

**MINISTRY OF SCIENCE AND HIGHER EDUCATION
RUSSIAN FEDERATION**

**FEDERAL STATE AUTONOMOUS EDUCATIONAL INSTITUTION OF
HIGHER EDUCATION
NORTH-CAUCASUS FEDERAL UNIVERSITY**

Methodological Guidelines
for Students on arranging and performing independent work
in the Discipline of "OTOLARYNGOLOGY"
for Students majoring (Specialty) in 31.05.01 General Medicine

INTRODUCTION

The purpose of studying "Otorinolaryngology" is to develop students' competencies aimed at addressing problems related to ENT organ pathology by providing appropriate quality care and necessary skills for independent work as an otorinolaryngologist.

The main objectives of the course are:

- Improvement of theoretical knowledge of anatomical and physiological characteristics of human ENT organs, as well as etiological and pathogenic mechanisms and clinical manifestations of major ENT diseases.
- Development of skills in clinical, laboratory, and functional diagnosis of ENT disease, including the ability to assess research results for diagnosis and differential diagnosis, predict disease progression, and choose appropriate treatment.
- Mastery of techniques for treating ENT diseases, including prevention, considering age-specific features, and management of chronic patients. - Understanding of pharmacotherapeutic principles in otorhinolaryngology, including indications and contraindications for sanatorium treatment, dietary recommendations, and diet therapy.
- Knowledge of emergency care principles and skills in urgent situations.

Methodological Recommendations for Studying Theoretical Material

When performing the independent study of theoretical material, the student must follow the rules as set below. The working curriculum of the respective academic discipline shall be recommended to be used as the basis for such activity. According to the schedule of classroom lessons and independent work, a different number of hours is to be allocated for studying individual topics. A significant portion of the student's independent work should be allocated to mastering the material on the covered topic, writing a summary (notes) on the specified theoretical blocks, and searching for additional literature based on the NCFU library and via the Internet system. The lecture material shall not cover all theoretical material; the greater part of it must be mastered through independent work. Given the above, working with the recommended literature is mandatory. Special attention must be paid to the content of the main provisions and conclusions, the explanation of phenomena and facts, and the understanding of the practical application of the theoretical issues under consideration. In the process of this work, the student should strive to understand and memorize the main provisions of the material being considered, the examples illustrating it, as well as to understand the illustrative material. Preparation should be completed by drawing up a plan (summary/notes) on the material (issue) being studied. This allows for the creation of a concentrated, concise representation of the issues being studied. First, studying the recommended literature is to be done. Special attention must be paid to the content of the main provisions and conclusions, the explanation of phenomena and facts, and the understanding of the practical application of the theoretical issues under consideration.

During this work, the student should strive to understand and memorize the main provisions of the material being considered, the examples illustrating it, as well as to understand the illustrative material. Preparation should be completed by drawing up a plan (summary/notes) on the material (issue) being studied. This allows for the creation of a concentrated, concise representation of the issues being studied. If necessary, one should seek (advice) consultation from the instructor. When going to a consultation, it is necessary to thoroughly think through the questions that require clarification. Keeping records contributes to turning reading into an active process, mobilizing motor memory along with visual memory. The following should be born in mind: a student who systematically keeps records creates their own individual stock of auxiliary materials for a quick review of what has been read and for the mobilization of accumulated knowledge. Records are especially important and useful when they reflect the thoughts that arose during independent work.

It is important to develop the students' capacity to compare sources and to think through the material being studied.

Improving note-taking skills among students is of great importance.

The instructor may recommend the following main forms of recording to students: a plan (simple and detailed), excerpts, and theses (abstracts).

The results of note-taking can be presented in various forms.

- A plan is an outline of the read material, a brief (or detailed) list of questions reflecting the structure and sequence of the material.
- A detailed plan fully replaces a summary.
- A summary (notes) is a systematized, logical presentation of the source material. Four types of summaries are distinguished:
 - Outline-summary (Plan-notes) – this is an expanded, detailed plan in which sufficiently detailed records are provided for those points of the plan that need explanation.
 - Textual summary – this is the reproduction of the most important provisions and facts of the source.
 - Free summary – these are clearly and briefly formulated (stated) main provisions resulting from a deep understanding of the material. It may contain excerpts, quotations, and theses; part of the material may be represented by a plan.
 - Theme-based summary – this is compiled on the basis of studying a number of sources and gives a more or less exhaustive answer according to a certain scheme (issue).

Methodological Guidelines for the Preparation for Practical Activities

When preparing for practical activities, the recommendation implies studying the control questions for the given lesson and the theoretical material from one's own notes.

The main form of work during the lessons is an interview (discussion). Each student must be ready to speak on all issues raised in the plan and demonstrate maximum activity during their consideration.

The speech must be constructed freely, convincingly, and with arguments. The instructor ensures that the speech is not reduced to a reproductive level (simple reproduction of the text); simple reading of the summary is also not allowed.

It is necessary for the speaker to show their own attitude towards what they are talking about, express their personal opinion and understanding, substantiate it, and be able to draw the correct conclusions from what has been said. In doing so, the student may refer to the entries in the summary, directly to the primary sources, use knowledge of previously studied disciplines, etc. In addition, to obtain a grade at an advanced level, students solve situational tasks based on the results of the mastered topics.

During the execution of practical works, a defense of practical skills is provided, the full list of which is specified in the fund of assessment tools.

Methodological Recommendations for the Preparation of Presentations and Reports

The report must contain elements of novelty; along with the fundamental aspect, an analysis of the current state of the problem under study must be carried out, as well as inclusion in regional issues. The report must include an introduction, a theoretical part, a conclusion, a list of literature, and a presentation that reveals the essence of the topic in graphs, pictures, diagrams, and formulas.

The report is recommended to be submitted on 1 printed sheet. The text of the work must be printed with 1.5 line spacing on one side of a standard sheet (A4) of white paper.

The text and other printed elements of the work must be black, and the contours of letters and signs must be clear, without halos and shading. The font must be Times New Roman, size 14. The titles of chapters and paragraphs are highlighted in bold. The sheet with text must have margins: left – 30 mm, right – 10 mm, top – 20 mm, bottom – 20 mm.

Page numbering of the text is done in the lower right corner of the sheet. It is necessary to number pages starting from the page where the Introduction is printed, on which the number 3 is placed. After that, all pages, including appendices, are numbered.

A space equal to two intervals is placed between the title of the chapter and the title of the paragraph of this chapter, and the title of the paragraph must not be separated from the text of this paragraph by a space. The titles of paragraphs shall be separated from the text of the previous paragraph by a space equal to two intervals. Each chapter, as well as the introduction, conclusions, appendices, and the list of used literature, begin on a new page. The word Chapter is not to be written. Chapters have ordinal numbers within the entire work, designated by Arabic numerals (for example: 1, 2, 3), followed by a period.

The word **PARAGRAPH** or the paragraph symbol (§) is not placed in the title. Paragraphs have ordinal numbers within the chapters, designated by Arabic numerals (for example: 1.1. and 1.2.).

Headings of chapters and paragraphs in the text must be centered; a period shall not be placed at the end of the title of the chapter and paragraph. It is not allowed to hyphenate (transfer) a part of a word in a heading. 4.5. The numbering of tables and figures can be running (continuous) or relate to the number of the chapter and paragraph. For example, if a table or a figure is included in the text of the first paragraph of the second chapter, the numbering is as follows: Table 2.1.1., Fig. 2.1.1.

The last digit means the ordinal number of the table (or figure) in this paragraph.

The table is to be placed as the next page after the first mention of it in the text.

Recommended literature.

Main literature:

1. Drozdov, A. A. ENT Diseases: Textbook / A. A. Drozdov, M. V. Drozdova. - 2nd ed.- Saratov: Nauchnaya Kniga, 2019. - 159 p. - ISBN 978-5-9758-1742-6. - Text: electronic // Digital Educational Resource IPR SMART: [website].
URL:<https://www.iprbookshop.ru/81020.html>

Additional literature:

1. Anatomy, physiology and pathology of organs of hearing, vision and speech : educational and methodical the manual / compiled by I. A. Popova. - Komsomolsk-on-Amur, Saratov : Amur Humanitarian and Pedagogical State University, AI Art Media, 2019. - 63 p. -ISBN 978-5-4497-0087-2. - Text : electronic // Digital educational resource IPR SMART : [website]. - URL: <https://www.iprbookshop.ru/86189.html>
2. Martov, V. Yu. Medications in Otolaryngology / V. Yu. Martov. - Moscow :Medical literature, 2009. - 494 p. - ISBN 978-5-89677-128-9. - Text: electronic //Digital educational resource IPR SMART: [website].-URL: <https://www.iprbookshop.ru/66748.html>
3. Otorhinolaryngology : a textbook / P. A. Timoshenko, V. S. Kunitsky, A. Ch. Butsel [and others]; edited by P. A. Timoshenko. - Minsk : Higher School, 2014. - 432 p. - ISBN 978-985-06-2384-3. - Text : electronic // Digital educational resource IPR SMART : [website].- URL: <https://www.iprbookshop.ru/35523.html>
4. Petryakov, V. A. Otorhinolaryngology : textbook / V. A. Petryakov. - Minsk : Vysheyshaya shkola, 2008. - 240 c. - ISBN 978-985-06-1606-7. - Text : electronic // Digital educational resource IPR SMART : [website]. - URL: <https://www.iprbookshop.ru/20113.html>
5. Uzdenova, R. H. Otorhinolaryngology : an educational and methodological guide for 5th year students,students studying in the specialty 060101.65 "Medical business", interns, residents / R. H.Uzdenova. Cherkessk : North Caucasus State Academy of Humanities and Technology

Academy, 2014. - 24 c. - Text: electronic // Digital educational resource IPR SMART: [website].
- URL: <https://www.iprbookshop.ru/27216.html>

Internet resources:

1. <http://rudactor.net> / - Medical portal
2. <http://www.e-reading.club> / - Large online library
3. <https://dic.academic.ru> / - Dictionaries and Encyclopedias
4. <https://roszdravnadzor.gov.ru> / - Federal Service for Supervision of Healthcare
5. <https://www.rmj.ru> / - Russian Medical Journal

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TOPIC 2: Morphological and Physiological Features of the Nose and Paranasal Sinuses.

Control Questions:

1. Clinical, Topographic Anatomy and Operative Surgery of the Facial Skeleton Applied to Otorhinolaryngology.
2. Facial Skull: Eye Sockets, External and Internal Nose, Paranasal Sinus, Mouth Cavity. Topographical Features of These Departments.
3. Muscles of Head (Skull Vault, Face, Parotid and Temporal Regions, Occiput)
4. Blood Supply: System of External and Internal Carotid Arteries of Right and Left Sides, Anastomoses Between These Systems. Blood Supply of Brain. Sinuses of Dura Mater: Sinuses of Skull Roof and Sinuses Base. Venous System. Features of Blood Outflow from Areas of Nose, Paranasal Sinuses, Middle Ear. Graduates Lymphatic System of Head, Localization of Lymph Nodes, Features of Lymph Outflow from Nose and ONP
5. Nose and Paranasal Sinuses. Development External Nose, Nasal Cavity and Paranasal. External Nose. Nasal Cavities: Nasal Passages, Conchae, Nasal Septum, Features Blood Supply and Innervation, Communications with Paranasal, Topographic Relationships with Cranial Cavity, Mouth, Orbit, Pterygopalatine Fossae. Paranasals of Nose: Maxillary, Frontal, Main, Ethmoidal Labyrinth. Age Related Features. Topographic Relationships. Structure Mucous Membrane, Cavernous Plexuses. Blood Supply, Innervation, Lymphatic Drainage, Regional Lymph Nodes. Structure Olfactory Analyzer.

Physiology of the Nose and Paranasal Sinuses

Control questions:

1. Physiology of the nose and paranasal sinuses. Respiratory function: the path of air movement in the nasal cavity and paranasal sinuses. The function of the ciliated epithelium, the kinematics of the ciliated cell and the ciliated field, the transport function resulting from the operation of the ciliated field.
2. The absorption and excretory functions of the nasal cavity and paranasal sinuses. Absorption of drugs, proteins, microbes and other antigenic and allergic substances.
3. The nasal cavity as a reflexogenic zone, the sensitivity of the receptors of the nasal mucous membrane, reflexes on breathing, blood circulation and other functions of the body. Reflexes from the mucous membrane of the paranasal sinuses on breathing, blood circulation. The value for the body of the disorder of nasal breathing.
4. The olfactory function. Microstructure of the olfactory epithelium. The concept of smell and olfactory sensitivity. Theories of smell.

Methods of examination of the nose and paranasal sinuses. Clinic and treatment of diseases of the nose and paranasal sinuses

Control questions:

1. Development of methods of examination of the nose and ONS. The importance of endoscopy in the improvement of examination of the ENT organs. The specifics of examination of otorhinolaryngological patients. Organization of the workplace, the necessary tools.
2. Examination of the nose and paranasal sinuses. Identification of deformation of the external nose, swelling or asymmetry in the area of projection of the paranasal sinuses; condition of the skin coverings of the face. Palpation of the external nose and the front walls of the sinuses.
3. Examination of the nasal cavity. Inspection of the entrance to the nose, anterior, middle and posterior rhinoscopy. Palpation of the nasopharynx. Probing of the nasal cavity. Examination of the respiratory function of the nose. Subjective and objective methods. Rhinopneumometry. Research of the olfactory function of the nose: qualitative and quantitative assessment of the sense of smell. Olfactometry.
4. Research of the paranasal sinuses. Difanoscopy, the principle of the method, its diagnostic capabilities. Probing of the maxillary, frontal, and main sinuses. Indications. Features of probing of different sinuses.
5. Sinus puncture through the lower and middle nasal passages. Indications, advantages and disadvantages. Sinus puncture, anatomical prerequisites for successful manipulation. Application of electron-optical conversion during probing and sinus puncture. Trepan puncture of frontal sinuses, indications, types of devices and instruments, diagnostic capabilities of the method.
6. Examination of the paranasal sinuses using optical devices (microscope, special optical devices). Possibilities and prospects of using fiber light guides for examining the paranasal sinuses.
7. Allergological examination of patients with nasal and paranasal sinus pathologies. Identification of personal and family allergological history. Examination of nasal and sinus mucus for the presence of eosinophils, conducting provocative tests, and possible complications. Skin-allergic tests with non-bacterial and bacterial allergens, test evaluation, their diagnostic value. Laboratory methods of detection allergic restructuring of the body.
8. Methods of X-ray examination of the nose and paranasal sinuses. Reading radiographs. Radiography data in the case of injuries of the facial skeleton, damage maxillary, frontal, main sinuses and ethmoid labyrinth. Computer tomography of the nose and ONP. Methods of contrast radiological examination in otolaryngology.

9. Acute and chronic diseases of the nose. Acute rhinitis, acute rhinopharyngitis in early childhood, rhinitis in acute infectious diseases; vasomotor and allergic rhinitis. Etiology, pathogenesis, clinic, differential diagnosis. Furuncle of the nose, and erysipelas. Etiology, pathogenesis, clinic, differential diagnosis, complications, treatment, prevention. .
10. Chronic rhinitis: simple, hypertrophic, and atrophic forms, and ozena. Bleeding nasal polyp, nasal septum. Etiology, pathogenesis, symptoms, diagnosis, prevention.
11. Nosebleeds: general and local causes, localization of bleeding. Local and general treatment, prevention. Frontal and posterior tamponade of the nasal cavity, vascular ligation.
12. Curvatures, spikes, and ridges of the nasal septum. Etiology, pathogenesis, and symptoms. Indications for surgical treatment and principles of endonasal interventions.
13. Benign and malignant nasal tumors. Diagnosis and differential diagnosis. Biopsy. Principles of surgical, radiation, combined, and chemotherapy treatment. Treatment outcomes.
14. Acute and chronic diseases of the paranasal sinuses. Acute sinusitis: maxillary sinusitis, ethmoiditis, frontal sinusitis, and sphenoiditis. Etiology, pathogenesis, pathological anatomy, symptoms, diagnosis, and complications. Treatment: conservative and surgical. Forecast. Prevention.
15. Chronic sinusitis: maxillary sinusitis, ethmoiditis, frontal sinusitis, sphenoiditis. Classification B.S. Preobrazhensky. Etiology, pathogenesis, classification, symptoms, diagnosis and differential diagnosis, complications. Treatment surgical and conservative. Forecast. Prevention. Allergic lesions of the paranasal sinuses. Symptoms, diagnosis, treatment, non specific and specific.
16. Injuries of the nose and paranasal sinuses. Damage to the external nose. Fractures and dislocations of the nasal septum. Open and closed injuries of the paranasal sinuses. Hematomas and abscesses of the nasal septum. Pathogenesis, symptoms, and prognosis. Provision of first aid, elimination of morphological and functional defects caused by trauma. Diagnosis and differential diagnosis, prognosis. Rhinogenic complications: orbital and intracranial. Ways of spreading infection. Symptoms, diagnosis and differential diagnosis, prognosis. Principles of surgical treatment.
17. Diseases of the nose and paranasal sinuses in children. Abnormalities of development, atresia and synechia. Rhinopharyngitis in young children, rhinitis in general infectious diseases. Osteomyelitis of the upper jaw in young children, acute and chronic inflammation of the paranasal sinuses. Pneumosinus. Brain hernia.

TOPIC 5. Ear Diseases. Normal and Topographic Anatomy of the Outer, Middle, and Inner Ear.

Control Questions:

1. Clinical, topographic anatomy and operative surgery of the head with reference to otorhinolaryngology.
2. Skull. Cerebral skull, anterior, middle and posterior cranial fossae, their contents. Base of the skull and its openings.
3. Facial skull: eye sockets, external and internal nose, paranasal sinuses, oral cavity. Topographic features of these departments.
4. Muscles of the head (skull vault, face, parotid and temporal regions, occipital region).

5. Blood supply: system of external and internal carotid arteries of the right and left sides, anastomoses between these systems. Blood supply of the brain. Sinuses of the dura mater: sinuses of the skull roof and sinuses of the base. Venous system. Features of blood outflow from the areas of the nose, paranasal sinuses, middle ear. Graduates. The lymphatic system of the head, localization of lymph nodes, features of the outflow lymph.
6. Twelve pairs of cranial nerves in clinical illumination. Facial nerve: topography of the first neuron, nuclei in the medulla oblongata; types of paralysis.
7. Topography of the trigeminal, vagal and oculomotor nerves.
8. Ear. Age-related features of the ear. Topographic relationships, blood supply and innervation. Middle ear. The drum cavity, its walls and contents, the labyrinth wall, the course of the facial nerve, the auditory tube. The mastoid process. The structure of the mucous membrane of the middle ear. Blood supply and innervation. Inner ear. The bony and membranous labyrinths. The sound analyzer: the Corti (spiral) organ, the spiral node, The cochlear nerve, nuclei, and cortical center in the temporal lobe of the brain. The vestibular analyzer: its receptors in the vestibular sacs and ampullae of the semicircular canals. The structure of the otolith receptor and the ampullary crest. The vestibular nerve and its node. The nuclei of the vestibular analyzer and their connection with the cerebral cortex, cerebellum, oculomotor muscles, spinal cord, and autonomic nervous system.
9. The topographic relationship of the organ of hearing with the meninges, brain, cranial fossae, dura mater sinuses, brain and cerebellum cisterns, and the parotid and temporal regions.

Physiology of the outer, middle, and inner ear

Control questions:

1. Physiology of the sound analyzer. The concept of sound as an adequate stimulus of the sound analyzer. Characteristics of sound in physical and physiological terms: pitch, volume, intensity, and timbre.
2. The difference or differential threshold (DT) of auditory sensitivity. Adaptation, masking, fatigue, and otopy in the horizontal and vertical planes. Musical absolute hearing.
3. The sound-conducting and sound-receiving parts of the sound analyzer. The mechanism of sound transmission, the concept of impedance of the sound-conducting apparatus. Air and bone (tissue) sound conduction. Theories of bone conduction. Theories of hearing. Transformation of sound stimulation into auditory sensation.
4. Physiology of the vestibular analyzer. The concept of adequate stimuli of the otolith apparatus and semicircular canals. Angular acceleration as an adequate stimulus of the ampullary receptor. Reflexes of the semicircular canals: sensory reaction, animal reflexes on striated muscles, reflexes on the muscles of the eye (nystagmus). Ewald's laws. Rotational and caloric' nystagmus, pressor and galvanic nystagmus. Other types of nystagmus.
5. Functions of the vestibular receptors. Reflexes of the otolith apparatus according to the theory of Magnus and Klein. Reflexes of the otolith apparatus according to the theory of Quincke. Dependence of the vestibular reaction on the functional state of the cerebral cortex.
6. The inhibitory function of the cerebral cortex on the reflexes of the vestibular analyzer. Cortical regulation of the vestibular function.
7. The concept of the Coriolis acceleration and its effect on the vestibular analyzer.

Methods of examination of the outer, middle and inner ear. Clinic and treatment of ear diseases

Control questions:

1. Development of ear research methods. The importance of endoscopy in improving the study of ENT organs. The specifics of the examination of otorhinolaryngological patients. Workplace organization, necessary tools.

2. Examination of the outer ear. Anamnesis and its significance in the diagnosis of lesions of the outer ear. Examination of the auricle, the external opening of the auditory canal and the mastoid process. Palpation of the mastoid process area. Research features the outer ear in inflammatory and traumatic lesions.
3. Middle ear examination. Analysis of anamnestic data and patient complaints. Otoscopy - features of its implementation in adults and children. Otoscopy using optical means: a Siegle funnel, a magnifying glass and an operating microscope.
4. The importance of these research methods in the dynamic observation of the patient, as well as in the preparation of patients for hearing-enhancing surgery.
5. Study of the function of the auditory tubes. Definition of ventilation function: ear manometry. Pressure gauges by V. I. Voyachek and M. I. Svetlanov. The degree of patency of the auditory tubes. Determination of drainage function. - Ear flushing by Politzer, catheterization. Examination of the pharyngeal mouth of the auditory tubes, salpingomanipulator by N.V.Zberovskaya. Augmentation of the auditory tubes. Possibilities and prospects of using research methods the middle ear using optical fibers.
6. The study of the sound analyzer. Patient's complaints and medical history. The study of hearing through whispered and spoken speech. The study of perception of pure tones tuning forks. The concept of a continuous series of tones. A set of tuning forks. The importance of tuning fork examination in the clinic at the current stage of audiology development.
7. Tonal threshold audiometry. The history of development, types of audiometers and their diagnostic capabilities, conditions for conducting audiological research, advantages and disadvantages of audiometry. Units of hearing measurement, their essence. Features of the determination of air and bone sound conduction. Types of audiograms. Differential diagnosis of hearing organ lesions. Characteristics of audiograms at damage to the sound-conducting and sound-receiving departments of the sound analyzer. Mixed form of hearing loss. Scalar hearing loss.
8. Ultrasound examination. The priority of the development of this method by Russian scientists. Differential diagnostic capabilities of the method. Technical characteristics and range of ultrasonic frequencies used in medicine. The study of hearing with low frequency sounds. Equipment, technical conditions; frequencies used for research, differential diagnostic value of the method.
9. Tonal threshold audiometry. The value of threshold tests, differential diagnostic capabilities of the method. The concept of the phenomenon of accelerated volume increase, differential intensity threshold. Noise audiometry.
10. Sound probe examination. The significance, differential diagnostic capabilities of the method. Speech audiometry. Types of speech audiometry: giving audio signals through air and bone telephones, speech audiometry in a free sound field. Concepts: speech intelligibility, speech hearing thresholds, socially suitable hearing. Speech an audiogram.
11. Game audiometry. Features of this type of study, diagnostic value, indications. Objective audiometry based on unconditioned reflexes and using evoked averaged potentials. EEG audiometry.
12. Examination of the vestibular analyzer. The nature of the complaints and the history of the disease. Identification of symptoms caused by the pathological process. Detection of spontaneous nystagmus and its types, physiological, installation, congenital, nystagmus caused by damage to the central nervous system, visual analyzer, etc. Detection of latent spontaneous nystagmus. Positional nystagmus. Identification of reflexes on the muscles of the limbs and trunk. Methods of recording vestibulosensory and animal reactions. The importance of objective registration methods, indications for their use, evaluation of the results.
13. Rotational test. Indications for this type of study, conditions of implementation, detection of post-rotational nystagmus. Diagnostic capabilities of the rotational sample. Assessment of the duration of post-rotational nystagmus.

- 14.** Caloric test - The effectiveness of a caloric test, its advantages over compared to the rotational one. Modification of the caloric sample is a sample with ether. Cold and hot, calorization, indications for choosing the type of calorization. Corbrak calorization and Holpike.
- 15.** Compression and aspiration test. The mechanism of nystagmus, a complete fistulous symptom. Possible complications during this test. Contraindications to conduct it. Electronystagmography. Possibilities and advantages of the method, conditions the execution. Decoding of electronic stagmograms. Investigation of otolith function. The significance of this reaction in the conduct of professional selection. Determination of the otolith reaction by Voyachek-Khilov.
- 16.** Vestibular sensitivity to Coriolis acceleration, the theoretical basis of the occurrence of irritation during this acceleration. The importance of Coriolis acceleration in aeronautics and astronautics. The experience of combined rotation according to V. I. Voyachek.
- 17.** X-ray diagnostics in otorhinolaryngology. The importance of the X-ray examination method in otorhinolaryngology. Methods of X-ray examination of the temporal bones. Reading X-rays and CT scans. Data on mastoiditis, acute and chronic otitis media.
- 18.** Diseases of the outer ear. Developmental abnormalities and absence of an auricle. The doctor's tactics, the age at which surgical treatment should be performed. Incised, punctured and lacerated wounds; surgical tactics in the primary treatment of ear wounds. Complications when piercing the earlobe, otohematoma, burns, frostbite of the auricle. Inflammatory diseases of the outer ear: perichondritis, erysipelas, limited and diffuse inflammation of the external auditory canal, otomycosis. Diagnosis, principles of treatment. Benign and malignant lesions of the outer ear. Differential diagnosis, principles of surgical and radiation treatment. Features of clinical symptoms of external ear lesions in young children. Features of acute inflammation of the middle ear. Symptoms, diagnosis, treatment, and prevention.
- 19.** Acute inflammatory diseases of the middle ear. Acute otitis media. Etiology, pathogenesis, clinic, treatment. Acute otitis media in acute infectious diseases. Tubotites. The role of the upper respiratory tract in the development and course of this disease. Flu-like otitis media. Frequency, pathogenesis, clinic. Exudative otitis media, etiology; Treatment conservative and surgical.
- 20.** General principles of treatment of acute otitis media. Local treatment, choice of drugs and methods of their management; effects on the macroorganism and microorganisms, rehabilitation of the upper respiratory tract. Physical therapy. Indications for paracentesis. Antritis and recurrent mastoiditis in children. Chronic inflammation of the middle ear. Etiology, pathogenesis, treatment, prevention.
- 21.** Acute mastoiditis. Etiology, pathogenesis, pathological and anatomical essence, clinic, treatment. Special forms of mastoiditis: zygomaticitis, apical, etc. (Bezoldovsky), tuberculosis, syphilitic. Differential diagnosis. Principles of treatment. Features of treatment of mastoiditis and arthritis in children.
- 22.** Chronic purulent inflammation of the middle ear. Etiology, pathogenesis, classification, status of the issue of the genesis of cholesteatoma. Diagnosis and method selection treatment. Conservative methods of treatment. The stage of treatment. Forms of medicines, principles of topical application of antibiotics, hormonal drugs and enzymes. Physical methods of exposure: electrophoresis, UHF therapy and ultraviolet radiation, X-ray therapy, exposure to negatively ionized air. Specific therapy; parenteral administration of bacteriophage, the use of staphylococcal toxoid, vaccine and antibiotic therapy. Surgical treatment methods: indications and contraindications. Removal of polyps and granulations. Rehabilitation operations on the middle ear: extraural, endaural. Postoperative management of ear trepanation wounds depending on the plastic surgery of the external auditory canal. The ability to work of patients after rehabilitation operations "on the middle ear.
- 23.** Thymoplasty. Indications (audiological, morphological), types

of reconstructive operations on the middle ear. Examination of patients and preparation for surgery. Postoperative management of patients at various stages of the postoperative period. Immediate and long-term results.

24. Non-purulent diseases of the middle ear. Otosclerosis. Etiology, pathogenesis, clinic. Conservative methods of treatment, the search for etiological and pathogenetic treatment. Surgical methods for the elimination of hearing loss, the specifics of the postoperative period, ability to work.
25. Adhesive otitis media. Etiology, pathogenesis, clinic. Conservative methods of treatment. Surgical methods of elimination: hearing loss with adhesive otitis media. Features of postoperative management.
26. Tympanosclerosis. Etiology, pathogenesis, treatment.
27. Dry perforated otitis media. Etiology, pathogenesis, clinic. The possibility of cholesteatoma in a "dry" ear.
28. Cochlear neuritis. Etiology (post-infectious, drug-induced, intoxication, etc.), pathogenesis, clinic, principles of treatment.
29. Meniere's disease and cochleovestibulopathy. Meniere's disease, etiology, pathogenesis, clinic. Conservative and surgical methods of treatment. Otogenic cochleovestibulopathy. Pathogenesis, clinic, treatment. Cochleovestibulopathy caused by circulatory insufficiency in the vertebrobasilar artery basin. Pathogenesis, clinic, principles of treatment.
30. Inflammatory diseases of the inner ear. Routes of infection.

TOPIC 4. Diseases of the larynx.

Normal and topographic anatomy of the pharynx and larynx

Control questions:

1. Clinical anatomy and operative surgery of the head, neck, trachea, bronchi and esophagus in relation to otorhinolaryngology.
2. Topographic anatomy of the neck, cellular spaces. The muscular apparatus of the pharynx and larynx, ligamentous apparatus. Features of blood supply: the system of external and internal carotid arteries of the right and left sides, anastomoses between these systems. Blood supply to the brain. The venous system. Features of blood outflow from the area pharynx and larynx. Graduates. The lymphatic system of the pharynx and larynx. Topographic relationships.
3. Borders and areas of the neck, interfascial spaces of the neck. Surface vessels, nerves, lymphatic system.
4. Topography of the cervical neurovascular bundle, cervical plexus, and recurrent nerve. Deep lymphatic system of the neck. Identification points along the midline of the neck.
5. The throat. Embryology. Age-related features. Pharyngeal cavity: nasopharynx, oropharynx, laryngopharynx. The structure of the pharyngeal walls. Development and structure of tonsils. Lymphadenoid pharyngeal ring. Topography of the palatine tonsils and carotid arteries (external and internal). Vascularization and innervation of various parts of the pharynx. Paratonsillar and parapharyngeal spaces: their contents and borders.
6. The larynx. Embryology. Age-related features. Skeletotopia and syntopia of the larynx. Paired and unpaired cartilages of the larynx. Ligamentous and folding apparatus. Muscles. Vascularization and innervation of the larynx. The structure of the mucous membrane of the larynx. Lymph outflow routes. Regional lymph nodes. The pre-glottis space.
7. The esophagus. Embryology. Age-related features. Skeletotopy and syntopia. The structure of the esophageal wall in the upper, middle and lower sections. Blood supply and innervation. Lymph outflow routes. Narrowing of the esophagus, their clinical significance.
8. The trachea. Skeletotopy, syntopy of the cervical and thoracic trachea. Bronchial tree. Vascularization and innervation. Ways of lymph drainage. Regional lymph nodes.

Physiology of the pharynx, larynx, esophagus, and trachea

Control questions:

1. Physiology of the pharynx. Swallowing function. Participation of the pharynx in the act of breathing and voice formation. Protective and adaptive reactions of the pharynx.
2. Physiology of the larynx. Respiratory, protective, and voice-forming functions of the larynx.
3. Physiology of the esophagus. Swallowing: three phases of the act of swallowing. Locking mechanism Sardines. The mechanism of food movement through the esophagus (solid, liquid).
4. Features of physiology in childhood.

Methods of examination of the pharynx, larynx, esophagus, and trachea. Clinic and treatment of diseases of the pharynx and esophagus

Control questions:

1. Development of methods for examining the pharynx, larynx, esophagus, and trachea. The importance of endoscopy in improving the examination of ENT organs. The specifics of examining otorhinolaryngological patients. Organization of the workplace, necessary instruments.
2. Examination of the pharynx. Examination of the skin of the anterior and lateral parts of the neck, and palpation. Examination of the oral mucosa, assessment of the function of the salivary glands, and the condition of the teeth. Direct pharyngoscopy and mirror hypopharyngoscopy. Examination of taste sensitivity. Examination of swallowing and soft palate function.
3. Examination of the larynx, trachea, and bronchi. External examination of the skin of the neck and chest. Palpation, determination of the passive mobility of the larynx and the symptom of "crunch of the laryngeal cartilages." Indirect laryngoscopy. Direct laryngoscopy. Indications for using this method. Upper tracheobronchoscopy under local and general anesthesia, lower tracheobronchoscopy, and indications for their use. Stroboscopy, physical and physiological foundations of the method. Types of stroboscopes: mechanical, electronic. The significance of this method is in the early diagnosis of laryngeal tumors.
4. Examination of the esophagus. Esophagoscopy under local and general anesthesia. Indications and contraindications. Esophagotonokimographic examination, registration methods, interpretation of esophagotokimograms. Radioisotope research. Blind bougie.
5. Methods of X-ray examination of the larynx and pharynx. Reading radiographs. Data on infectious granulomas, neoplasms and perichondritis of the larynx. X-ray and computed tomography of the neck organs.
6. Acute and chronic diseases of the pharynx. Acute pharyngitis, its forms. Etiology, pathogenesis, principles of treatment. Angina (acute tonsillitis), non-specific sore throats (banal), sore throats in acute infectious diseases and blood diseases, lyuetic tonsillitis, fibrinous and ulcerative necrotic tonsillitis. Etiology, pathogenesis, symptoms, principles of treatment, prevention.
7. Chronic pharyngitis. Etiology, pathogenesis, principles of treatment. Chronic tonsillitis, classification of B. S. Preobrazhensky (with additions by V. T. Palchun), pathological anatomy, symptoms, diagnosis, prevention. Chronic tonsillitis as the cause of repeated sore throats. Chronic tonsillitis and related diseases. Principles of conservative and surgical treatment.
8. Tonsillogenic sepsis. Paratonsillitis, parapharyngitis, pharyngeal abscess. Etiology, pathogenesis, principles of surgical and conservative treatment, prevention.
9. Pharyngeal foreign bodies. Diagnosis, removal of foreign bodies. Diseases of the esophagus. Esophagospasm, diverticula, esophagitis. Etiology, pathogenesis, symptoms, diagnosis, principles of treatment. Foreign bodies of the esophagus. Clinical picture, diagnosis, course, complications. Treatment, prognosis, and prevention. Burns of the esophagus. Pathological anatomy, clinical picture, course, diagnosis, complications. Treatment and prevention.

10. Acute catarrhal laryngitis, phlegmonous laryngitis, erysipelas of the larynx, laryngeal sore throat, laryngeal edema. Etiology, pathogenesis, symptoms, differential diagnosis, prognosis, principles of treatment, prevention.
11. Chronic laryngitis, its forms are limited, diffuse, hyperplastic and atrophic. Chondroperichondritis of the larynx. Laryngeal stenosis. Etiology, pathogenesis, pathological anatomy, symptoms, diagnosis, treatment, prevention.
12. Laryngeal paralysis. Etiology, pathogenesis, symptoms, diagnosis, principles of treatment.
13. Scleroma, tuberculosis, lupus of the upper respiratory tract. Fungal lesions of the upper respiratory tract.
14. Foreign bodies of the respiratory tract. The mechanism of ingress of foreign bodies. Diagnostics and removal methods. Complications in the removal of foreign bodies. Benign tumors of the larynx and upper trachea. Polyps, fibroids, cysts, intubation granulomas. Etiology, pathogenesis, diagnosis, treatment.
15. Diseases of the pharynx and larynx in children. Angina in childhood: banal and specific. Chronic tonsillitis. Methods of conservative and surgical treatment. Tumors of the nasopharynx. Acute laryngitis in infectious diseases. Chronic laryngitis. Surgical methods for the treatment of laryngeal diseases: intubation, tracheotomy and laryngostomy.

Diagnosis and treatment of oncological diseases of ENT organs

Control questions:

1. Etiology and pathogenesis of malignant tumors. Theories of cancer occurrence: embryonic dystopia; prolonged irritation; infectious onset; polyethologic hypothesis; carcinogenic substances; impaired carbohydrate metabolism and vicious protein synthesis in cancer cells. The dependence of the occurrence of malignant tumors on the state of the macroorganism and the central nervous system. Medical examination of patients with neoplasms of ENT organs.
2. Chemotherapy of tumors. The main groups of chemotherapy drugs: 1) alkylating agents - doxorubicin, cyclophosphamide, endoxan, thiotepa; 2) antimetabolites - methotrexate, 6-mercaptopurine; 3) pyrimidine acid antagonists - 5-fluorouracil; 4) antibiotics - cisplatin, bleomycin; 5) herbal substances - vinorelbine.
3. Routes of administration of chemotherapeutic drugs in the treatment of malignant tumors: parenteral and local; methods of administration that increase the concentration of the chemotherapeutic substance in the affected organ.
4. Actinotherapy of tumors. General information about X-ray therapy. Indications. Conditions of the origin and nature of X-rays. The concept of dosimetry. The essence of the biological effect of X-rays on a tumor. Methods of oncological radiotherapy, complications.
5. Fundamentals of radium therapy. Radioactivity. Radioactive decay, Absorption of gamma rays. Biological effects, sensitivity to rays and radioresistance, dosage. Methods of treatment. Anti-radiation protection.
6. Laryngeal cancer. Pathological anatomy of laryngeal cancer. Symptoms. Stages of the disease. A biopsy. Dietary diagnostics. Differential diagnosis. Diagnostic value of radiography and tomography. Combined surgical and radiation treatment methods. Indications for these types of treatment. Types of surgical interventions: laryngeal resection, extirpation, and extended laryngectomy. The Crile operation. Complications of surgical treatment.
7. Actinotherapy. Complications. Postradiation chondrites and perichondrites, methods of their treatment. Long-term treatment results. Long-term results of laryngeal cancer treatment.
8. The fourth stage of laryngeal cancer. Symptomatic treatment. Treatment of relapses.
9. Tumors of the nose and paranasal sinuses. Pathological anatomy. Symptoms. A biopsy. Diagnosis. Treatment methods: combined, surgical, radiation, chemotherapy. Indications for these types of treatment. Long-term results.
10. Tumors of the pharynx and esophagus. Pathological anatomy. Symptoms. Diagnosis and

differential diagnosis. Treatment methods: combined, surgical, radiation, chemotherapy.

Indications for these types of treatment. Long-term results.

11. Ear tumors. Pathological anatomy. Symptoms. Diagnosis, Treatment methods. Long-term results.

TOPIC 6. Urgent ENT care

Emergency care for diseases of the ear, nose and throat

Control questions:

1. Organization of emergency ENT care in a large city, regional center, and regional scale. The skills that an emergency room doctor should have when helping otorhinolaryngological patients.
2. The volume of emergency care for inflammatory diseases of the nasal paranasal sinuses, injuries of the nose and paranasal sinuses isolated and combined with injuries of the facial and cerebral skull (jaw, orbit, cranial fossa). Providing emergency care for nasal bleeding, ways to stop it (tamponade, ligation of the main vessels).
3. The volume of emergency care for purulent diseases of the pharynx. Otorhinolaryngologist's tactics for paratonsillitis, parapharyngitis, pharyngeal abscesses and phlegmon of the neck. First aid for foreign bodies of the upper respiratory tract and esophagus.
4. The volume of emergency care for diseases and injuries of the larynx. Indications for emergency tracheotomy, conicotomy. Stages of stenosis. Providing emergency care to patients with malignant neoplasms of the larynx.
5. The volume of emergency care for ear diseases. Doctor's tactics for otogenic intracranial complications. Providing emergency care in case of an acute attack of the disease Meniere's maze attack.

Anesthesiology and Intensive care in Otorhinolaryngology

Control questions:

1. Types of anesthesia. Local anesthesia: application, infiltration, conduction. General anesthesia: mask and intubation anesthesia; ether, narcotane, nitrous oxide and other types of anesthesia. Controlled hypotension. Neuroleptoanalgesia. Features of the use of various types of anesthesia depending on the area of surgical intervention.
2. Preparation of patients for surgical intervention under anesthesia, postoperative period.
3. Intensive care for acute disorders of cerebral circulation, respiration, and cardiovascular activity. Symptoms of clinical death, indications and contraindications to intensive care units. Immediate actions during resuscitation, their sequence; follow-up actions and their sequence.
4. Drugs, their dosage and methods of administration during intensive care and in the first hours and days after it due to the phenomena of cerebral edema, unstable blood pressure, stagnation in the lungs, etc.

Basics of transfusion therapy

Control questions:

1. History of the use of blood and blood substitutes. Basic data on group differentiation in the human body. The method of determining blood groups and group factors. Blood preservation. Preparation and application of blood products. Blood-changing fluids. Blood transfusion and infusion of blood-changing fluids. The mechanism of therapeutic action of blood transfusion and blood substitutes-
2. The use of blood transfusion, its preparations and blood substitutes in clinical practice. General issues of indications and contraindications for blood transfusion and use blood substitutes and blood products. The use of blood and blood-changing fluids in otorhinolaryngology.
3. Dangers and complications of blood transfusion and blood-changing fluids. Classification of complications. Complications related to errors in transfusion technique blood. Complications of

a reactive nature, the risk of infectious diseases. The sequence of complications during blood transfusion or blood replacement liquids. Prevention of posttransfusion complications. Documentation of blood transfusion in the medical history and in a special journal.

Questions of military otorhinolaryngology

Control questions:

1. Fundamentals of the organization of otorhinolaryngological care for the wounded, shell-shocked and sick in the Russian Army in peacetime and wartime. Otorhinolaryngological care for the wounded and sick during the Great Patriotic War and the post-war period. Modern requirements for the provision of ENT care in the context of the use of weapons of mass destruction. A system of step-by-step treatment of the wounded and shell-shocked with evacuation as directed. Organization of specialized assistance to the wounded in the ENT organs in the front area and in the rear of the country.
2. Features of wounds in the ear, nose, throat and larynx from the experience of the Great Patriotic War. The volume of assistance at different stages of evacuation. Wounds to the nose and paranasal sinuses. Combined wounds of the paranasal sinuses with wounds to the brain, eye socket, and jaws. Wounds to the pharynx, larynx. Neck injuries with ENT injuries. Wounds to the outer, middle and inner ear. Combined radiation damage ENT organs.
3. Modern methods of treating wounds of the ear, nose, throat and larynx: treatment, application of primary suture, primary delayed and secondary sutures. Diagnostics and removal of foreign bodies. Burns. Concussion lesions with hearing and speech disorders. Treatment of the shell-shocked. Military medical examination of ENT injuries, diseases and radiation injuries. Duties of an otorhinolaryngologist during the examination of conscripts and military personnel, selection for special forces.

Recommended literature.

Main literature:

1. Drozdov, A. A. ENT Diseases: Textbook / A. A. Drozdov, M. V. Drozdova. - 2nd ed. - Saratov: Nauchnaya Kniga, 2019. - 159 p. - ISBN 978-5-9758-1742-6. - Text: electronic // Digital Educational Resource IPR SMART: [website].
URL: <https://www.iprbookshop.ru/81020.html>

Additional literature:

6. Anatomy, physiology and pathology of organs of hearing, vision and speech : educational and methodical the manual / compiled by I. A. Popova. - Komsomolsk-on-Amur, Saratov : Amur Humanitarian and Pedagogical State University, AI Art Media, 2019. - 63 p. - ISBN 978-5-4497-0087-2. - Text : electronic // Digital educational resource IPR SMART : [website]. - URL: <https://www.iprbookshop.ru/86189.html>
7. Martov, V. Yu. Medications in Otolaryngology / V. Yu. Martov. - Moscow : Medical literature, 2009. - 494 p. - ISBN 978-5-89677-128-9. - Text: electronic // Digital educational resource IPR SMART: [website]. - URL: <https://www.iprbookshop.ru/66748.html>
8. Otorhinolaryngology : a textbook / P. A. Timoshenko, V. S. Kunitsky, A. Ch. Butsel [and others]; edited by P. A. Timoshenko. - Minsk : Higher School, 2014. - 432 p. - ISBN 978-985-06-2384-3. - Text : electronic // Digital educational resource IPR SMART : [website]. - URL: <https://www.iprbookshop.ru/35523.html>

9. Petryakov, V. A. Otorhinolaryngology : textbook / V. A. Petryakov. - Minsk : Vysheyshaya shkola, 2008. - 240 c. - ISBN 978-985-06-1606-7. - Text : electronic // Digital educational resource IPR SMART : [website]. - URL: <https://www.iprbookshop.ru/20113.html>
10. Uzdenova, R. H. Otorhinolaryngology : an educational and methodological guide for 5th year students, students studying in the specialty 060101.65 "Medical business", interns, residents / R. H. Uzdenova. Cherkessk : North Caucasus State Academy of Humanities and Technology Academy, 2014. - 24 c. - Text: electronic // Digital educational resource IPR SMART: [website]. - URL: <https://www.iprbookshop.ru/27216.html>

Internet resources:

6. <http://rudocor.net> / - Medical portal
7. <http://www.e-reading.club> / - Large online library
8. <https://dic.academic.ru> / - Dictionaries and Encyclopedias
9. <https://roszdravnadzor.gov.ru> / - Federal Service for Supervision of Healthcare
10. <https://www.rmj.ru> / - Russian Medical Journal