

**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 "GENERAL SURGERY"
for Students majoring (Specialty) in 31.05.01 General Medicine

introduction

The objectives of the discipline: are to teach students the propaedeutics of surgical diseases and the basics of general surgical pathology, the general principles of diagnosis and treatment of general surgical diseases (including urgent ones), and the basics of clinical thinking, as well as the professional skills of the reasonable and comprehensive use of imaging techniques necessary for further education and professional activities in medical specialties, which are necessary for future professional activities.

The objectives of the discipline are:

- to provide knowledge on the main stages of the development of the history of surgery and radiation diagnostics;
- to equip students with issues of medical ethics and deontology, to be able to clarify the patient's complaints;
- familiarizing students with the principles of organization and operation of radiation diagnostics departments in medical and preventive institutions, creating favorable conditions for patients and medical staff;
- familiarizing students with measures for occupational health and safety, prevention of occupational diseases, and monitoring compliance with and ensuring environmental safety when working with radiation imaging equipment;
- to teach students the algorithm and skills of conducting a physical examination of a surgical patient (examination, palpation, percussion, auscultation) and radiation examinations, and to compile an algorithm for radiation examination in the main clinical syndromes;
- an algorithm for drawing up an examination plan for a surgical patient; to develop students' skills in providing first aid on the spot with the definition of the type transportation of the patient by appointment;
- provide knowledge of asepsis and antiseptics;
- know the basics of anesthesiology and intensive care;
- to teach students the methods of diagnosing injuries and certain surgical diseases, stopping bleeding, determining the blood type and Rh factor, testing for individual blood compatibility between the recipient and the donor, filling the intravenous infusion system, performing wound care, applying a bandage, performing transport immobilization, and examining a surgical patient.

As a result of studying the discipline, the student should know:

- the clinical manifestations of the main syndromes that require surgical treatment; the features of providing medical care to patients and victims in emergency situations;
- modern methods of clinical, laboratory, and instrumental diagnostics of surgical patients; general principles and features of diagnostics of hereditary diseases and congenital abnormalities;
- general principles of clinical examination of a surgical patient;
- diagnostic capabilities of the main methods of examination of surgical patients;
- the main stages of treatment of patients with the most common types of surgical diseases;
- fundamentals of the medical staff.

Must be able to:

- collect anamnesis;
- conduct a survey of the patient, his relatives, conduct a physical examination patient of different age (examination, palpation, auscultation, measurement of blood pressure, determination of the characteristics of the pulse, breathing rate, etc.), if necessary, send it to laboratory and instrumental examination, to consult specialists;
- interpret the results of the examination, put the patient preliminary diagnosis, outline the scope of additional studies to clarify the diagnosis;
- to make a preliminary syndrome diagnosis - to synthesize information about the patient in order to determine the pathology and the causes that cause it;
- to formulate a clinical diagnosis;

- to identify the signs of "emergency conditions" (intestinal obstruction, free gas in the abdominal cavity, pneumohydrothorax, traumatic damage to bones and joints, gallstone disease, urolithiasis);
- to develop a treatment plan for the patient, taking into account the course of the disease, to select and prescribe drug therapy, to use non-drug treatment methods, and to carry out rehabilitation measures;
- to determine the scope of additional studies in accordance with the disease prognosis, in order to clarify the diagnosis and obtain reliable results.

Must be able to:

- methods of assessing the patient's condition in order to make a decision on the need for medical care;
- set priorities for solving the patient's health problems: critical (terminal) condition, condition with pain syndrome;
- algorithm for making a preliminary diagnosis to the patient, followed by sending him to additional examination and to specialists;
- algorithm for making a detailed clinical diagnosis to patients;
- an algorithm for performing basic medical diagnostic and therapeutic measures to provide first medical aid in emergency and life-threatening conditions;
- apply and remove transport splints, bandages and standard bandages;
- use special clothing for conducting surgical operations, modern dressing materials and bandages, modern furniture.

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.

1. Mishinkin, P. N. General Surgery: Textbook / P. N. Mishinkin, A. Yu. Neganova. — 2nd ed. — Saratov: Nauchnaya Kniga, 2019. — 159 p. — ISBN 978-5-9758-1758-7. — Text: electronic // Electronic Library System IPR BOOKS : [website]. — URL: <http://www.iprbookshop.ru/81076.html>
2. General Surgery: Textbook / V. M. Timerbulatov, R. M. Garipov, V. M. Sibaev [et al.]. — Ufa: BSMU, 2020. — 202 p. — Text: electronic // Lan: electronic library system. — URL: <https://e.lanbook.com/book/155768>

Additional literature:

1. History of General Surgery in Personalities [Electronic resource]: a textbook / V. K. Esipov, P. P. Kurlaev, G. V. Savitsky [et al.] ; edited by G. V. Savitsky. — Electronic. text data. — Orenburg: Orenburg State Medical Academy, 2013. — 142 p. — 2227-8397. — Access mode: <http://www.iprbookshop.ru/21813.html>
2. Krivenya, M. S. Surgery: Textbook / M. S. Krivenya. — Minsk : Vysheyshaya shkola, 2014. — 414 c. — ISBN 978-985-06-2399-7. — Text : electronic // Electronic library system IPR BOOKS : [website]. — URL: <http://www.iprbookshop.ru/35570.html>
3. Nekhaev, A. N. Practical skills in general surgery [Electronic resource] : textbook / A. N. Nekhaev, G. P. Rychagov. — The electron. text data. — Minsk : The Highest school, 2012. — 525 p. — 978-985-06-2087-3. — Access mode: <http://www.iprbookshop.ru/20257.html>
4. General Surgery. Volume 2 : textbook / G. P. Rychagov, P. V. Garelik, A. N. Nekhaev [et al.] ; edited by G. P. Rychagov, P. V. Garelik. — Minsk : Vysheyshaya shkola, 2006. — 492 c. — ISBN 978-985-06-1585-5. — Text : electronic // Electronic library system IPR BOOKS : [website]. — URL: <http://www.iprbookshop.ru/20101.html>
5. Rychagov, G. P. Surgical diseases. Part 1. General surgery [Electronic resource] : textbook / G. P. Rychagov, A. N. Nekhaev. — The electron. text data. — Minsk : The Highest school, 2012. — 428 p. — 978-985-06-1647-0. — Access mode: <http://www.iprbookshop.ru/20169.html>

Internet resources:

1. <http://rudoctor.net/> - Medical portal
2. <http://www.e-reading.club/> - Large online library
3. <http://www.spravocnikpolekarstvam.ru/> - free online pharmacological reference book
4. <https://dic.academic.ru/> - Dictionaries and encyclopedias

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- use special clothing for conducting surgical operations, modern dressing materials and bandages, modern furniture.

Practical lesson No. 1

History of surgery and organization of surgical care.

Control questions:

1. The concept of surgery and surgical diseases.
2. A brief history of surgery.
3. The current state of surgery.
4. The organization of surgical services.
5. The concept of deontology.
6. The moral character and general culture of a doctor.
7. Medical ethics, medical thinking, and new medical technologies.
8. Medical errors in surgery. Iatrogenic pathology in surgery.

Practical lesson No. 2

Antisepsis. Asepsis

Control questions:

1. The history of antisepsis development.
2. Types of modern antisepsis.
3. The essence of physical antisepsis.
4. The essence of mechanical antisepsis.
5. The objectives of chemical antisepsis.
6. The objectives of biological antisepsis.
7. Characteristics of the main chemical antiseptics.
8. Complications that occur when using antibiotics.
9. The effect of proteolytic, immune agents and other biological antiseptics.
10. The main methods of application of antiseptics.
11. What is asepsis?
12. Sources of exogenous and endogenous infection.
13. Ways of infection propagation.
14. Measures of prevention of air, drop, contact and implantational surgical infection.

15. Methods of processing surgical instruments.
16. Methods of sterilization of instruments with an optical system.
17. The device and principle of operation of an autoclave and a dry heat cabinet.
18. Methods of controlling sterility.

Practical lesson No. 3

Pain relief

Control questions:

1. Define pain relief, and name its types.
2. What is anesthesia? Name its types.
3. What stages of anesthesia do you know? Describe them.
4. What are muscle relaxants? Name their types.
5. Define recurarization.
6. What complications are possible in the post-anesthetic period? What are their prevention and treatment?
7. Define pure anesthesia.
8. What is mixed anesthesia?
9. What is combined anesthesia?
10. What are the possible complications of local anesthesia? What are their prevention and treatment?

Practical lesson No. 4

Emergency care for critical conditions of the body

Control questions:

1. The concept of resuscitation. The functions of a resuscitation doctor.
2. Terminal conditions.
3. Cardiac arrest. Signs.
4. Cardiopulmonary resuscitation.
5. Shock. Factors predisposing to the development of shock.
6. Assessment of the severity of the condition.
7. Traumatic shock.
8. Hemorrhagic shock.
9. Burn shock.
10. Anaphylactic shock.
11. Acute vascular insufficiency.

Practical lesson No. 5

Bleeding

Control questions:

1. What is called bleeding?
2. How do you distinguish between bleeding depending on the damaged vessel, what are their distinguishing features?
3. Types of bleeding depending on the time of their appearance, the causes of their occurrence?
4. What are the signs of acute anemia?
5. Local symptoms of hemothorax, hemoperitoneum?
6. List the mechanisms of the body's compensation in response to blood loss?
7. What complication may occur when major veins are damaged?
8. Diagnosis of hidden external bleeding?
9. Diagnosis of hidden internal bleeding?

Practical lesson No. 6
Blood transfusion
Control questions:

1. What is the hemagglutination reaction?
2. What is pseudoagglutination, panagglutination?
3. Control of standard sera for suitability?
4. How to determine blood type?
5. How to determine Rh factor?
6. Technique of p/k and v/m injections?
7. Technique of i/v injections?
8. How to fill a transfusion system?
9. Is there a "universal" donor and recipient?

Practical lesson No. 7
Blood substitutes
Control questions:

1. Blood as a suspension of formed elements.
2. Relative viscosity of blood (norm, anemia, polycythemia).
3. Viscosity of blood in various blood vessels of the human body.
4. Viscosity in norm and pathology of endolymph, perilymph, bile.
5. Measurement of viscosity of blood substitutes and blood-replacing fluids.
6. The equation of continuity of the jet on the example of blood.
7. Calculation of the minute volume of blood (MVC).
8. Stationary flow of a liquid. The continuity equation of the flow and the equation Bernoulli. Special cases of the Bernoulli equation.
9. Volumetric energy of blood. Laminar and turbulent flow of a liquid, the number Reynolds.
10. Quantitative characteristics of the motion of a viscous liquid. Formulas of Newton, Poiseuille, Stokes.
11. The nature of viscosity, features of Newtonian and non-Newtonian fluid.
12. Causes of change in the viscosity of biological fluids.
13. Osmosis. Osmotic pressure of solutions of BMA. Haller equation.
14. Oncotic pressure of blood. Colloid-osmotic pressure.
15. Water-electrolyte homeostasis (basic concepts).
16. Homeostasis, plasmolysis, hemolysis, the nature of endo- exosmosis.
17. Physiological, isotonic, hypertonic and hypotonic solutions, their practical application.

Practical lesson No. 8
Surgical operation
Control questions:

1. Preparation of the patient for surgery.
2. Selection of anesthesia and preparation for it.
3. Legal and legal basis for conducting examination and operative interventions.
4. The concept of surgical operation. Criteria of the operational risk, ways of its reduction.
5. The position of the patient on the operating table. Principles of the choice of operating access.
6. Stages of surgical operation.
7. The body's reaction to surgical aggression.
8. Clinical observation of the patient. Laboratory and functional diagnostic control over the condition of the main systems of the body.

Practical lesson No. 9
Examination of a surgical patient
Control questions:

1. The order of examination of a surgical patient.
2. What is the purpose of questioning the patient and what is its significance?
3. What is the order of objective examination of the patient?
4. Why is palpation, percussion, and auscultation performed?
5. What data can be obtained during percussion of the abdomen?
6. What is the basis for making a preliminary diagnosis?
7. What is a clinical diagnosis?

Practical lesson No. 10
General questions of traumatology
Control questions:

1. Classification. Clinical picture of fractures and dislocations.
2. Basics of X-ray diagnostics.
3. First medical aid. Transport tires. Rules of transport immobilization.
4. Basic principles and methods of treatment.
5. Complications of fractures and dislocations.
6. What is the mechanism of bone callus formation?
7. How to determine the range of motion in the joint?
8. What is meant by the functional method of treating fractures?
9. Types of bone fragment repositioning.
10. What are the methods of traction?
11. Operative methods of treating fractures.
12. Classification, determination of the depth and area of burns.
13. First aid for burns.
14. Burn disease.
15. Radiation and chemical burns.
16. Cooling injuries. Types of general and local cold injuries. General and local treatment.
17. Electrocution. Features of examination and treatment.

Practical lesson No. 11
Surgical infection (purulent-inflammatory diseases)
Control questions:

1. Clinical manifestations, laboratory diagnostics.
2. Acute aerobic and anaerobic surgical infection.
3. Modern principles of prevention and treatment of purulent diseases.
4. General principles of treatment of purulent diseases.
5. Purulent diseases of the skin and subcutaneous tissue.

Practical lesson No. 12
Specific surgical infection
Control questions:

1. Furuncle, carbuncle. Abscess, phlegmon. Erysipelas, hidradenitis.
2. Phlegmons of the neck. Subfascial and intermuscular phlegmons of the extremities.
3. Purulent mediastinitis. Purulent paranephritis. Acute paraproctitis, fistulas of the rectum.

4. Acute purulent mastitis.
5. Classification, types of panaritium. Features of purulent inflammation of the hand.
6. Peritonitis. Pleuritis.

Practical lesson No. 13
Insufficiency of blood and lymph circulation in the extremities
Control questions:

1. Circulatory disorders that can cause necrosis. Other factors that lead to local (limited or widespread) tissue necrosis.
2. Disorders of arterial blood flow: acute and chronic. General principles of clinical and instrumental diagnostics. Operative and conservative treatment.
3. First aid for acute arterial thrombosis and embolism.
4. Disorders of venous circulation: acute and chronic. The concept of phlebotrombosis, phlebitis, and thrombophlebitis. The concept of pulmonary embolism. Other diseases of peripheral veins and their complications.
5. Trophic ulcers, principles of surgical and non-surgical treatment.
6. Lymphostasis. Lymphorrhea.

Practical lesson No. 14
Tumors
Control questions:

1. General characteristics of tumors.
2. Benign and malignant neoplasms. Pathways of metastasis.
3. Clinical classification of tumors. Clinical diagnostics.
4. Special diagnostic methods.
5. Principles of surgical treatment of tumors.
6. Principles of organizing an oncological service.

Practical lesson No. 15
Parasitic surgical diseases
Control questions:

1. Pathogenetic mechanisms in the impact of echinococcus.
2. Stages of the course and clinical manifestations in echinococcosis.
3. Differences between alveococcosis and echinococcosis.
4. What is the localization of asymptomatic cysticercosis?
5. What determines the clinical picture of cysticercosis of the brain, and what symptoms does it cause?
6. Phases of the course of ascariasis, surgical complications.
7. Forms of schistosomiasis, their features.
8. What system is affected by filariasis, and what are the symptoms?
9. How is dracunculiasis transmitted?
10. Surgical complications of opisthorchiasis.
11. Features of clinical manifestations of giardiasis.
12. Forms of amebiasis, their features.

Practical lesson No. 16
Developmental defects
Control questions:

1. Factors leading to developmental defects:
 - I. Internal teratogenic factors: genetic defects (gametopathies).
 - II. External teratogenic factors: infections, effects of chemical and physical agents.
2. Classification of congenital defects
 - I. Changes in the size of organs: hypergenesis; hypoplasia (hypogeneia); aplasia (agenesis).
 - II. Change in the shape of organs: clubfoot, horseshoe kidney, bicornuate uterus, etc.
 - III. Abnormalities in the location of organs: ectopia, heterotopia (cryptorchidism, aberrant thyroid gland).
 - IV. Increase in the number of organs: polydactyly, hermaphroditism, extra ribs.
 - V. Atavisms: median, lateral cysts of the neck, fistulas.
 - VI. Duplicating anomalies: conjoined twins.

Practical lesson No. 17
Plastic (restorative) surgery
Control questions:

1. The main goals of plastic surgery of the maxillofacial area.
2. The main objectives of plastic surgery of the maxillofacial area.
3. The main historical stages of development of plastic restorative and reconstructive surgery.
4. The main sections of plastic surgery of the maxillofacial area, depending on the purpose.
5. Congenital and acquired defects and deformities of the face and neck.
6. Indications for performing restorative and reconstructive surgeries in the maxillofacial area.
7. Local contraindications for performing plastic surgeries in the maxillofacial area.
8. General contraindications for performing plastic surgeries in the maxillofacial area.
9. Groups of patients with possible types of psychoneurological status reaction to performing plastic surgeries.
10. Basic biological principles of plastic surgery in the maxillofacial area and the neck.

Recommended literature.

Main literature:

1. Mishinkin, P. N. General Surgery: Textbook / P. N. Mishinkin, A. Yu. Neganova. — 2nd ed. — Saratov: Nauchnaya Kniga, 2019. — 159 p. — ISBN 978-5-9758-1758-7. — Text: electronic // Electronic Library System IPR BOOKS : [website]. — URL: <http://www.iprbookshop.ru/81076.html>
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2. Krivenya, M. S. Surgery : textbook / M. S. Krivenya. — Minsk : Vysheyschaya shkola, 2014. — 414 c. — ISBN 978-985-06-2399-7. — Text : electronic // Electronic library system IPR BOOKS : [website]. — URL: <http://www.iprbookshop.ru/35570.html>
3. Nekhaev, A. N. Practical skills in general surgery [Electronic resource] :textbook / A. N. Nekhaev, G. P. Rychagov. — The electron. text data. — Minsk : The Highest school, 2012. — 525 p. — 978-985-06-2087-3. — Access mode: <http://www.iprbookshop.ru/20257.html>

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Internet resources:

1. <http://rudocor.net/> - Medical portal
2. <http://www.e-reading.club/> - Large online library
3. <http://www.spravocnikpolekarstvam.ru/> - free online pharmacological reference book
4. <https://dic.academic.ru/> - Dictionaries and encyclopedias