

**MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS  
EDUCATIONAL INSTITUTION  
BELARUSIAN STATE MEDICAL UNIVERSITY**

**APPROVED**

by First Vice-Rector of the educational  
institution «Belarusian State Medical  
University»



I.N.Moroz

**THE STATE EXAMINATION PROGRAM  
SURGICAL DISEASES**

in the specialty *1-79 01 01 General Medicine*

for pre-graduate internship training in “General medical practice” of medical faculty  
of international students

2023

The Program of the State Examination in “Surgical Diseases” is developed on the basis of:

the higher education standard in the specialty 1-79 01 01 “General Medicine”, approved and put into effect by the Resolution of the Ministry of Education of the Republic of Belarus, dated 30.08.2013 № 88;

the standard curriculum (curriculum of a higher education institution) in the discipline “Surgical Diseases” for the specialty 1-79 01 01 “General Medicine”, approved 31.08.2016, registration #TD-L. 560/тип

the standard curriculum (curriculum of a higher education institution) in the discipline “General Surgery” for the specialty 1-79 01 01 “General Medicine”, approved 20.08.2014, registration # TD-L. 341/тип

the standard curriculum (curriculum of a higher education institution) in the discipline “Neurology and Neurosurgery” for the specialty 1-79 01 01 “General Medicine”, approved 31.08.2016, registration #TD-L. 576/тип

the standard curriculum (curriculum of a higher education institution) in the discipline “Anesthesiology and Reanimatology” for the specialty 1-79 01 01 “General Medicine”, approved 29.07.2016, registration # TD-L. 535/тип

the standard curriculum (curriculum of a higher education institution) in the discipline “Traumatology and orthopedics” for the specialty 1-79 01 01 “General Medicine”, approved 20.06.2017, registration # TD-L. 601/тип

the standard curriculum (curriculum of a higher education institution) in the discipline “Oncology” for the specialty 1-79 01 01 “General Medicine”, approved 19.10.2017, registration # UD-L 612 type

the standard curriculum (curriculum of a higher education institution) in the discipline “Urology” for the specialty 1-79 01 01 “General Medicine”, approved 08.08.2017, registration #TD-L. 609/type

## **COMPILERS:**

Volotovskii A.I. Dean of Faculty of General Medicine, Educational Institution «Belarusian State Medical University», Professor

Rummo O.O. Head of the Department of Surgery and Transplantology, Educational Institution «Belarusian State Medical University», Professor

Plandovskii A.V. Associate Professor of the Department of Surgery and Transplantology, Educational Institution «Belarusian State Medical University», PhD

Yakubouski S.U. Associate Professor of the Department of Surgery and Transplantology, Educational Institution «Belarusian State Medical University», PhD

**RECOMMENDED FOR APPROVAL:**

by the Department of Surgery and Transplantology, Educational Institution  
«Belarusian State Medical University»  
(protocol № 10 of 21.02.2023);

by the Council of the Faculty of General Medicine, Educational Institution  
«Belarusian State Medical University»  
(protocol №\_\_ of \_\_\_\_\_)

## **STATE EXAMINATION PROCEDURE**

### **List of academic disciplines included in the state examination:**

1. «Surgical Diseases»;
2. «General Surgery»;
3. «Traumatology and Orthopedics»;
4. «Oncology»;
5. «Anesthesiology and Reanimatology»;
6. «Urology»;
7. «Neurosurgery».

### **State examination form and procedure**

The State Examination is taken orally on examination cards after the assessment of practical skills during the Objective Structured Clinical Examination (OSCE) in the practical training laboratory. The state exam is conducted in the form of an oral interview using examination cards tasks in accordance with the approved work schedule of the State Examination Commission. The student chooses a card and a situational task, prepares for at least 30 minutes, then answers to members of the State Examination Commission and members of subject commissions.

### **STRUCTURE OF THE EXAMINATION CARD**

The oral interview examination card includes five theoretical questions.

The first question includes topics on general surgery, the second and third - questions on surgical diseases, the fourth - questions of oncology or traumatology and orthopedics, the fifth - questions on related disciplines of urology, anesthesiology with resuscitation, neurosurgery.

## CONTENT OF THE STATE EXAMINATION PROGRAM

### LIST OF ISSUES FOR THE STATE EXAMINATION

#### 1. GENERAL SURGERY

##### 1.1 Introduction. History of surgery

The concept of surgery and surgical diseases.

The history of surgery, asepsis and antisepsis, pain control, haemotransfusion. Surgery and other medical disciplines.

The development of surgery and surgical care organization in the Republic of Belarus. The primary and specialized, emergency and elective medical care. Surgical care in the outpatient and inpatient settings. One-day surgery.

Importance, aim and objectives of “General surgery” discipline. Surgery training in the Republic of Belarus.

Deontology in surgery. Iatrogeny.

##### 1.2. Desmurgy

The concept of bandages and dressings. Basic requirements to the dressing material. Types of dressings (the nature of the material used, purpose, fixing method of the dressing, bandages type, nature and purpose of immobilization).

Rules of bandaging. Soft strengthening (ice pack, glue, adhesive band, sling, T-shaped, roller bandage, tubular bandage) bandage on his head, neck, chest, legs. Immobilizing soft and compression bandages. Taping. Indications and contraindications.

##### 1.3. Antiseptic and aseptic

**Antiseptic.** Antiseptic: definition, history of development. Types of modern antiseptics and their brief characteristics. Mechanical antiseptic: toilet and debridement of the wound. Modern methods of physical antisepsis: drainage of wounds and cavities, the use of tampons on the basis of carbon and other sorbents, the use of ultraviolet light, ultrasonic cavitation, medical lasers, vacuum wounds, hyperbaric oxygenation, aerotherapy. Photodynamic therapy: description, principle of action. Chemical antiseptics: the requirements for antiseptics, groups of drugs, methods of application. Biological antiseptic: antibiotics (group of rational application of rules, complications of antibiotic therapy and prevention). Enzyme therapy. The concept of active and passive immunotherapy. Mixed antiseptic.

**Aseptic.** Sources and routes of infection. The concept of hospital infection. Prevention of HIV infection, viral hepatitis in the surgical departments. Prevention of air and droplet infection.

The structure and organization of the surgical department, its layout, the basic premises and their design. Wards, dressing room, and their equipment. The operating unit, requirements for its placement, design and equipment (preoperative, operating room, sterilization, material, instrumental room, room for anesthesia services, endoscopic, etc.). Outpatient surgery design.

Cleansing of the operation and dressing rooms. The behavior of staff and visitors (students, doctors) in the operating room.

Prevention of contact infection. Surgical instruments, their disinfection, presterilisation treatment and sterilization process. Preparation of dressing material and linen for sterilization, features and types of sterilization. Sterility control. Personnel preparation for the operation. Hand hygiene. Scrubbing. Preparation of the surgical field.

Prevention of implant infection. Contemporary suturing material, classification, requirements. Sterilization of alloplastic, xenoplastic transplants, non-biological materials in plastic surgery and traumatology.

#### **1.4. Bleeding**

Definition, classification, pathogenesis, clinical presentation. The organism reaction to bleeding. Compensatory-adaptive reactions in acute blood loss. Local and general signs of different severity bleeding. Outcomes of bleeding (hemorrhagic anemia, hemorrhagic shock). Lab tests. Methods for the blood loss severity assessment. Spontaneous hemostasis.

Basic principles of acute blood loss management. Methods of temporary and final stop bleeding (mechanical, chemical, physical, biological). Methods for determining the volume of blood loss.

#### **1.5. Basics of clinical transfusiology**

Principles of water electrolyte balance, daily fluid requirements and losses, volumes of gastrointestinal tract liquids.

**Principles of haemotransfusion.** Isoserology of blood. Blood groups. ABO system. Rh-Hr system. Methods for determination of blood group and Rh using standard isohaemagglutinating sera, monoclonal antibodies and standard erythrocytes, results assessment. Possible errors in blood group determination.

**Blood sources.** Blood donation in the Republic of Belarus, donor groups. Methods of preservation and storage of blood, its components and products. The mechanism of action of transfused blood, its components and products. Indications and contraindications for transfusion of donated blood components and blood products. The concept of blood reinfusion. Preserved autologous blood transfusion.

**Haemotransfusion.** Order of physician's action in haemotransfusion. Ottenbegh rule and legal bases of haemotransfusion in action. Haemotransfusional reactions and complications, prophylaxis and treatment.

**Blood substitute solutions.** Classification, characteristics of the main groups, indications and contraindications for transfusion. Methods and techniques of transfusions. Complications of blood transfusion and their prevention and treatment.

#### **1.6. Mechanical injuries**

**Injuries.** The concept of the industrial, agricultural, residential, street, sports, military injuries. Isolated injury, polytrauma (multiple, concomitant, the combined injury). The organization of trauma patient care.

**Closed injuries.** Closed soft tissue injuries: bruises, sprains, ruptures. General and local signs of traumatic injuries. Order of actions in primary aid for injuries of the brain, chest, abdomen, retroperitoneal organs.

**Wounds.** Classification of wounds. Wound healing process. Morphological and biochemical changes in the wound. Types of wound healing (primary intention, secondary intention, under a scab). Phases of wound healing. Structure and functions of granulation tissue. Types of scars.

General principles of treatment of fresh wounds. Postoperative suppurated wound management. Special features of gunshot wounds management. Primary, secondary and repeated surgical debridement of wounds, its rationale, technique.

Surgical sutures: classification, indications, technique, alternatives. Surgical knots: classification, types, technique.

**Dislocations of bones.** Classification. The concept of the mechanisms of dislocation. Clinical presentation, diagnosis, primary health care, methods of treatment.

**Fractures of bones.** Classification. Morphological changes in the fracture area at different time periods after injury. Clinical presentation, diagnostics, primary care. Transport immobilization/splinting: purpose, objectives, means and methods of implementation. General principles of fracture treatment: pain relief, reduction and internal fixation of bone fragments. Types of plaster casts, traction, osteosynthesis. Indications and contraindications for conservative and surgical treatments. Complications of fractures.

**Traumatic shock:** pathogenesis, clinical presentation, primary care, treatment guidelines.

**Crush syndrome:** clinical presentation, primary care, treatment guidelines.

### 1.7. Thermal damage and electric shock

**Burns:** thermal, chemical, radiation. Classification of burns. Burn formula. Clinical presentation depending on the burn depth. Determination of burn area and depth. Burn disease: shock, toxemia, septic toxemia, convalescence. Special features of burn shock. Primary care for burns. General and local treatment of burned patients. Specialized medical care.

**Cold injury:** definition, classification. Total cooling: definition, degrees. Frostbite: degrees and depth. Pathogenesis of frostbite, clinical presentation in the preactive and postreactive periods. Primary care. Treatment.

**Electrical accident.** The mechanism of electric current action to body. Local and general presentation. Primary care and treatment.

### 1.8. Surgical examination

Special features of trauma and emergent & chronic surgical patient examination. Main steps of examination. Surgical diagnostics.

Diagnostic possibilities of contemporary laboratory and instrumental diagnostics: thermometry, lab tests, radiology, endoscopy. Biopsy: determination, nouns, indications, types.

Inpatient medical case record: common sections, requirements for complying. Inpatient medical case record as medical and legal document, rules for complying and storage.

### 1.9. Surgical operation. Preoperative and postoperative periods

**Preoperative period.** Indications and contraindications for surgery (local, general). Urgency of surgery. Determining risk of surgical intervention and patient

condition severity. Special features of patient examination for the elective and urgent surgery. Preparation of patient for surgery. Prevention of endogenous infection, surgical antibiotics prophylaxis. Preoperative summary.

**Surgical operation.** Types of surgical procedures. Steps of surgery. Indications and contraindications to surgery. Surgical team: staff, working objectives and tasks.

**Postoperative period.** Uncomplicated postoperative period, phases, stages. Monitoring and treatment of postoperative patients. Postoperative complications: local (surgical site) and general (cardiovascular, respiratory, gastrointestinal, kidney, hepatic and nervous system). Diagnosis, treatment, prevention of post-operative complications. Bed sores prevention.

### **1.10. Surgical infection**

Definition and classification of surgical infection.

**Acute purulent surgical infection.** Etiology and pathogenesis. Local tissue reaction. The general reaction. Systemic inflammatory response syndrome, manifestations. Basic principles the general and local treatment of acute purulent surgical infection according to stages.

**Acute purulent diseases of skin and subcutaneous tissue.** Furuncle, carbuncle, abscess, cellulitis (phlegmon), erysipelas, erysipeloid. Etiology. Clinical presentation. Diagnosis. Treatment.

**Acute purulent diseases of glandular organs.** Hidradenitis, parotitis, mastitis. Etiology. Classification. Clinical presentation. Diagnosis. Treatment. Prevention.

**Acute purulent diseases of lymphatic system.** Lymphangitis, lymphadenitis.

**Acute purulent diseases of blood vessels** (phlebitis, thrombosis, arteritis). Etiology. Clinical presentation. Diagnosis. Treatment.

**Acute purulent diseases of hand.** Panaritium (felon), hand phlegmons (cellulitis). Etiology. Classification. Clinical presentation. Diagnosis. Treatment.

**Osteomyelitis.** Etiopathogenesis. Clinical presentation. Diagnosis. The principles of treatment.

**Paraproctitis** (anorectal abscess and fistula-in-ano). Etiopathogenesis. Clinical presentation. Diagnosis. The principles of treatment.

**Acute purulent bursitis and arthritis:** etiology, clinical presentation, diagnosis, treatment.

**Acute purulent serous membranes pathology (pleurisy, peritonitis):** classification, etiology, clinical presentation, diagnosis, treatment.

**Acute specific surgical infection.** Anaerobic clostridial infection (gas gangrene). Etiology. Pathogenesis. Clinical presentation. Treatment. Prevention.

Tetanus. Etiology and pathogenesis. Clinical presentation. Treatment. Prevention.

Anthrax. Clinical presentation. Treatment. Prevention. Diphtheria of wounds. Features of the course. Treatment. Prevention.

Wound diphtheritis. Clinical presentation. Treatment. Prevention. Diphtheria of wounds. Features of the course. Treatment. Prevention.

**Anaerobic nonclostridial infection.** Classification. Etiology. Pathogens. Clinical presentation. Diagnosis. Treatment. Prevention.



**Chronic specific surgical infection.** Tuberculosis of peripheral lymph nodes. Clinical presentation. Treatment. Bone tuberculosis. Pathogenesis. Scheme of bone TB evolution (steps and phase). Clinical course of the disease (local and general symptoms). Features of flow in prearthritic, arthritic and post arthritic stages. Complications. Treatment.

Syphilis of bones and joints. Clinical presentation. Diagnosis. Treatment. Actinomycosis. Variants. Etiology. Pathogenesis. Clinical presentation, diagnosis, treatment.

**Surgical sepsis.** Classification. Pathogenesis, Clinical presentation, diagnosis, principles of general and local treatment. Septic shock, Clinical presentation, diagnosis, treatment principles.

### **1.11. Necrosis. Lymphatic outflow and circulatory disorders**

**Necrosis:** terminology, causes of circulatory necroses, pathogenesis, types, clinical presentation.

**Gangrene:** clinical classification, causes. Principles of treatment of necrosis and gangrene.

**Trophic ulcers:** Causes, classification, clinical presentation, general principles of treatment.

**Bed sores (pressure ulcers):** localization, stages, clinical presentation, general principles of treatment.

**Fistulas/ sinus tracts:** classification, clinical presentation, diagnosis, treatment.

**Types of circulatory disorders. Acute arterial insufficiency:** causes. Arterial thrombosis and embolism. Stages of ischemic disorders. Principles of diagnosis, conservative and surgical treatment.

**Chronic arterial insufficiency.** Obliterating diseases of the arteries. Classification of chronic ischemia of the lower limbs. Raynaud's disease: clinical presentation, general diagnostic principles. Stages of chronic arterial ischemia. Obliterative atherosclerosis, obliterative endarteritis: pathogenesis, clinical presentation, general principles of diagnosis and treatment. Endovascular and mini-invasive procedures.

**Acute venous insufficiency.** Deep vein thrombosis, variants, clinical presentation, principles of diagnosis, treatment and prevention. Acute superficial thrombophlebitis, variants, variants, clinical presentation, principles of diagnosis, treatment and prevention.

**Chronic venous insufficiency.** Varicose veins of the lower extremities, variants, clinical presentation, principles of diagnosis, and treatment (sclerotherapy, intravenous ablation, cryodestruction). Post thrombotic syndrome: etiology, pathogenesis, clinical presentation, general principles of diagnosis and treatment.

**Microcirculatory disorders.** Diabetic microangiopathy: clinical presentation, general principles of diagnosis and treatment. Types of lymph outflow disorders (chronic lymphostasis, lymphoedema): etiology, pathogenesis, clinical presentation, general principles of diagnosis and treatment.

## **2. SURGICAL DISEASES**

### **2.1. Acute and chronic appendicitis**

Acute appendicitis: definition, anatomy, etiology, pathogenesis, classification, syndromes, clinical presentation, diagnostics.

Differential diagnostics of acute appendicitis.

Particular features of acute appendicitis in children, aged people, pregnant women.

Peculiarities of clinical presentation in case of atypical localization of the appendix.

Complications of acute appendicitis: classification, clinical presentation, diagnostics and treatment of complications of acute appendicitis, their prevention.

Periappendiceal mass: clinical presentation, diagnostics, differential diagnostics, treatment.

Chronic appendicitis: classification, clinical presentation, diagnostics, principles of treatment, outcomes.

### **2.2. Acute pancreatitis**

Acute pancreatitis: definition, classification, etiology, pathogenesis, clinical presentation, diagnostics, differential diagnostics, principles of treatment.

Complications of acute pancreatitis: clinical presentation, diagnostics, treatment.

### **2.3. Chronic pancreatitis**

Chronic pancreatitis: definition, classification, etiology, pathogenesis, clinical forms, diagnostics, differential diagnostics, treatment (conservative and surgical), outcomes. Cysts, fistulas of pancreas.

### **2.4. Gallstone diseases. Acute and chronic cholecystitis**

Anatomy, physiology, methods of examination of hepatobiliary diseases. Clinical form of gallstone disease, diagnostics, complications, treatment.

Acute cholecystitis: classification, clinical presentation, diagnostics, differential diagnostics, treatment.

Chronic cholecystitis: clinical presentation, diagnostics, treatment.

Complications of cholecystitis: classification, pathogenesis, clinical presentation, diagnostics, special methods of examination, differential diagnostics, prevention and treatment.

Concept of postcholecystectomy syndrome, classification, tactics. Mistakes and dangers of hepatobiliary surgery, their causes, prevention and ways of treatment of complications.

Cholestasis syndrome: definition, clinical presentation. Classification, differential diagnosis of jaundice.

### **2.5. Acute intestinal obstruction**

Definition, classification, etiology, pathogenesis. Clinical presentation and diagnostics, differential diagnostics of different types of intestinal obstruction. Methods of examination of patients with different types of intestinal obstruction.

Differential diagnostics of paralytic and mechanical types of intestinal obstruction. Value of treatment-and-diagnostics complex in intestinal obstruction.

Modern principles of treatment of patients with intestinal obstruction, outcomes, prevention.

### **2.6. Complications of the gastroduodenal ulcers**

Perforated ulcer: clinical presentation, diagnostics, treatment.

Atypical perforation of gastric and duodenal ulcers: peculiarities of clinical presentation, diagnostics, treatment.

Bleeding gastroduodenal ulcer: clinical presentation, diagnostics, principles of conservative treatment, methods of endoscopic hemostasis, indications for surgical treatment, types of operations.

Diagnosis of gastroduodenal and colonic bleeding, differential diagnosis. Principles of medical treatment, indications for surgery.

Mallory-Weiss syndrome: etiology, clinical manifestations, diagnosis, treatment, surgical tactics.

Gastric outlet obstruction of ulcer etiology: pathogenesis, clinical presentation, diagnostics, principles of conservative and surgical treatment.

Penetrating and intractable ulcer: clinical presentation, diagnostics, treatment.

Indications for gastrectomy and organ-preserving operations in gastric and duodenal ulcers.

Clinical presentation, diagnostics and treatment of symptomatic ulcers (hormonal ulcers, Zollinger-Ellison syndrome, medicinal ulcers).

Postgastrectomy problems: classification, pathogenesis, clinical course, special methods of investigation, differential diagnosis of functional and mechanical disorders. Principles of medical treatment. Indication for surgery, preoperative examination, choice of procedure.

### **2.7. Blunt abdominal trauma**

Blunt abdominal trauma: definition, classification, mechanisms of abdominal traumas.

Injuries of anterior abdominal wall, hollow and solid abdominal organs, organs of retroperitoneal space: clinical presentation, diagnostics. Principles of conservative and surgical treatment.

Closed injuries of spleen: clinical presentation, diagnostics, surgical tactics.

### **2.8. Blunt chest trauma**

Classification. Mechanisms of injuries, pathogenesis, modern methods of diagnostics, differential diagnostics and treatment. Complications, indications for operations, types of surgery.

Rib fractures: clinical presentation, diagnostics, treatment.

Pneumothorax: causes, classification, clinical presentation, diagnostics and surgical tactics.

Hemothorax: causes, classification, clinical presentation, diagnostics and surgical tactics.

### **2.9. Peritonitis**

Anatomy, physiology of peritoneum. Causes, stages of pathogenesis, classification, syndrome diagnostics, differential diagnostics.

Modern principles of treatment of patients with peritonitis. Efferent methods of treatment of patients with peritonitis.

### **2.10. Hernias, complications of abdominal hernias**

Definitions, anatomy, causes, pathogenesis, classification. Clinical presentation, diagnostics and treatment of uncomplicated hernias.

Incarcerated hernia: definition, clinical presentation, diagnostics, treatment.

Postoperative hernias: causes, clinical presentation, diagnostics, treatment.  
Causes of recurrent hernias. Prevention of postoperative and recurrent hernia formation.

Inguinal hernias: classification, clinical presentation, diagnostics, differential diagnostics, surgical treatment.

White (Hunter's) line hernias: anatomical data, classification, clinical presentation, diagnostics, methods of operations.

Umbilical hernias: classification, clinical presentation, diagnostics, treatment.  
Peculiarities of treatment in children.

Femoral hernia: diagnostics, differential diagnostics, clinical presentation, surgical treatment.

Complications of the hernias (strangulation, inflammation of hernia, coprostasis (fecal impaction)): clinical presentation, diagnostics and treatment.  
Principles of surgical treatment.

Tactics of surgeon in case of suspected strangulation, spontaneous or forced reposition).

### **2.11. Focal liver lesions**

Modern methods of diagnostics of hepatobiliary diseases. Classification of focal liver lesions. Clinical presentation, diagnostics, differential diagnostics of focal liver lesions, principles of treatment.

Liver cysts and abscesses: etiology, clinical presentation, diagnostics, treatment.

### **2.12. Surgical treatment of parasitic diseases**

Hydatid disease of lung: etiology, clinical presentation, diagnostics, differential diagnostics, complications, treatment, prevention. Hydatid disease of liver: etiology, clinical presentation, diagnostics, differential diagnostics, complications, treatment, prevention.

### **2.13. Suppurative Diseases of the Lungs and Pleura**

Semiotics, clinical manifestation, special methods of investigation, diagnostics of the suppurative diseases. Treatment of abscess, gangrene, pyopneumothorax, bronchiectasis, chronic pneumonia, suppurated cyst, pleural empyema. Indications for surgery, type of operations.

Acute and Chronic Mediastinitis: classification of mediastinitis. Treatment principles for mediastinitis of different etiology. Mediastinal drainage rules and types.

### **2.14. Varicose disease**

Anatomy, physiology, special and functional methods of veins investigation. Classification. Etiology, pathogenesis, clinical manifestation, diagnostics and treatment of varicose disease of lower extremities. Medical treatment. Indications for surgery, types of operations.

Complications of varicose disease of lower extremities: clinical manifestations, diagnostics, principles of treatment.

Thrombophlebitis of superficial veins of lower extremities. Clinical manifestations, diagnostics, treatment.

Deep veins thrombosis: clinical manifestation, diagnostics, differential diagnosis, treatment.

Post-thrombotic syndrome: etiology, pathogenesis, clinical manifestation (by stage), classification. Methods of investigation. Principles of medical and surgical treatment.

Trophic calf ulcer: etiology and pathogenesis, clinical manifestation, differential diagnosis, treatment.

### **2.15. Portal Hypertension**

Definition. Classification. Causes, pathogenesis, special methods of investigation. Clinical picture, diagnostics, differential diagnosis, treatment. Indications for surgery, types of surgical procedures.

Complications of portal hypertension, their diagnosis and therapy. Emergent measures for bleeding from esophageal varicose veins.

### **2.16. Diabetes Mellitus in Surgery**

Management peculiarities of diabetic patients with emergent and chronic surgical pathology. Diabetic foot syndrome, clinical manifestation, diagnosis, treatment. Methods of surgical treatment for diabetes mellitus.

### **2.17. Management and diagnostics features in acute surgical diseases in ambulatory conditions**

Diagnostic abilities in ambulatory conditions. Features of management in acute surgical diseases in ambulatory conditions (at home, in polyclinic, in admission department).

### **2.18. Surgery of arteries diseases**

Aneurysms of the aorta and peripheral arteries. Etiology, pathogenesis, clinical manifestations, diagnostics, treatment.

Acute insufficiency of peripheral blood supply: thrombosis and embolism of peripheral arteries at different sites. Acute arterial obstruction syndrome. Clinical manifestations, diagnostics, grades of ischemia, principles of treatment.

Chronic arterial insufficiency. Pathogenesis, clinical manifestations, classification, diagnostics, differential diagnosis, treatment.

Arteriosclerosis obliterans, endarteritis obliterans: etiology, pathogenesis, clinical manifestations, diagnostics, differential diagnosis, principles of medical and surgical treatment of patients with low extremities occlusive diseases.

Raynaud's syndrome: Clinical manifestations and diagnosis, treatment.

### **2.19. Organs and tissues transplantation**

Definitions of: different types of transplantation, donor, recipient. Main innovations laying in basis of organs and tissues transplantation development. Ethical, legal, immunological aspects of transplantation.

### **2.20. Surgical diseases of small intestine and colon**

Crohn's disease: classification, clinical manifestations, diagnostics, complications, indications for surgical treatment, types of operations.

Ulcerative colitis. Short bowel syndrome. Diverticular disease: definition, clinical manifestations, diagnostics, principles of treatment.

Acute and chronic mesenteric ischemia: clinical manifestations, diagnostics, treatment.

Large bowel fistula: classification, clinical manifestations, diagnostics, treatment.

Foreign bodies of alimentary tract. Clinical manifestations, diagnostics, management.

Meckel's diverticulum: clinical importance.

### **2.21. Diseases of the rectum**

Topographic anatomy, methods of examination of the rectum. Classification of the diseases, etiopathogenesis, clinical manifestations, diagnostics and treatment of hemorrhoids, polyps, rectal prolapse, fistula-in-ano, anal fissure, perirectal abscess. Complications and mistakes in diagnostics, treatment.

### **2.22. Diseases of the esophagus and diaphragm**

Classification, pathogenesis, clinical manifestations, diagnostics and treatment of functional diseases, foreign bodies, injuries and tumors of the esophagus.

Chemical burn of esophagus: clinical manifestations, diagnostics, first aid.

Esophageal stricture: clinical manifestations, diagnostics, treatment.

Spontaneous esophageal rupture: clinical manifestations, diagnostics, treatment.

Hiatal hernias, diaphragmatic hernias, diaphragmatic paralysis. Clinical manifestations, complications and mistakes in diagnostics, differential diagnosis, treatment.

## **3. Traumatology and Orthopedics.**

### **3.1. General traumatology.**

Introduction to traumatology and orthopedics. History of its development. Modern achievements. Principles and methods of treatment of fractures. The definition of traumatology and orthopedics.

Development of traumatology and orthopedics in the Republic of Belarus. Organizational basis of trauma care.

Modern principles of treatment of fractures of long bones. Methods of treatment of bone fractures: conservative (non-surgical) and surgical treatment.

#### **3.1.1. Regeneration of bone tissue in normal and pathological conditions.**

Regeneration of bone tissue. Physiological and reparative regeneration. The stages of bone callus formation and its types. Primary and secondary healing of the bone.

Disorders of reparative regeneration of bone - delayed consolidation and false joint. Causes. Methods of treatment of nonunion.

#### **3.1.2. Multiple and combined injuries.**

Definition of the "polytrauma"; multiple, combined, associated injuries, their characteristics. Clinical features of polytrauma (syndrome of mutual burdening, incompatibility of therapy, acute complications of injuries - shock, massive blood loss, toxemia, acute renal failure, fat embolism, thromboembolism, etc.).

Emergency medical care at the prehospital stage of treatment: ways to identify life-threatening conditions, methods for their elimination in patients with trauma of

the musculoskeletal system (damage-control orthopedics); determining the severity of injury; detection of dominant injury.

Choice of methods of anti-shock therapy in patients with polytrauma. Novocain blockades, blood substitutes, anti-shock mixtures in the complex treatment of patients with polytrauma. Transport immobilization in patients with polytrauma. Characteristics of the hospital stage of treatment of patients with polytrauma.

Means, methods of anti-shock therapy at pre- and hospital stages of treatment. Methods of therapeutic immobilization in patients with multiple, combined and associated injuries. The choice of the optimal time and volume of surgical interventions.

Diagnosis, prevention and treatment of complications of injuries of the musculoskeletal system.

Features of the rehabilitation period in patients with polytrauma. Social, professional rehabilitation of patients who survived multiple, combined and associated injuries of the musculoskeletal system.

### **3.1.3. Open fractures.**

Occurrence and features of open fractures. Classification of open fractures. Clinical manifestations, diagnostics. Complications.

Principles of step-by-step treatment of victims with open fractures. Primary surgical treatment of wounds with open fractures. Indications for osteosynthesis and skeletal traction. Complications. Features of gunshot fractures.

### **3.1.4. Local and general complications in trauma.**

Classification of complications. Local complications: secondarily open fractures, damage to the main vessels and nerves, acute compartment syndrome, blisters. Prevention, diagnostics, the aid on pre-and hospital stages of treatment.

Wound infection of soft tissues, posttraumatic and postoperative osteomyelitis. Prophylaxis, diagnosis and treatment.

General complications in trauma. Traumatic shock. Pathogenesis, clinical manifestations, diagnosis. Prevention and treatment at pre- and hospital stages. Etiopathogenesis of fat embolism, forms (pulmonary, cerebral, generalized), clinical signs, diagnosis, prevention and treatment.

The main sources and predisposing factors of thromboembolism. Forms of thromboembolism. Clinical manifestations, diagnosis, prevention and treatment of thromboembolism. The main factors of development of renal failure in severe trauma. Clinical manifestations, diagnosis and treatment.

### **3.1.5. Rehabilitation of orthopedic and traumatological patients.**

Definition of the "rehabilitation". Basic principles of rehabilitation. Sections included in the content of rehabilitation. Goals of rehabilitation. Types of rehabilitation (medical, social or household and professional). Methods of rehabilitation of patients.

## **3.2. Local Traumatology.**

**3.2.1. Features of examination of patients with injuries and diseases of the musculoskeletal system.**

Types of positions of patients with pathology of the musculoskeletal system. Methods of determining the axis of the limb and spine. The main types of deformations of the axis of the limb and spine. Methods of palpation and percussion. Methods of determining the range of motions in the joints. Methods for measuring the length and circumference of the limbs. Types of limb shortening, ways to determine them. Deformations of the spine (scoliotic deformity, kyphosis, lordosis). Disorders of the gait (lameness, its types).

Absolute and relative clinical signs of fractures, dislocations. Types of displacement of bone fragments and methods for their determination. Reliable and probable signs of diseases of the joints and spine.

Special diagnostic methods in traumatology and orthopedics. Indications for their use. Methodology. Interpretation of received data. X-ray signs of fractures, dislocations and the most common orthopedic diseases.

### **3.2.2 Fractures of the clavicle and humerus.**

Fractures of the clavicle. Classification. The mechanism of injury. Mechanogenesis of fragments displacement. Clinical signs. Diagnostics. Treatment. Classification of injuries of the proximal metaepiphysis of the humerus.

Fractures of the surgical neck of the humerus. Classification. The mechanism of injury. Mechanogenesis of fragments displacement. Clinical signs. Diagnostics. Treatment.

Fractures of the diaphysis of the humerus. Classification. The mechanism of injury. Mechanogenesis of fragments displacement. Clinical manifestations. Diagnostics. Treatment.

Supracondylar and transcondylar fractures of the humerus: classification, mechanism of injury, mechanogenesis of fragments displacement. Diagnostics. Treatment. Complications (acute arterial insufficiency and Volkman's ischemic contracture).

### **3.2.3 Injuries of the elbow and forearm.**

Fractures of the olecranon: the mechanism of injury, diagnosis, methods of conservative and surgical treatment, indications for their use, timing of consolidation. Fractures of the coronoid process of the ulna: diagnosis, treatment.

Fractures of the head and neck of the radius: the mechanism of injury, clinical signs, diagnosis, treatment.

Fractures of the forearm bones, Galeazzi and Monteggia fracture-dislocations. Clinical manifestations, diagnosis and treatment.

Fractures of the diaphysis of the forearm bones: classification, mechanism of injury, mechanogenesis of fragments displacement. Diagnostics. Treatment.

Fracture of the radius in a typical place (Colles and Smith fractures): the mechanism of injury, clinical signs, diagnosis, treatment. Timing of fusion and recovery of work capacity.

### **3.2.4. Injuries of the hand, complications, prevention and treatment.**

Frequency of hand injuries, their structure. The medical and special importance of the hand injuries. Classification of hand injuries. Clinical manifestations, diagnosis and treatment of closed injuries.



Principles of treatment of open injuries. Principles of surgical treatment of damaged structures of the hand. Application of various types of dermal plastic. The concept of re-implantation and revascularization.

Fractures of the bones of the wrist (navicular, semilunar): clinical manifestations, diagnosis, conservative and surgical methods of treatment.

Injuries of the extensor's tendons of the fingers. Clinical manifestations, diagnostics. Conservative and operative treatment of extensor fingers.

Injuries of the flexor's tendons of the fingers. Clinical manifestations. Diagnostics. Principles of surgical treatment of injuries of flexor's tendons of fingers. Types of tendon sutures.

Fractures of metacarpal bones and phalanges of fingers: diagnostics, treatment.

### **3.2.5. Injuries of the pelvis.**

Classification of pelvic injuries. The mechanism of various types on injury. Clinical manifestations and diagnosis of complicated and uncomplicated fractures of pelvic bones. The first medical aid. Anti-shock therapy for pelvic fractures in the prehospital stage of care. Conservative and surgical methods for treating patients with various types of pelvic fractures.

### **3.2.6. Injuries of the spine.**

Classification of spine injuries. Isolated ligament injuries. Mechanism of injury, diagnosis, treatment. Fractures of transverse processes, arches and articular processes - diagnosis, treatment.

Vertebral body fractures: the mechanism of injury. Typical localization of injury, principles of diagnosis. Methods of treatment of uncomplicated fractures of vertebral bodies: conservative (functional, one-stage reposition, gradual reclination) and surgical methods of treatment. Methods of therapeutic immobilization with fractures of vertebral bodies. Timing of fusion of vertebral body fractures. Features of outpatient treatment of patients with uncomplicated vertebral fractures.

Diagnosis of complicated spine injuries. The volume of emergency medical care for patients with complicated spinal injuries. Modern methods of treatment of complicated vertebral fractures.

### **3.2.7 Femur fractures.**

Fractures of the femoral neck, features of bone regeneration in this area, diagnosis. Clinical signs. Complications. Surgical treatment. Treatment of valgus fractures (conservative, surgical).

Trochanteric fractures of the femur: the mechanism of injury, clinical manifestations, diagnosis, treatment methods.

Fractures of the diaphysis of the femur: classification, mechanism of injury, mechanogenesis of displacement of fragments depending on the level of fracture. Clinical manifestations, diagnostics, methods of treatment. Timing of fusion. Prophylaxis of possible complications. Out-patient management of patients with fractures of the femur.

### **3.2.8. Injuries of the knee, shin and foot.**

Patella fractures: fracture types and the mechanism of injury, clinical manifestations, diagnosis, treatment.

Fractures of the condyles of the tibia. The mechanism of injury, clinical manifestations, diagnosis, treatment. Meniscal tears. Classification. Clinical manifestations. The role and place of arthroscopy in the diagnosis and treatment of intraarticular injuries of the knee joint.

Ligamentous injuries of the knee joint: lateral and cruciate ligaments, a patellar ligament. Clinical signs. Diagnosis of injuries of ligaments of the knee joint.

Fractures of the diaphysis of the shin bones: the mechanism of injury. Clinical manifestations. Diagnostics. Treatment. Injuries of the ligaments of the ankle joint: diagnosis, treatment. Fractures of the ankles: classification, clinical manifestations, diagnosis, conservative and surgical methods of treatment.

Fractures of the calcaneus: the mechanism of injury, clinical manifestations, diagnosis, treatment. Fractures of metatarsal bones and phalanges of fingers. Dislocations of toes. Diagnosis, treatment.

### **3.2.9. Traumatic dislocations.**

Dislocations of clavicle, shoulder, forearm, hip, lower leg. Classification. The mechanism of injury. Clinical manifestations. First medical aid. Methods of correction. Treatment in the post-traumatic period. Prevention of complications.

Pronational subluxation of the head of the radius. The mechanism of injury. Clinical manifestations. Treatment.

## **3.3. Orthopedics**

### **3.3.1. Congenital hip dislocation.**

Etiology. Pathogenesis. Pathological anatomy. Degrees of developmental hip dysplasia and their characteristics. Clinical symptoms of congenital hip dislocation in newborns and children. Radiographic semiotics of different degrees of hip dysplasia.

Early detection of developmental hip dysplasia and treatment of children in the first year of life. Conservative (traction according to Mau) and surgical treatment of congenital dislocation of the femur in children and adolescents. Early detection of pathology in the maternity hospital. Preventive examinations of children. Organization of orthopedic assistance to children in the Republic of Belarus.

### **3.3.2. Congenital clubfoot.**

Occurrence. Etiology. Pathogenesis. Pathological anatomy. Clinical signs in different age groups. Treatment depending on the severity of the pathology and age of the child. Rehabilitation of patients.

### **3.3.3. Congenital muscular torticollis.**

Occurrence. Etiology. Pathological anatomy of various types of torticollis. Classification. Clinical signs. Treatment depending on the degree of severity, type of pathology, age of the child. Rehabilitation of patients.

### **3.3.4. Osteoarthritis.**

Etiology and pathogenesis of secondary osteoarthritis. Features of biomechanics of the hip and knee joints in norm and in osteoarthritis. Classification depending on the etiology and stage of the disease.

Clinical signs and diagnosis of osteoarthritis. Hip osteoarthritis. Knee osteoarthritis. Principles and methods of treatment of osteoarthritis depending on the etiology and stage of the disease development. Conservative methods of treatment.

Indications for surgical treatment of osteoarthritis. Methods of surgical treatment: corrective osteotomy of the pelvis, femur, tibia and their types, joint arthroplasty. An arthrodesis of the joints. Endoprosthetics of joints. Medical and professional rehabilitation of patients.

### **3.3.5. Disorders of posture. Scoliotic disease.**

Definition of the concept of "posture." Types of its violation. Diagnosis and prevention of postural disorders.

Scoliosis. Definition. Etiopathogenesis. Pathological anatomy. Classification. Clinical manifestations. X-ray diagnostics. Determination of the arc of scoliotic deformation according to Cobb and Ferguson-Risser. Changes in the cardiovascular and respiratory systems in patients with scoliotic disease. Signs of possible progression of spinal deformity. Modern conservative and surgical treatment. The role of boarding schools in the treatment of patients with scoliotic disease.

### **3.3.6. Bone tumors.**

Occurrence of bone tumors in children. Classification of bone tumors. Characteristics of malignant and benign tumors. Clinical manifestations of bone tumors.

Additional methods of examination in the diagnosis of bone tumors (X-ray, clinical laboratory, computer and magnetic resonance imaging).

Treatment of bone tumors. Medical and social rehabilitation of patients.

### **3.3.7. Osteochondropathy.**

Etiology, pathogenesis, pathological anatomy of osteochondropathies. Clinical manifestations of Leg-Calve-Perthes disease, Osgood-Schlatter disease, Keller I and II diseases, Scheuermann-Mau disease. X-ray diagnostics. Treatment. Prevention.

### **3.3.8. Static foot deformities.**

Etiology, pathogenesis of static foot deformities, types of deformity of the toes. Classification. Etiology and pathogenesis of longitudinal and transverse flatfoot and planovalgus foot. Clinical manifestations and methods of detecting of static foot deformities. Methods of treatment of a flatfoot.

Hallux valgus. Etiology and pathogenesis. Course of the disease. Methods of treatment.

Hammer toes. The causes of the development of hammer-shaped deformation of the toes. Clinical symptoms of hammer-shaped fingers. Principles of treatment. Indications for conservative and surgical methods of treatment.

## **4. ONCOLOGY**

### **4.1. Organization of oncological care.**

Oncological diseases, incidence and mortality in the World and the Republic of Belarus. Documentation, rules and terms of registration of oncological patient. Follow up period of oncological patients. Dispensary groups of oncological patients. Deontology in oncology. Methods of treatment of patients with malignant tumors. Rehabilitation of oncological patients after radical treatment. Prophylaxis of cancer.

### **4.2. Skin tumors**

Classification of skin tumors. Pigmented skin tumors. Classification of pigmented nevi. Metastasis of melanoma. Malignancy signs of pigmented nevi. Clinical picture of melanoma. Methods of diagnosis. Differential diagnosis. The principles of treatment. Prognosis. Prevention.

Classification of epithelial skin tumors. Incidence. Risk Factors, premalignant conditions. The histological types of skin cancer, their features. Clinical presentations. Methods of diagnosis. Differential diagnosis. Methods of treatment. Prevention.

### **4.3. Thyroid cancer**

Etiology of thyroid cancer. Epidemiology of thyroid cancer. Link thyroid cancer with Chernobyl disaster. Histologic forms of thyroid cancer. Clinical features of cancer. Biological features of various forms. Hereditary syndromes, correlation with separate forms of cancer. Diagnostic methods. Treatment. Types of surgical interventions at a thyroid cancer. Role of radioiodine therapy, its indications.

Differential diagnosis of a thyroid cancer with benign thyroid diseases. Medical tactics in nodal pathology and thyroid cancer.

### **4.4. Breast cancer and benign diseases of mammary gland**

Breast cancer - incidence, mortality. Clinical presentations of breast cancer. Skin symptoms of breast cancer. Metastases. Methods of diagnosis. Treatment. Breast cancer surgery. Chemotherapy and hormonal therapy. Early detection of breast cancer. Screening. Prevention.

Benign diseases of the mammary gland. Classification. Etiology of benign diseases of mammary glands. Diagnosis of tumors and tumor alike diseases of mammary glands.

Clinical presentations of diffusion and focal mastopathy. Treatment. Clinical presentations of fibroadenoma, filloid tumor. Treatment.

### **4.5. The tumors of the esophagus, stomach**

The etiology of esophageal cancer, precancerous diseases, risk factors. Metastasis of cancer of the esophagus. The clinical presentations. Diagnosis and differential diagnosis. Methods of treatment. Prevention.

The etiology of gastric cancer. Precancerous disease and risk factors. Metastasis of gastric cancer. The clinical presentations with depending of the type of tumor growth and localization. Complications of tumor, diagnostic methods. The rare gastric tumors. The differential diagnosis of neoplastic and non-neoplastic diseases. Methods of treatment. The reasons for late revealing of gastric cancer. Screening and early diagnosis of gastric cancer.

### **4.6. Colorectal cancer**

Precancerous diseases of the colon and rectum. Metastasis. Clinical presentations of a cancer of the colon and rectum depending on localization. Clinical forms of colon cancer. Diagnostics. Differential diagnosis. Complications of colorectal cancer. Methods of treatment. Causes of abandonment. Screening and early diagnosis. Prevention of colon and rectal cancer.

### **4.7. Lung cancer and mediastinum tumors**

Lung cancer causes, incidence, mortality. Lung cancer etiology. Premalignant conditions and risk factors. Histologic forms of lung cancer, specificity of growth and

metastases. Clinical presentations of lung cancer. Clinical and radiological forms of lung cancer.

Paraneoplastic syndromes. Diagnosis of lung cancer. Radiological signs of various forms of cancer of lung. Differential diagnostics. Treatment. Ways of early diagnostics and prevention of lung cancer.

Topography of mediastinum and classification of mediastinum tumors. Clinical presentations of mediastinum tumors. Groups of symptoms of mediastinum tumors. Diagnostics and differential diagnosis of mediastinal tumors. Principles of treatment of mediastinal tumors.

#### **4.8. Renal carcinoma and retroperitoneal tumors**

Renal tumors. Renal carcinoma. Incidence. Etiology. Features of distant metastasis. The clinical presentations of renal carcinoma. Methods of diagnosis, differential diagnosis. Principles of treatment.

Retroperitoneal tumors. Classification, morphological forms. Clinical presentations, diagnosis and treatment.

Classification of soft tissue tumors. Clinical presentations of benign tumors. Clinical presentations of soft tissue sarcomas. Diagnostics. Differential diagnosis. Principles of treatment.

#### **4.9. Lymphomas**

Lymphadenopathy classification. Lymphadenopathy benign and malignant. Clinical presentations of lymphomas (non-Hodgkin's, Hodgkin's lymphoma), metastases in the lymph nodes of the different tumors. Differential diagnosis of lymphadenopathy, diagnostic procedures. Treatment of malignant lymphomas.

#### **4.10. Liver (primary and metastatic) and pancreatic tumors**

Etiology of liver cancer, premalignant diseases and risk factors. Clinical presentations, diagnosis, differential diagnosis. The principles of treatment.

Pancreatic cancer, etiology, risk factors. Incidence. Mortality.

Clinical presentation of pancreatic tumors depending on different localizations in pancreas. Diagnosis of pancreatic cancer. Treatment.

## **5. QUESTIONS OF ADJACENT DISCIPLINES**

### **5.1. ANESTHESIOLOGY AND REANIMATOLOGY**

#### **5.1.1. Types of modern Anesthesia.**

Types of modern General Anesthesia (GA). Stages and clinical signs of GA. Types of modern inhalation and noninhalation anesthetics.

Types of Local Anesthesia: topical, infiltration, regional anesthesia. Epidural and Spinal anesthesia. Indications, contraindications. Complications, their prevention and treatment.

#### **5.1.2. Preparation for anesthesia.**

Preoperative patients' physical status assessment. Anesthetic technique choice. The objectives of premedication. Drugs for premedication.

**5.1.3. Methods of the patient's monitoring applied in anesthesiology and intensive care.**

Methods of the patient's condition objective control, applied in anesthesiology and intensive care.

#### **5.1.4. Resuscitation and intensive care in the early postoperative period**

The basic forms of acid-base balance disorders, pathophysiology. Clinical manifestations, correction principles.

The main types of water and electrolyte balance disorders, pathophysiology. Clinical signs, intensive therapy.

#### **5.1.5. Terminal conditions. Cardio-pulmonary resuscitation (CPR)**

Terminal conditions. Pathologic physiology and clinical signs. Main principles and ways of Basic Life Support (BLS). Main principles of Advanced Life Support (ALS). Drugs used during cardiac arrest treatment. Routes for drug delivery. Methods of cardiac defibrillation. Criteria for CPR cessation. Clinical signs of 'brain death'. Post-Cardiac Arrest Syndrome: pathologic physiology, intensive care. Coma. Classification. Intensive therapy of patients in coma.

#### **5.1.6. Intensive therapy of Acute Circulatory Disorders**

Shock. Classification of shock, pathophysiology, principles of diagnostics and intensive therapy. Cardiogenic shock. Pathophysiology, principles of diagnostics and intensive therapy. Hypovolemic shock. Pathophysiology, diagnostics and intensive therapy. Anaphylactic shock. Pathophysiology, diagnostics and intensive therapy. Septic shock. Pathophysiology, diagnostics and intensive therapy.

#### **5.1.7. Intensive therapy of Acute Respiratory Failure (ARF)**

Acute Respiratory Failure. Definition, classification, types and pathophysiology of acute respiratory failure (ARF). Principles of ARF treatment.

Methods of oxygen therapy. Indications and technique. Methods of mechanical ventilation. Indications and technique.

#### **5.1.8. Sepsis**

Sepsis. Classification (systemic inflammatory response syndrome, sepsis, septic shock). Clinical criteria for diagnosis. Intensive therapy. Application of methods of extracorporeal detoxification in sepsis.

#### **5.1.9. Acute poisoning**

General principles of acute poisoning treatment. Specific features of various acute poisoning treatment.

## **5.2. UROLOGY**

5.2.1. Acute renal failure (ARF): Types, causes (aetiology), clinical presentations, treatment.

5.2.2 Chronic renal failure (CRF): aetiopathogenesis, stages, treatment methods.

5.2.3. Acute urinary retention. Causes, investigations, First aid algorithm (initial management algorithm).

5.2.4. Macrohematuria (Gross hematuria). Types, Causes (aetiology), Topical and differential diagnosis. Physician's (Doctor's) tactics during hematuria.

5.2.5. Renal colic: Aetiology, pathogenesis, investigations, differential diagnosis. Algorithm for the management of renal colics.

5.2.6. Acute pyelonephritis. Classification. Clinical presentations. Investigations (diagnosis). Treatment.

5.2.7. Chronic pyelonephritis. Classification. Causes, clinical presentations, Investigations, treatment, prophylaxis (prevention) of relapses.

5.2.8. Paranephritis. Aetiology. Clinical presentations. Investigations (diagnosis). Treatment.

5.2.9. Vesicoureteral reflux. Aetiology, pathogenesis, grades (stages), clinical presentation and investigations (diagnosis). Choice of conservative and surgical management (treatment). Types, indications and methods of antireflux procedures (operations).

5.2.10. Acute epididymo-orchitis: clinical presentations, investigations (diagnosis), management (treatment).

5.2.11. Prostatitis: classifications, symptoms, investigations (diagnosis), treatment.

5.2.12. Urinary tract stones (urinary calculi, Urolithiasis), aetiology, pathogenesis. Theories of stone formation. Risk factors or mechanism of stone formation. Investigations (diagnosis).

5.2.13. Urinary tract stones. Conservative and surgical management. Types of surgical managements (Treatments).

5.2.14. Testicular tumors. TNM Classification. Nonseminomas and germ cell testicular tumors. Treatment methods. Prognosis.

5.2.15. Benign prostatic hyperplasia (BPH). Pathogenesis. Clinical presentations. Investigations (diagnosis). Management (treatment).

5.2.16. Testicular and scrotal injury (trauma), mechanism of trauma, methods of investigation, initial management, features of surgical managements.

5.2.17. Hydrocele, spermatic cord cyst. Clinical presentations. Treatment.

5.2.18. Cryptorchidism. Clinical presentation. Investigations (diagnosis). Conservative and surgical management (treatment).

5.2.19. Prostate cancer. Frequency. Investigations (diagnosis). Role of tumor markers and other special investigative methods in the diagnosis of prostate cancer. Treatment.

5.2.20. Renal anomalies, classifications. Methods of investigations (diagnosis). Choice of conservative and surgical management.

5.2.21. Hydronephrosis. Classification, causes, stages (grades), main symptoms of hydronephrosis. Indications for surgical management (treatment).

5.2.22. Phimosis and paraphimosis. Clinical presentations, investigations (diagnosis), indications for surgical management (treatment). Emergency management of paraphimosis.

5.2.23. Renal (kidney) injury: classification, clinical presentations, investigations (diagnosis), treatment methods. Indications for surgical management (treatment).

5.2.24. Acute scrotum in children. Definition. Investigations (diagnosis). Treatment.

5.2.25. Anuria, its types. Causes. Emergency management. Differential diagnosis between acute urinary retention and anuria.

5.2.26. Traumatic injury of the urinary bladder. Main mechanisms of injury during intra – and extraperitoneal urinary bladder damage. Classification. Investigations (diagnosis). Management.

5.2.27. Imaging (X-Ray) studies in urology. Principles of patient's preparations for various imaging (X-Ray) studies in urology. Types of imaging (X-Ray) studies methods, principles of implementation. Radiocontrast agents used in urology.

5.2.28. Radioisotope and ultrasound methods of investigations used in urology. Their diagnostic relevance.

5.2.29. Urinary bladder tumors. Risk factors for bladder tumors. Endogenous and exogenous carcinogens. TNM classification. Recurrence and metastasis. Clinical presentations. Investigations (diagnosis). Treatment options, urinary diversion.

5.2.30. Qualitative and quantitative changes in urine and their diagnostic relevance in urological disease.

5.2.31. Lower urinary tract symptoms. Common causes. Types of obstructive and irritative symptoms with presenting complain.

5.2.32. Digital rectal examination (DRE) in urologic patients. Differentiate normal DRE findings and abnormal.

### **5.3. NEUROSURGICAL DISEASES**

5.3.1. Classification of traumatic brain injury.

5.3.2. Mild traumatic brain injury: clinical features, diagnosis, treatment.

5.3.3. Moderate brain injury: clinical features, diagnosis, treatment.

5.3.4. Fractures of the roof and base of the skull. Clinic, diagnostics, treatment.

5.3.5. Severe traumatic brain injury. Clinic, diagnostics, principles of treatment.

5.3.6. Traumatic brain compression: clinical features, diagnosis, treatment.

5.3.7. Brain contusion mild, moderate and severe: clinical features, diagnosis, treatment.

5.3.8 Diffuse axonal injury: the biomechanics of injury, pathogenesis, clinical manifestations, diagnosis, treatment principles.

5.3.9 Epidural hematoma (stage, clinical picture, diagnosis, treatment).

5.3.10 Subdural hematoma (stage, clinical picture, diagnosis, treatment).

5.3.11 Traumatic and spontaneous intracerebral hematoma: clinical, surgical treatment principles.

5.3.12 Brain abscesses: etiology, clinical features, differential diagnosis, treatment.

5.3.13. Classification of brain tumors.

5.3.14. Neuro-ectodermal brain tumors: clinical, treatment principles.

5.3.15 Arterial (saccular) aneurysm of the brain. Periods, clinical picture, diagnosis, treatment principles.



## INFORMATION AND METHODOLOGICAL UNIT

### LITERATURE

#### **Basic literature:**

1. Alekseev, S.A. Surgical diseases: practice book/manual / S.A.Alekseev, D.V.Narezkin. – Minsk; Smolensk: Svitok, 2019. – 304 p. - Библиогр.: с. 301.
2. General surgery: textbook / ed. by S. D. Khimich, M. D. Zheliba. – Kyiv ; AUS Medicine Publishing. 2019. – 534 p.
3. Godwin Iwegbu. Orthopedics and trauma for medical students and junior residents. AuthorHouse. Indiana, US. 2012. 389 p.
4. Oncology national guidelines / V.N.Chissov, M.I.Davydov. - M. Media, 2017.-624 pages
5. Sabiston textbook of surgery : the biological basis of modern surgical practice / [ed. by] Courtney M. Townsend [et al.]. - 20th ed. - [Philadelphia] : Elsevier, 2017. – 2146 p.
6. Schwartz's principles of surgery / [ed. by] F. Charles Brunicaudi [et al.]. - 11th ed. - [New York] McGraw-Hill, 2018. – 3106 p.
7. Бушма, К.М. Основы анестезиологии = Basics of anesthesiology : учеб. пособие для иностр. студентов учреждений высш. образования по спец. "Лечебное дело" / Бушма, Кирилл Михайлович, Ржеутская, Рита Евгеньевна. - Минск : Новое знание, 2020. - 111 с.
8. Кулеш С.Д. Неврология и нейрохирургия: пособие для студентов факультета иностранных учащихся / = Neurology and neurosurgery : tutorial for students of the faculty of foreign students / - Гродно : ГрГМУ, 2016. - 488 с.


#### **Additional literature:**

14. Ansaloni L, Pisano M, Coccolini F, et al. 2016 WSES guidelines on acute calculous cholecystitis [published correction appears in World J Emerg Surg. 2016 Nov 4;11:52]. World J Emerg Surg. 2016;11:25. Published 2016 Jun 14. doi:10.1186/s13017-016-0082-5
15. Birindelli, Arianna et al. “2017 update of the WSES guidelines for emergency repair of complicated abdominal wall hernias.” World journal of emergency surgery : WJES vol. 12 37. 7 Aug. 2017, doi:10.1186/s13017-017-0149-y
16. Björck, M., Koelemay, M., Acosta, S., Bastos Goncalves, F., Kölbel, T., Kolkman, J. J., . . . Verzini, F. (2017). Editor's choice – management of the diseases of mesenteric arteries and veins: Clinical practice guidelines of the european society of vascular surgery (ESVS). European Journal of Vascular and Endovascular Surgery, 53(4), 460-510. doi:10.1016/j.ejvs.2017.01.010
17. Di Saverio S, Birindelli A, Kelly MD, et al. WSES Jerusalem guidelines for diagnosis and treatment of acute appendicitis. World J Emerg Surg. 2016;11:34. Published 2016 Jul 18. doi:10.1186/s13017-016-0090-5
9. Essential surgery: problems, diagnosis and management / Quick C. R. G. [и др.]. - 5 th ed. – Elsevier. – 2014.
10. Essentials of general surgery / Peter F.Lawrence [et. al.]. 5th ed. Philadelphia [etc.] : Wolters Kluwer : Lippincott Williams & Wilkins, 2013. – 586 p.

18. Gorter RR, Eker HH, Gorter-Stam MA, et al. Diagnosis and management of acute appendicitis. EAES consensus development conference 2015. *Surg Endosc.* 2016;30(11):4668–4690. doi:10.1007/s00464-016-5245-7
19. Greenfield's Surgery: Scientific Principles & Practice / Michael W. Mulholland [et. al.]. 5th ed., 2010. 2074 p.
20. HerniaSurge Group (2018). International guidelines for groin hernia management. *Hernia : the journal of hernias and abdominal wall surgery*, 22(1), 1–165. doi:10.1007/s10029-017-1668-x
21. Lavery, L. A., Davis, K. E., Berriman, S. J., Braun, L., Nichols, A., Kim, P. J., Attinger, C. (2016). WHS guidelines update: Diabetic foot ulcer treatment guidelines. *Wound Repair and Regeneration : Official Publication of the Wound Healing Society [and] the European Tissue Repair Society*, 24(1), 112-126. doi:10.1111/wrr.12391
11. Martha M. Murray, Patrick Vavken, Braden Fleming. Selected References in Trauma and Orthopedics. Springer New York Heidelberg Dordrecht London, 2013, 330 p.
12. Oxford handbook of neurology/Manji, Hadi [и др.]. - 2ed. - New York: Oxford University Press, 2015. - 623 p. - Оксфордское руководство по неврологии.
22. Sartelli M, Catena F, Abu-Zidan FM, et al. Management of intra-abdominal infections: recommendations by the WSES 2016 consensus conference. *World J Emerg Surg.* 2017;12:22. Published 2017 May 4. doi:10.1186/s13017-017-0132-7
23. Silen W: Cope's early diagnosis of the acute abdomen, ed 22, New York, 2010, Oxford University Press. 340
13. Алексеев С.А. Хирургические болезни. Практикум = Surgical diseases. Practice book: учеб. пособие для иностр. студентов учреждений высш. образования по спец. «Стоматология», «Медико-профилактическое дело». - Минск: Вышэйш. шк., 2020. – 222 с.

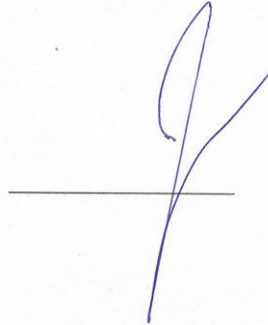
**COMPILERS:**

Dean of Faculty of General  
Medicine, Educational Institution  
«Belarusian State Medical  
University», Professor



A.I. Volotovski

Head of the Department of Surgery  
and Transplantology, Educational  
Institution «Belarusian State Medical  
University», Professor



O.O. Rummo

Associate Professor of the  
Department of Surgery and  
Transplantology, Educational  
Institution «Belarusian State Medical  
University», PhD



A.V. Plandovski

Associate Professor of the  
Department of Surgery and  
Transplantology, Educational  
Institution «Belarusian State Medical  
University», PhD



S.U. Yakubouski