disclosure of a subject, is able to draw conclusions and generalizations to give the reasoned answers which are logical and consecutive.

"grade 4" is assigned to a student if he/she is on the issues under discussion provides the right answers, is the depth and completeness of the topic, knows how to make conclusions and generalizations, but allowed one or two mistakes in the answers.

"grade 3" is given to a student if he/she gives answers to the discussed questions which insufficiently open it, there is no logical construction of the answer, admits several mistakes.

"grade 2" is given to a student if he gives answers to the discussed questions, which show that he does not own the material of the topic, can not give reasoned answers, serious errors in the content of the answer are allowed.

Evaluation tools for current certification

Control tests are designed for students studying the course "Otorhinolaryngology". Tests are necessary for both the control of knowledge in the process of the current interim certification, and for the assessment of knowledge, the result of which can be set off.

When working with tests, the student is asked to choose one answer out of three or four proposed. At the same time, the tests vary in their complexity. There

are tests among the proposed ones containing several options for correct answers. The student must provide all correct answers.

Tests are designed for both individual and collective solutions. They can be used in the process and classroom, and independent self-work. The selection of tests necessary for the control of knowledge in the process of interim certification is made by each teacher individually.

Results of performance of the test tasks are evaluated by a teacher using a five-grade scale for certification or on system "credit" - "no credit". Grade "excellent" is given if the number of correct answers is more than 90% of the tests offered by the teacher. Grade "good" is given if the number of correct answers is more than 70% of the tests. Grade "satisfactory" is given if the number of correct answers is more than 50% of the tests offered to the student.

Examples of test tasks.

1. The thinnest wall of the orbit are:
 - a) outer wall;
 - b) upper wall;
 - c) inner wall;
 - d) lower wall;
 - e) correct A and B.
2. The canal of the optic nerve is used to pass:
 - a) optic nerve;
 - b) orbital artery;
 - c) both;
 - d) neither one nor the other.
3. The nasolacrimal canal opens in the:
 - a) lower bow;
 - b) middle nasal meatus;
 - c) upper bow;
 - d) correct are B and C.

4. The choroid nourishes:

- a) outer retinal layers;
- b) the inner layers of the retina;
- c) entire retina;
- d) all of the above.

5. Blood supply to the eyeball is carried out by:

- a) orbital artery;
- b) Central retinal artery;
- c) posterior ciliary arteries;
- d) correct A and B;
- e) correct B, and C.

6. In a healthy adult, the ratio of the artery caliber and retinal veins are defined as:

- a) 1: 2;
- b) 2:3;
- c) 1:1;
- d) 1:1.5.

7. Clinical refraction is:

- a) the ratio between the optical power and the length of the eye axis;
- b) the refractive power of the optical system, expressed in diopters;
- c) radius of curvature of the cornea;
- d) refractive power of the lens;
- e) the main planes of the optical system.

8. For 1 diopter take the refractive power of the lens with a focal length:

- a) 100 m;
- b) 10 m;
- c) 1 m;
- d) 10 cm;
- e) 1 cm.

9. The closest point of clear vision is:

- a) point at the top of the cornea;

- b) the point located in front of the lens;
- c) the point located behind the lens;
- d) the minimum distance at which the considered objects at maximum stress accommodation;
- e) the point at which the rays converge after passing the optical system of the eye.

10. Accommodation spasm is a condition:

- a) in which the natural conditions revealed myopia;
- b) in which the conditions of cycloplegia revealed emmetropia, hypermetropia or less than in vivo myopia;
- c) which characterizes the overall refraction of the eye;
- d) only B and B;
- e) all of the above.

11. Accommodation is:

- a) static refraction;
- b) the refractive power of the cornea;
- c) anterior-posterior axis of the eye;
- d) adaptation of the visual apparatus to the object examination at different distances from the eye;
- e) all of the above.

12. Chronic inflammation of the meibomian glands is:

- a) barley;
- b) chalazion;
- c) abscess of the century;
- d) internal barley.

13. Scaly blepharitis is characterized by:

- a) redness at the edges of the eyelids;
- b) thickening of the edges of the eyelids;
- c) painful itching in the eyelids;
- d) roots of eyelashes are covered with dry scales;
- e) all of the above.

14. The presence of pericorneal injection of the eyeball, the rough surface of the cornea, violations of tactile sensitivity of the cornea, infiltrates in the cornea and corneal vascularization is typical for:

- a) central retinal artery thrombosis;
- b) macular degeneration;
- c) cataracts;
- d) diabetic retinopathy;
- e) keratitis.

15. Herpetic keratitis is characterized by:

- a) the neurotrophic nature of the lesion, one of the manifestations which is a decrease in the sensitivity of the cornea of the eye;
- b) slow regeneration;
- c) the failure and/or bacterial therapy;
- d) true A and B;
- e) all of the above.

16. When the disease of the uveal tract affects all of the following eye structures, except:

- a) retina;
- b) optic nerve;
- c) bones of the orbit;
- d) lens.

17. The absolute signs of penetrating wounds are:

- a) a sharp decrease in vision;
- b) hyperemia of the optic disc;
- c) swelling of the optic disc;
- d) all of the above;
- e) only A and B.

18. The second stage of diabetic retinopathy is characterized by the following ophthalmoscopic changes:

- a) angiosclerosis;

- b) micro- and macroaneurysms;
- c) hemorrhage into the vitreous body and the retina;
- d) proliferative changes, gliosis;
- e) retinal detachment.

19. Acute disorders of arterial blood circulation in the retina are characterized by:

- a) a sharp decrease in vision;
- b) narrowing of retinal vessels;
- c) retinal edema;
- d) all of the above;
- e) only A and B.

20. The symptom of "cherry bone" is observed in:

- a) optic neuritis;
- b) retinal dystrophy;
- c) retinal vein thrombosis;
- d) acute arterial obstruction of the retina;
- e) all of the above.

21. Treatment of retinal vein thrombosis includes:

- a) thrombolytics;
- b) anticoagulants and antiplatelets;
- c) symptomatic means;
- d) laser therapy;
- e) all of the above.

22. At the initial stages of the stagnant disc development the vision:

- a) does not change;
- b) decreases slightly;
- c) decreases significantly;
- d) falls to 0.

23. Neuritis of the optic nerves is characterized by;

- a) tuberculin test;
- b) ophthalmoscopy;

c) biomicroscopy;

d) radiography

24. The patient has no fundus reflex, the lens are gray, visual acuity - correct projection of light. In patients with:

a) initial cataract;

b) immature cataract;

c) mature cataract;

d) overripeness of the cataract;

e) opacity in the vitreous.

25. Symptoms that are not characteristic of an acute attack of glaucoma:

a) corneal edema;

b) small front camera;

c) wide elliptical shaped pupil;

d) congestive injection of the eyeball;

e) pupil is narrow, pupil reaction to light is preserved.

26. The stage of primary glaucoma is estimated by the following indicators:

a) visual acuity;

b) the level of intraocular pressure;

c) areas of glaucomatous excavation of the optic disc;

d) the state of the field of view;

e) the scope of daily fluctuations of IOP.

27. Mydriatics are registered in:

a) angle-closure glaucoma;

b) allergic conjunctivitis;

c) traumatic mydriasis;

d) iritis;

e) neuralgia.

28. The most informative in the diagnostics of tuberculosis uveitis is:

a) wound passing through all layers of the cornea, sclera or corneal scleral zone;

b) infringement in the wound of the inner eye shells;

- c) intraocular foreign body;
 - d) traumatic coloboma of the iris, an air bubble in the vitreous body;
 - e) all of the above.
29. Intraocular foreign body located behind the lens must be removed:
- a) diasclerally;
 - b) through the flat part of the ciliary body;
 - c) through the corneoscleral incision after the preliminary cataract extraction;
 - d) through the wound channel;
 - e) the choice of access is individual.
30. First aid for chemical eye burns includes:
- a) heavy rinsing;
 - b) appointment of surface anesthetics;
 - c) use of antibiotics;
 - g) use of steroids;
 - e) all of the above.

Standard test answers.

1 d; 2.c; 3d; 4.a; 5.a; 6c; 7.a; 8.a; 9.a; 10.d; 11.a;12.a;13.d;14.d;15.d;16.e;
17.c;18.a;19.b;20.c;21.c;22.b;23.b;24.b;25.a;26.b; 27a;2c;29e;30e.

MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION

Federal state autonomous educational institution

of higher education

« Far Eastern Federal University »

(FEFU)

SCHOOL OF BIOMEDICINE

GLOSSARY

on discipline «Ophthalmology»

Direction of training (specialty) 31.05.01 General medicine

Form of training: full-time

Vladivostok

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- amblyopia "by idle eyes" appearing when anisometropia, strabismus, disruption of binocular vision. To prevent the development of amblyopia with refractive errors, it is necessary to use glasses from preschool age;

- anterior and posterior chamber,

- congenital occurring in one or both eyes as a result of abnormalities in the development of the visual tract or various intrauterine pathological processes that have left no visible traces;

- hard (polymethylmethacrylate - PMMA) and soft, that is elastic (silicone, acrylic, hydrogel),

- hysterical amblyopia occurs suddenly, most often after any affect.

- spherical, toric and multifocal.

A lens is an optical medium that not only transmits light but also refracts it. Lenses can be biological (cornea, lens), spectacle, contact, intraocular. As well as positive and negative, spherical and toric, monofocal and multifocal, etc.

Aberration (from lat. Aberrare - avoid, err) - image errors caused by the deviation of the light beam in the real optical system from its direction in the ideal optical system. Aberrations include myopia, hyperopia, astigmatism, coma, distortion, irregular aberrations, etc.

Ablation (photoablation) is a type of action of laser radiation on living tissue, consisting in its removal, evaporation produced by splitting molecular bonds.

Accommodation is an adaptive function of the eye, providing the possibility of high visual resolution at different distances from it. The ability to translate the look far away subject in close and back. It is realized by means of lens and a ciliary body. The factors influencing the work of accommodation include chromatic and spherical aberrations, astigmatism and dozens of others.

Amblyopia is a decreased vision. Due to the occurrence several types of amblyopia are distinguished:

Amblyopia is divided into: disbinocular, refractive, anisometropic, obscuration; right-sided, left-sided and bilateral; low (visual acuity of the squinting eye 0,4-0,8), medium (0,2-0,3); high (0,05-0,1) and very high (below 0,04) degree.

Ametropia - a deviation of clinical refraction of the eye from normal. There are primary ametropia, the cause of which are mainly violations of the anatomical and optical ratio (myopia, hypermetropia, astigmatism, anisometropia, etc.) and secondary ametropia, the cause of which is external exposure or disease (keratoconus, nuclear cataract with myopization, operations for cataracts, myopia, retinal detachment, etc.). Aberrometric terminology is used to characterize refractive changes in secondary ametropies.

Anisometropia is a condition in which the difference in refraction in both eyes is more than one diopter.

Antimetropia - a condition in which the refraction in both eyes has the opposite sign (plus and minus).

Aphacia - a condition in which the eye is no lens. Refraction is characterized by an average of about +12 diopters.

Artificial tear - medications that moisturize the surface of the cornea and conjunctiva. They are used for deficiency of tears due to the appearance of dry eye syndrome, Segren's disease, in the postoperative period. Artificial tear preparations include Sistine, oftigel, natural tear, sodium hyaluronate (0.18 %).

Artyphacia - condition of eyes, in which instead own crystalline lens implanted artificial - intraocular lens.

Astigmatism - uneven refraction. With regular (correct) astigmatism, there is a difference in refraction in the two main meridians (conditionally horizontal and conditionally vertical). When irregular (irregular) astigmatism refraction is different for different segments of the same meridian.

Autorefractokeratometry is the definition of objective refraction of the eye, reflecting the approximate value of defocus, astigmatism and optical power of the cornea in its Central zone.

Binocular vision - simultaneous visual work with two eyes to form a visual image in a three-dimensional image.

Biometrics (ultrasound and optical) is a lifetime measurement of different sizes of intraocular structures. The measurement of the anteroposterior segment of the eyeball, the thickness of the lens and the depth of the anterior chamber can be considered traditional. If this concept is understood more widely, now there are many new diagnostic devices that can accurately measure the various morphological structures of the living eye, without injury, cuts, and sometimes without contact. This biomicrotechnology using optical coherence tomography and ultrasound biomicroscopy, and optical pachymetry and more.

Biomicroscopy is an in vivo visualization of the eye based on increased image and creating a contrast between the illuminated and unlit areas.

Cataract - clouding of the natural lens. There are congenital and acquired cataracts.

Conjunctivitis - inflammation of the mucous membrane of the eyeball and the inner surface of the eyelids-conjunctiva. The cause of conjunctivitis is most often an infection or allergy.

Contact lenses - a lens temporarily placed in the conjunctival cavity on the surface of the cornea. With their help, you can correct almost any kind of ametropia and even some aberrations of the highest order. Hard (or elastic) contact lenses are now rarely used, mainly in high-degree astigmatism and to stabilize the flow of keratoconus. Soft lenses are widely used and constantly upgraded - gas permeable, disposable, for correction of presbyopia. There are orthokeratological lenses, wearing which for several hours leads to a temporary (1-2 days) change in the curvature of the cornea. These lenses can be worn at night, and removing them in the morning, get good vision for the whole day.

Cycloplegia medicamentous - paralysis of accommodation, achieved by instillation of drops (atropine, cyclomed, etc.). Drugs affect the ciliary body. Cycloplegia is accompanied by mydriasis. The true refraction of the eye can be checked only in the conditions of cycloplegia.

Defocus. In the literature on optics defocus is called aberration of the lower, the second order-myopia, farsightedness.

Diopter is a value used for the optical power of lenses. The refractive power of a lens with a focal length of 1 m is taken as one diopter.

Diopter-a device for determining the optical power of spectacle lenses.

Dry eye syndrome is a set of xerotic changes in the cornea and conjunctiva caused by a systematic violation of the stability of the tear film. Syndrome affects from 7 to 17 % of the population of highly developed countries. Some causes of dry eye syndrome: autoimmune diseases; endocrine dysfunction; kidney disease; pregnancy; ophthalmic surgery (including LASIK); some eye drops; harmful environmental factors (conditioned air, working with monitors, wearing contact lenses).

Emmetropia - the absence of ametropia. Normal refraction. A condition in which the main focus of the optical system of the eye coincides with the retina. The achievement of emmetropia is a purpose of laser correction.

FTK - phototherapy keratectomy-excimer laser surgery, which consists in the evaporation of several microns of corneal thickness without changing its refraction. It is used to remove persistent surface opacities.

Glare-effect (from persistent. glare-blinding) - optical phenomenon, which consists in blinding the patient in the dark and dusk, when even dim light enters the eyes. The causes of the glare effect are similar to the causes of the halo effect.

Glaucoma is a disease in which irreversible atrophy of the nerve fibers of the optic disc occurs, most often against the background of increased intraocular pressure (IOP). Previously, it was believed that glaucoma is always accompanied by an increase in IOP, but now there is a separate nosology-glaucoma with low pressure (GND). One of the causes of MHD is the development of glaucoma in a patient who has previously been laser-corrected. Laser correction is not the cause of glaucoma, but complicates its early diagnosis. Standard methods of measuring intraocular pressure are not able to determine the true IOP in a patient undergoing

laser correction. Patients who have undergone laser correction, after forty years need to undergo regular ophthalmological examination only in specialized clinics engaged in refractive surgery.

Gonioscopy is a method of investigation that allows to examine the angle of the anterior chamber of the eye. Used in the diagnostics of glaucoma, iridocyclitis, iris tumors, etc.

Halo-effect (from persistent. halo-halo) - an optical phenomenon, which is a bright glowing, often rainbow, ring around the light sources (and blurring the boundaries of the light source). Appears in darkness and dusk. Due to the fact that in the dark the pupil expands and in the visual act begins to participate corneal zone, not subjected to laser ablation (more precisely, the transition zone of laser ablation). This optical effect is most often observed in those patients who during laser correction have to narrow the optical ablation zone due to the thin cornea.

Herpetic keratitis is an inflammatory disease of the cornea caused by herpes simplex virus, which is dangerous only for humans. Even after the disappearance of inflammatory phenomena, the virus remains in the human body. When a factor provokes the activation of the virus, inflammation appears again. One of the provoking factors is ultraviolet light. Accordingly, the excimer laser can provoke an exacerbation of herpetic keratitis. If there are traces of herpetic keratitis on the cornea, it makes sense to conduct a preventive course of medical treatment in the postoperative period of laser correction.

Hyperopia (farsightedness) is a violation of the anatomical and optical ratio, in which the optical power of the eye is too small in comparison with its length or, conversely, the length of the eye is too small in comparison with its optical power. The refractive focus of the rays is behind the retina. For eyeglass correction of hypermetropia, positive ("plus", convex) lenses are used, which increased refraction of the optical system to the desired level. There are different classifications of hypermetropia. For some of them, a weak degree of hypermetropia - up to 2-3 DPTR, average - up to 4-6 DPTR, high - more than 4-6

DPTR. Now it often used for classification, which is considered weak hyperopia to 2.25 d, medium - to 5.25 diopters, high of 5.25 diopters and more.

Induced aberrations - aberrations, the cause of which began operation, trauma, inflammation.

Instillation - a type of local administration of drugs, which consists in the instillation of drops in the conjunctival sac.

IOL - intraocular (intraocular) lens, artificial lens. IOL is implanted into the eye: in the surgical treatment of cataracts instead of the natural clouded lens; for the correction of high-degree ametropia instead of the natural lens (aspiration of the transparent lens with IOL implantation) or nearby (implantation of phakic IOL) with it.

IOLs are mainly divided into:

IOP - intraocular pressure is the main indicator reflecting the peculiarities of intraocular fluid circulation from the ciliary body to the anterior chamber angle. It is measured by two main methods: contact (by Maklakov) and non-contact (pneumotonometry).

It is carried out on a biomicroscope with a slit lamp. With the help of biomicroscopy it is possible to visualize eyelids, conjunctiva, limb, cornea, anterior chamber, iris, lens, vitreous body, etc. with the help of special lenses it is possible to examine the angle of the anterior chamber (gonioscopy) and the fundus (ophthalmoscopy).

Keratitis - inflammation of the cornea. Keratitis may be adenovirus, acanthameba, bacterial, Brucella, herpes, vitamin deficiency, fungal, diplomatically, radiation, meibomitis, neuromyasthenic, post-traumatic, syphilitic, tuberculosis etc.

Keratoconus - non-inflammatory cone-shaped protrusion of the central part of cornea. Neither the causes, nor the factors that provoke the appearance of keratoconus, are still not known.

Keratometry is a measure of the cornea curvature. Performed using ophthalmometers, autokeratorefractometer, keratotopograph. The average radius of

curvature of the cornea is 7.7 mm. The average optical power of the cornea is 44.0 DPTR.

Keratotomy the incision of cornea. Anterior radial keratotomy (incision) consists of applying several non-penetrating incisions around the center of the cornea for surgical correction of myopia and astigmatism (tangential incisions). Currently, this surgery is rarely used.

Laser coagulation is the destruction(cauterization) of living tissue with the formation of a "scar" (for example, preventive laser coagulation, which consists in the formation of a point "scar" connecting the retina and the underlying tissue to reduce the risk of retinal detachment).

LASIK - Laser assisted in situ keratomileusis (on - site laser keratomileusis) is a type of laser excimer vision correction surgery. This name is due to the fact that the laser keratomylosis was first carried out on the spot, not on the eye-the corneal flap was completely separated from the eye and "ground" on a special device to the desired shape. During LASIK corneal flap is not completely separated from the cornea.

Light-electromagnetic oscillations in the visible range. One of the types of electromagnetic oscillations is laser radiation.

Microkeratome is a microsurgical apparatus designed to form a corneal flap of a certain thickness and diameter.

MICRON - micrometer, micron. 1 μm is equal to one thousandth of a millimeter. The thickness of the cornea in the optical center of the in average about 500 microns, i.e. 0.5 mm.

Mydriasis - the eye condition, in which the pupil is dilated, regardless of the degree of illumination. The cause of the mydriasis can be drugs, trauma, acute glaucoma attack, etc. Mydriasis accompanies drug cycloplegia required in the preoperative examination of patients.

Myopia (myopia) is a disturbance of the anatomical and optical ratio, in which the optical power of the eye is too large compared to its length or, conversely, the length of the eye is too large compared to its optical power. The

refractive focus of the rays is in front of the retina. For spectacle correction of myopia, negative ("minus", concave) lenses are used, which reduce the refraction of the optical system to the desired level. Distinguish between myopia and 3.25 diopters, the average extent to 6.25 diopters and a high of 6.25 diopters and more.

NM - nanometer. 1 nm is equal to one thousandth of a micrometer.

Ocular hypertension - increased intraocular pressure. Not always ocular hypertension is a manifestation of glaucoma. In excimer laser surgery, sometimes faced with increased pressure as a side effect of glucocorticoids, which are used locally, in the form of drops. The replacement of glucocorticoids (dexamethasone, oftan-dexamethasone, tobradex, maxitrol, sofradeks) nonsteroidal anti-inflammatory drugs (diclof, naclof, indollar) the intraocular pressure is reduced.

Ophthalmoscopy (biomicroscopy) is an examination method that allows study the fundus. Ophthalmoscopy can be direct and indirect. Indirect ophthalmoscopy is divided into monocular and binocular. About ten years ago, a new technique - laser scanning ophthalmoscopy, which allows to obtain a three-dimensional image of the fundus and carry out a lot of different measurements with an accuracy of 1 micron. For conducting ophthalmoscopy use of mirror Ophthalmoscope; hand-held electric Ophthalmoscope; binocular head Ophthalmoscope; slit lamp; laser scanning Ophthalmoscope.

Perimetry - the study of the central and peripheral fields of vision by determining their boundaries and light-distinguishing sensitivity of the retina. It is intended for the diagnosis of diseases of the retina, optic nerve, chiasm, pathways and visual cortex.

Presbyopia is an age - related accommodation disorder that leads to a decrease in its volume. Violation of the elasticity of the lens and a decrease in the volume of accommodation leads to a gradual progressive distance of the nearest point of clear vision. After 40-45 years, a person needs to wear glasses with positive lenses when looking at closely spaced objects. From 40 to 50 years to read need glasses about +1 DPTR, from 50 to 60-about +2 DPTR, from 60 to 70-about +3 DPTR, etc.

PRK - photorefractive keratectomy - excimer laser surgery to correct myopia, hypermetropia and astigmatism. Its peculiarity is the ablation on the surface of the cornea without forming a corneal flap. The main drawbacks of PRK: refractive pronounced regression; a long and painful postoperative period; a high probability of resistant surface corneal opacity (high haze).

Pterygium (pterygium) - a dystrophic process, which is a growth of the conjunctiva of the eyeball to the cornea.

Ptosis - temporary or permanent drooping of the upper eyelid.

Refraction is the refractive power of an optical system.

Spasm of accommodation (false myopia) - the lack of complete relaxation of accommodation in the distance vision and increased clinical refraction due to the weakness of the accommodation apparatus. When conducting autorefractokeratometry in terms of accommodation spasm decrease "pros" and appear or intensify negative effects. The true refraction of the eye with accommodation spasm can be determined only with medical cycloplegia .

Strabismus - deviation of one of the eyes from the general point of fixation, accompanied by a violation of binocular vision. There are strabismus: convergent, divergent and vertical; monolateral (constantly mowing one eye) and alternating (alternately mowing one, then the other eye); periodic and constant. One of the reasons, along with diseases of the central nervous system, infections, mental injuries and a significant decrease in the vision of one eye, is ametropia. It is possible to carry out hardware and surgical treatment of strabismus, but the key to the success of the treatment, first of all, is the elimination of the cause of the disease (if possible).

Tear film - a thin layer of tears covering the surface of the cornea. It consists of three main layers. It provides smoothness, sphericity and transparency of the cornea.

The ciliary body (ciliary body, ciliary muscle) is an intermediate structure between the iris and the vascular membrane of the eye. A unique organ that can both perform the function of accommodation muscle and produce intraocular

moisture. The spasm of the ciliary body distorts the data of autorefractometry, therefore, to identify the true parameters of ametropia during the examination, it is necessary to paralyze accommodation with medication - to conduct cycloplegia.

The destruction of the vitreous body is a violation of the transparency of the vitreous body associated with dystrophic, inflammatory, traumatic processes and hemorrhages. With a high degree myopia, the destruction of the vitreous body occurs in the vast majority of cases and in a stable state can be considered as a variant of the norm. In the presence of destruction people periodically notice the floating cloud in the field of vision ("floaters", dark spots, rings, webs, "string of pearls").

The fundus is an image of the inner surface of membranes of the posterior part of the eyeball, obtained during ophthalmoscopy. The term "fundus" is not synonymous with the word "retina".

The optical axis is a straight line through the center of the macula and the point at which the eye is focused. This line does not always cross the center of the cornea, pupil and lens.

The optical center of the cornea is the place of passage through the cornea of the optical axis of the eye. The optical center of the cornea does not always coincide with the anatomical one.

Tonometry - measurement of intraocular pressure.

Videokeratography (electroretinography) - getting a topographical map of the anterior corneal surface, containing the data about radius of curvature, the elevation of the individual sections relative to a certain reference plane and the changes of curvature in one Meridian. Keratotopograph, works on the projection principle and able to analyze not only the anterior but also the posterior surface of the cornea.

Visual acuity is the sensitivity of the visual analyzer, reflecting the ability to distinguish the boundaries and details of visible objects. Determined by the minimum angular distance between two points at which they are perceived

separately. The minimum angular distance is one minute ($1'$), which corresponds to the size of the image on the retina of 0.004 mm - the diameter of the cone.

Wavelength is the distance that an electromagnetic wave travels in one oscillation period.