MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
Educational Institution
«BELARUSIAN STATE MEDICAL UNIVERSITY»

Контрольный экземпляр

APPROVED
by Rector of the Educational Institution «Belarusian State Medical University»
_____ S.P.Rubnikovich
26.06.2025
Reg.# UD-0911-01-48/2526/edu.

UROLOGY

Curriculum of the educational institution in the academic discipline for the specialty

1-79 01 01 «General Medicine»

2025

Curriculum is based on the educational program «Urology», approved 26.06.2025, registration # УД-0911-01-48/2526/уч.; on the educational plan in the specialty 1-79 01 01 «General Medicine», approved 16.04.2025, registration # 7-07-0911-01/2526/mf.

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RECOMMENDED FOR APPROVAL:

by the Department of Urology and Nephrology with a course of advanced training and retraining of the Educational Institution «Belarusian State Medical University»
(protocol # 9/4 of 30.04.2025);

by the Scientific and Methodological Council of the Educational Institution «Belarusian State Medical University»
(protocol #10 of 26.06.2025)

EXPLANATORY NOTE

«Urology» is an academic discipline of the Surgical Module 3, containing systematized scientific knowledge about diseases of the urinary system in women, urinary system and genital organs in men, methods of their treatment and prevention.

The aim of the academic discipline «Urology» is to form specialized competence for constructing a clinical diagnosis based on knowledge of the pathogenesis of diseases of the urinary system in women, diseases of the urinary system and male genital organs, methods of their diagnosis, treatment and prevention.

The objectives of the academic discipline «Urology» are to form in students scientific knowledge about the etiology and pathogenesis of urological diseases; risk factors for the occurrence of the most common urological diseases and their prevention; causes and mechanisms of complications of urological diseases; skills and abilities necessary for:

examining patients with urological diseases;

interpreting the results of laboratory and instrumental research methods;

making a diagnosis;

diagnostics and differential diagnostics of acute conditions and diseases of the urinary system and male reproductive system;

treatment and outpatient follow-up care with urological diseases

diagnosis and provision of medical care in emergency urological conditions;

development of clinical thinking in accordance with the standards of medical ethics and deontology.

Connections with other academic disciplines

The knowledge, skills and abilities obtained in the study of the academic discipline «Urology» are necessary for the successful study of the following academic disciplines: «Surgical Diseases», «Oncology», «Traumatology and Orthopedics»; «Internal Medicine», «Urology» of sub-residency profile.

A student who has mastered the content of the academic material of the academic discipline must have the following specialized competence: diagnose and provide primary and specialized medical care for surgical and urological diseases and the most common malignancies.

As a result of studying the academic discipline «Urology», the student should know:

etiology, pathogenesis, clinical manifestations of urological diseases;

pharmacological properties of drugs used in urology;

rules of medical ethics and deontology;

methods of diagnosis, treatment, prevention and rehabilitation, clinical protocols for examination and treatment of patients with urological diseases;

causes and mechanisms of complications, as well as methods of their diagnosis, treatment, prevention in patients with urological diseases;

criteria for recovery of patients with urological diseases;

principles of clinical examination of patients with urological diseases;

be able to:

conduct communicative interaction;

conduct an objective examination of the urinary system in men and women and the reproductive system in men;

draw up a plan for diagnostic search and treatment in urological pathology;

interpret the results of the main and additional research methods in urological diseases;

establish a diagnosis and provide emergency medical care, determine the tactics of providing medical care for the most common urological diseases;

perform bladder catheterization with an elastic catheter in case of acute urinary retention;

organize care for patients with total urinary incontinence, permanent cystostomy, nephrostomy, ureterocutaneostomy, urinary retention syndrome requiring systematic bladder catheterization;

assess the condition of the prostate gland using a digital rectal examination;

prepare medical documentation;

master:

the technique of bladder catheterization with an elastic catheter in case of acute urinary retention;

methods and ways of caring for patients with total urinary incontinence, permanent cystostomy, nephrostomy, ureterocutaneostomy, urinary retention syndrome requiring systematic bladder catheterization;

the technique of performing subcutaneous, intramuscular and intravenous injections;

the technique of palpating the patient's kidneys in a lying and standing position;

the technique of palpation and percussion of the bladder;

the technique of examining the scrotum organs;

the technique of performing a digital rectal examination of the prostate gland.

Total number of hours for the study of the academic discipline is 108 academic hours, including 54 classroom hours and 54 hours of student independent work. Classroom hours according to the types of studies: lectures – 9 hours (including 3 hours of supervised student independent work (SSIW)), practical classes – 45 hours.

Intermediate certification is carried out in accordance with the curriculum for the specialty in the form of a credit (10th semester).

Form of higher education - full-time.

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

Code, name of the specialty	Semester	Total number of academic hours	Number of classroom hours				Out-of-class self-studies	Form of intermediate assessment
			Number of classroom hours	including				
				class lectures	SSIW	practicals		
1-79 01 01 «General Medicine»	10	108	54	6	3	45	54	Credit

THEMATIC PLAN

Section (topic) name	Number of class hours	
	lectures (incl. SSIW)	practical
1. Introduction to the discipline «Urology». Signs and symptoms of genitourinary diseases. Examination of a patient with urological pathology	3	6
2. Non-specific inflammatory diseases of the genitourinary system	-	6
3. Urolithiasis	3	6
4. Anomalies of the kidneys and urinary tract. Nephroptosis	-	6
5. Injuries (trauma) of the urogenital system	-	6
6. Neoplasms of the genitourinary organs	1,5	5
7. Benign prostatic hyperplasia	1,5	5
8. Prostate cancer	-	5
Total hours	**9**	**45**

CONTENT OF THE EDUCATIONAL DISCIPLINE

1. Introduction to the academic discipline «Urology». Signs and symptoms of genitourinary diseases. Examination of a patient with urological pathology

History of the development of urology in the Republic of Belarus. Current state, structure of the urological service and organization of urological care for the population of the Republic of Belarus.

Topographic anatomy and clinical physiology of the kidneys and urinary tract

Skeletotopy and syntopy of the kidneys, ureters, bladder. The structure of the kidneys and organs of the urinary and reproductive systems in men. Topographic anatomy of the retroperitoneal space. Cellular spaces of the pelvis. Topography of the renal hilum. Testicular membranes (tunics).

The kidney as an organ of homeostasis. Function of the renal glomeruli and renal tubules. The mechanism of urine formation (filtration, reabsorption, secretion). Countercurrent-multiplier tubular system of the kidney. Physiology of the upper urinary tract, bladder, urethra.

Symptoms of urological diseases

Pain, pathogenesis, localization and nature of pain in diseases of the kidneys, bladder, prostate gland, urethra, scrotum organs. Possible irradiation and special nature of pain in renal colic. Causes of renal colic.

Urination disorder (dysuria)

Types of dysuria: frequent (pollakiuria), painful, difficult (stranguria) urination, nocturia, nocturia. Acute and chronic urinary retention (ischuria), paradoxicalischuria, imperative urges. Urinary incontinence and urinary incontinence, nocturnal urinary incontinence (enuresis).

Quantitative changes in urine

Polyuria, opsuria, oliguria, anuria (prerenal, renal, subrenal, arenal). Differential diagnostics of anuria and ischuria.

Qualitative changes in urine

Physical properties of urine: color, transparency, odor. Causes of changes in the physical properties of urine. Leukocyturia, erythrocyturia (hematuria) and their types. Bacteriuria and its types. Density and osmolality of urine. Hypersthenuria, hyposthenuria, isosthenuria. Proteinuria and its types. Normal urine reaction and its changes.

Examination of a patient with urological pathology

General clinical research methods. Collection of complaints, anamnesis. Examination of the patient. Palpation of the urinary system. Palpation of the scrotum and penis. Digital rectal examination.

Laboratory research methods

Complete blood count and biochemical blood tests. Urinalysis. Microscopy of urine sediment. Methods of collecting urine for research. Features of urine collection in children and women.

Methods of quantitative assessment of formed elements of blood in urine: according to Nechiporenko, Addis-Kakovsky, Ambyurge. Three-glass test.

Bacteriological studies of urine. Study of uroculture for sensitivity to antimicrobial drugs.

Biochemical study of urine. Immunochemical studies of proteins in urine. Detection of atypical (cancer) cells in urine and their importance in the diagnosis of oncourological diseases.

Evaluation of the functional state of the kidneys

Determination of the daily amount of urine. Methods for determining diuresis. Factors affecting diuresis. The importance of dynamic determination of the relative density of urine: Zimnitsky test. Dilution and concentration tests. Determination of the content of nitrogen compounds in the blood. Rehberg-Tareev test (glomerular filtration rate - GFR). Other formulas for calculating the glomerular filtration rate (Cockcroft-Gault, Schwartz, MDRD). Provocative tests.

Ultrasound examination methods

Scanning of the genitourinary system. Transrectal examination of the genitourinary system. Load tests, blood flow study during ultrasound examination of the genitourinary system. The use of ultrasound scanning in urological operations and manipulations (puncture biopsy, emptying of cysts, hematomas, puncture installation of drainage under ultrasound control).

X-ray examination methods

Plane urography (kidney, ureter and bladder (KUB) X-ray). Interpretation of KUB X-ray, conditions and rules for implementation. Descriptions of musculoskeletal structures, kidney skeletotopy, images of pathological structures in the projection of the kidneys and urinary tract. Excretory urography: indications, features and methods of patient preparation, technique of performance. Interpretation of excretory urograms and their description. Contraindications to excretory urography. Contrast agents used in urology, their classification, doses and routes of administration. Complications and adverse reactions of the use of contrast agents, emergency care in the event of complications.

Antegrade ureteropyelography. Percutaneous puncture pyeloureterography using previously installed drainage: indications, contraindications, complications. Interpretation of radiographs. Possible complications of the study and their prevention.

Retrograde ureteropyelography: technique, indications, contraindications. Interpretation of radiographs. Possible complications of the study and their prevention.

Angiography in urology. The essence of the method of contrasting the renal arteries and veins. Indications and contraindications for renal arterio- and venography. Possible complications and their prevention. Angiographic signs of tumors, cysts and other space-occupying lesions in the kidneys. Angiographic signs of renal artery stenosis, nephrosclerosis, hydronephrosis.

Principles of endovascular interventions in urology: embolization of the renal and internal iliac arteries, balloon dilation of arterial stenoses. Embolization of the testicular, ovarian and adrenal veins.

Cystography: the essence of the study, indications and contraindications, technique. Modifications of cystography: descending, retrograde, micturating (voiding cystourethrogram). Rules of antiseptic during cystography.

Urethrography: types of urethrography, technique, indications, contraindications. Interpretation of radiographs. Possible complications of the study and their prevention.

Computed tomography (CT): kidneys, bladder, prostate. Native, with contrast, excretory phase. Magnetic resonance imaging (MRI) in the diagnosis of urological diseases. The essence of CT and MRI methods. Spiral CT. Indications and contraindications for the use of tomography. Diagnostic significance of the methods used.

Radionuclide diagnostics. Scintigraphic studies in urology

The principle of the radionuclide diagnostic method. Types of scintigraphy, drugs used. Indications for dynamic nephroscintigraphy (DNSG). Indications for static nephroscintigraphy (SNSG). Contraindications for SNSG. Pharmacological stress tests. Interpretation of SNSG results. Features of implementation in pediatric patients.

Renal radiography (Radioisotope renography). The principle of the method. Pharmacological stress tests. Indications and contraindications for renography. Evaluation of the results of the study.

Instrumental and endoscopic research methods

Catheters, bougies, stomy sets: purposes and technique of their use.

Urethroscopy: instrumentation and technique of implementation, indications and contraindications for urethroscopy.

Cystoscopy: instrumentation and technique of implementation, indications and contraindications. Cystoscopic picture in norm and in pathology. Chromocystoscopy. Ureteral catheterization: diagnostic and therapeutic value. Indications and contraindications. Dangers and complications of ureteral catheterization.

Uretero-, pyelo-, nephroscopy: instrumentation and technique, indications and contraindications for uretero-, pyelo-, nephroscopy.

Urodynamics: uroflowmetry, cystomanometry, electromyography of the pelvic floor muscles. Profilometry of the urethra. The concept of a biological feedback program (biofitbac).

Endoscopic operations in urology: laparoscopic operations on the genitourinary system, vesicoscopic operations, transurethral operations, endolithotripsy.

Extracorporeal shock wave lithotripsy.

2. Non-specific inflammatory diseases of the genitourinary system

Cystitis: classification, etiology and pathogenesis. Acute and chronic cystitis: etiology, routes of infection penetration into the bladder. Pathogenesis of microbial inflammation in the bladder. Types of infection. Factors contributing to the development of cystitis (local and general). Symptoms of cystitis. Diagnosis of acute and chronic cystitis. Features of symptoms and diagnosis of cystitis in newborns, school-age children and adolescents, treatment, prevention.

Pyelonephritis: definition, classification, etiology and pathogenesis. Pathways of infection penetration into the kidney. Acute complicated and uncomplicated

pyelonephritis. Obstructive and non-obstructive pyelonephritis. Pathomorphological forms of acute pyelonephritis (serous, purulent, necrotic papillitis).

Clinical manifestations and diagnosis of acute pyelonephritis, symptoms, complications. Physical examination: inspection, palpation. Instrumental diagnostic methods: ultrasound, SNSG, X-ray examination (excretory urography, CT), MRI. Endoscopic diagnostic methods. The importance of timely diagnosis of acute purulent forms of pyelonephritis.

Treatment of acute pyelonephritis. Principles of treatment of acute complicated and uncomplicated pyelonephritis. Peculiarities of management for acute pyelonephritis in pregnant women. Indications and principles of surgical treatment of pyelonephritis. Methods of emergency restoration of urine outflow from the kidney: ureteral catheterization, stent placement, nephrostomy. Principles of treatment of patients who have undergone surgery for acute pyelonephritis. Bacteriotoxic shock: etiology, pathogenesis, emergency measures. Chronic pyelonephritis: classification, symptoms, diagnostic methods, treatment (the importance of restoring urine passage, antibacterial therapy), duration of treatment. Outcomes of chronic pyelonephritis (secondary shrunken kidney, pyonephrosis). Paranephritis: symptoms, diagnostics, treatment.

Epididymitis, orchitis: etiology and pathogenesis, routes of infection, types of infection. Treatment of epididymitis, orchitis: conservative, surgical treatment. «Acute scrotum» syndrome in children, differential diagnosis, treatment tactics.

Urethritis: etiology and pathogenesis, classification, types of pathogens. Specific and non-specific urethritis: symptoms. Diagnosis of urethritis: clinical, laboratory, bacteriological. Possible complications of urethritis. Treatment of urethritis and its complications.

Prostatitis: etiology and pathogenesis, classification, symptoms. Diagnostics of prostatitis (laboratory, instrumental). Treatment of prostatitis. Indications and contraindications for prostate massage. Prognosis of acute and chronic prostatitis. Prostate abscess. Types of surgical treatment.

Vesiculitis: etiology and pathogenesis, classification, clinical signs, diagnostics and treatment.

Balanitis, balanoposthitis: causes and chronicity of the process. Diagnostics of balanoposthitis, treatment. Phimosis as a cause of balanoposthitis. Features of hygiene in newborns, school-age boys and adolescents, adult men.

Other, rarer, non-specific inflammatory diseases of the genitourinary organs: Ormond's disease, cavernitis, Fournier's disease.

General principles of drug therapy for diseases of the genitourinary system. Complications during antibiotic therapy in patients with a urological profile.

Patient supervision: collection of complaints and anamnesis (history) of the disease; objective (physical) examination; drawing up an examination plan, interpreting the results of laboratory and instrumental examination methods; making a diagnosis; drawing up a treatment plan.

3. Urolithiasis

History of the study of the kidney stone disease. Frequency of urolithiasis among kidney and urinary tract diseases, prevalence among the population of different climatic and geographical zones in the world and in the Republic of Belarus.

Etiology and pathogenesis of urolithiasis. Theories of stone formation. The role of infection, passage disorders, urine reaction, pyelonephritis, metabolic disorders (deficiency of vitamins A, B and C, excess vitamin D), hyperparathyroidism, prolonged immobilization, functional disorders of the liver and gastrointestinal tract, climate and dietary characteristics, drinking water in the genesis of nephrolithiasis.

Changes in the kidneys and urinary tract caused by impaired passage of urine as a result of complete or partial occlusion by a calculus, against the background of pyelonephritis, chronic renal failure.

Morphology and chemical composition of stones (urates, phosphates, carbonates, oxalates, cystine, cholesterol and protein stones), modern mineralogical classification.

Kidney and ureter stones: symptoms, diagnostic methods for kidney and ureter stones.

Renal colic: definition, etiology and pathogenesis of renal colic, clinical manifestations and diagnostics. Differential diagnostics of renal colic with acute diseases of abdominal organs, neurological diseases, cardiovascular diseases. Diagnostic value of primary screening: general urine and blood tests, ultrasound of the urinary system, plane abdominal urography, dynamic nephroscintigraphy (radionuclide renography). Possible complications of renal colic (acute pyelonephritis or exacerbation of chronic pyelonephritis, hydronephrotic transformation, etc.). Treatment of renal colic: conservative, use of drugs, installation of stents (external and internal), nephrostomy.

Diagnostics, methods of treatment of metaphylaxis in urolithiasis

Ultrasound, X-ray diagnostics, CT, MRI, DNSG, radioisotope renography. Indications and contraindications for conservative and surgical treatment of kidney and ureter stones. Principles of stone-expulsion and litholytic therapy. Types of surgical treatment for urolithiasis. Extracorporeal and contact lithotripsy, nephrolapaxy, lithoextraction and open operations in surgical treatment of kidney and ureter stones. Dietary nutrition and drug prevention of recurrent stone formation. Metaphylaxis of urolithiasis.

Bladder and urethral stones: primary and secondary bladder and urethral stones. The role of urodynamic disorders and infection in the formation of stones in the bladder. Clinical symptoms and diagnostics of stones in the bladder and urethra (ultrasound, endoscopic and X-ray diagnostics), treatment, types of surgical treatment, indications and contraindications for various surgical treatment methods. Prevention of stone formation in the bladder. Patient care: collection of complaints and anamnesis of the disease; objective examination; drawing up an examination plan, interpretation of the results of laboratory and instrumental examination methods; diagnosis; drawing up a treatment plan.

4. Anomalies of the kidneys and urinary tract. Nephroptosis

Prevalence of anomalies in the development of the kidneys, urinary tract and male genital organs. Embryological data on the development of the kidneys and upper urinary tract. Clinical significance of kidney anomalies - impaired urodynamics and hemodynamics in kidney anomalies. Possible diagnostic and tactical errors in the diagnosis of kidney anomalies.

Types of kidney anomalies:

anomalies of quantity (agenesis, aplasia, accessory kidney);

anomalies of size - hypoplasia (unilateral and bilateral);

anomalies of position - dystopia (thoracic, lumbar, iliac, pelvic, crossed);

anomalies of relationships (horseshoe-shaped, biscuit-shaped, L-shaped, S-shaped kidney);

anomalies of the structure - polycystic, solitary cysts, multicystic kidney, sponge kidney, renal parenchymal dysplasia, polymegacalicosis.

Methods of diagnostics of kidney anomalies (palpation, ultrasound, SNSG, functional tests, radiological examination methods, renal angiography, CT, MRI), principles of treatment.

Hydronephrotic transformation (hydronephrosis): etiology and pathogenesis, pathological anatomy, classification, clinical manifestations. Modern diagnostic methods: ultrasound, DNSG, CT, MRI, radiological methods. Pharmacodynamic tests. Surgical treatment of hydronephrosis (types of surgical interventions). Indications for surgical treatment. Dynamic observation of patients with hydronephrosis.

Megaloureter: definition of the concept, classification, clinical manifestations, diagnostics, indications for conservative and surgical treatment. Vesicoureteral reflux (VUR): etiology and pathogenesis, pathological anatomy, classification, clinical manifestations, modern diagnostic methods (voiding cystography, ultrasound, SNSG, CT, MRI). Modern treatment of VUR. Principles of surgical treatment of VUR, indications for surgical treatment. Dynamic observation of patients with VUR. Other anomalies: ureteral duplication (complete and incomplete), ectopia of the ureteral orifice, ureterocele, reto-rocaval ureter.

Bladder anomalies: agenesis, exstrophy, diverticula, bladder duplication, urachus patency. Main diagnostic methods: examination, palpation, ultrasound, radiographic examination methods, cystoscopy.

Infravesical obstruction: congenital urethral valves (classification). Contracture of the bladder neck (Marion's disease). Clinical manifestations, diagnostic methods and treatment of infravesical obstruction.

Nephroptosis: symptoms (pain, hematuria, arterial hypertension, asthenoneurotic syndrome), diagnostics (clinical, ultrasound, radiographic, CT), treatment, types of surgical treatment, indications for surgical treatment.

Anomalies of the urethra and penis

Hypospadias: definition, etiology and pathogenesis, classification, diagnostics, treatment, modern methods of surgical correction. Hypospadias and hermaphroditism in newborns, examination scheme for sex differentiation. Clinical and genealogical analysis.

Epispadias: definition, etiology and pathogenesis, classification, diagnostics, treatment, modern methods of surgical correction.

Anomalies of the penis: phimosis, short frenulum of the foreskin, doubling of the penis, micropenis, curvature of the penis, hidden penis.

Anomalies of the scrotum organs

Cryptorchidism: definition, etiology and pathogenesis, classification, diagnostics (physical and instrumental examination, study of the hormonal profile), treatment (conservative and surgical), indications for surgical treatment. Prognosis of fertility in cryptorchidism. Possible complications of cryptorchidism. Monorchidism, anorchidism, diagnostic methods, hormonal treatment.

Other diseases of the scrotum organs

Varicocele: definition, etiology and pathogenesis, classification, diagnostics (physical and instrumental examination), treatment (conservative and surgical), indications for surgical treatment. Theories of fertility disorders in varicocele. Possible complications of varicocele.

Hydrocele: definition, etiology and pathogenesis, classification, diagnostics (physical and instrumental examination), treatment.

Spermatic cord cyst: prevalence, etiology, clinical manifestations, diagnostics, treatment.

Syndrome of «acute scrotum in children». Tactics and methods of treatment for acute diseases of the scrotum organs in children and adults.

Patient supervision: collection of complaints and anamnesis of the disease; objective examination; drawing up an examination plan, interpretation of the results of laboratory and instrumental examination methods; diagnosis; drawing up a treatment plan.

5. Injuries (trauma) of the urogenital system

Kidney injuries

Blunt and penetrating kidney injuries (trauma), pathogenesis, classification, diagnostics. The importance of determining the functional state of the contralateral kidney. Treatment of kidney injuries: conservative and surgical. Possible late complications of kidney injuries.

Bladder injuries

Blunt and penetrating bladder (trauma), classification. Pathogenesis of extraperitoneal and intraperitoneal bladder ruptures. Combined injury: symptomatology, diagnostics, diagnostic value of ultrasound, cystography and excretory urography. Bladder injuries during childbirth, gynecological operations, instrumental examinations. Treatment of bladder injuries.

Ureteral injuries: etiology and pathogenesis, classification, diagnostic methods, treatment, patient supervision.

Urethral and penile trauma: pathogenesis, trauma mechanism, simple and combined injuries, classification, clinical symptomatology, diagnostics. Importance of ascending urethrography. Consequences of urethral trauma: early and late complications. Urethral strictures, their diagnostics and treatment. Penile trauma. The most common mechanisms of penile trauma. Contusion, bite, fracture, strangulation of the penis. Clinical picture, treatment of penile trauma.

Patient management: collection of complaints and medical history; objective examination; preparation of an examination plan, interpretation of laboratory and instrumental examination results; diagnosis; preparation of a treatment plan.

6. Neoplasms of the genitourinary organs

Neoplasms of the kidney and ureter

Prevalence, etiology and pathogenesis of neoplasms of the kidney and ureter. Classification using the TNM system of neoplasms of the renal parenchyma, renal pelvis and ureter. Benign neoplasms: adenoma, fibroma, lipoma, angiolipoma, hemangioma, myxoma, dermoid cyst. Malignant neoplasms of the renal parenchyma: adenocarcinoma, sarcoma, Wilms' tumor in children. Pathways of metastasis and spread of tumors of the kidneys and ureters.

Renal (hematuria, pain, presence of a palpable formation, varicose veins of the scrotum) and extrarenal (cachexia, erythrocytosis, anemia, hypo- and dysproteinemia) symptoms of malignant neoplasms of the kidneys and ureters. The concept of neoplastic syndrome. Features of the course of papillary cancer of the pelvis and ureter. Features of hematuria in neoplasms of the kidneys and ureters. Causes of neoplasms of the kidneys and ureters.

The importance of ultrasound of the kidneys in the diagnosis of space-occupying lesions of the parenchyma and the renal pelvis-calyceal system. X-ray studies in the diagnosis of space-occupying lesions of the kidneys. The diagnostic value of CT, MRI, renal angiography in detecting kidney cancer and its metastases.

Complex treatment for kidney cancer, Wilms tumor, papillary cancer of the pelvis, types of surgical operations. Radiation and chemotherapy in the treatment of tumors of the kidneys and ureters, treatment prognosis. Follow-up of patients with kidney tumors.

Neoplasms of the bladder

Prevalence, etiology and pathogenesis, classification using the TNM system. Precancerous diseases of the bladder. Occupational hazards in the etiopathogenesis of the bladder. Pathways of metastasis and spread of malignant neoplasms of the bladder.

Symptoms and clinical course, diagnostics of neoplasms of the bladder: ultrasound, cystoscopy, photodiagnostics of malignant neoplasms of the bladder, biopsy, X-ray examination (excretory urography, cystography, phlebography, lymphadenography, arteriography), CT, MRI.

Treatment of malignant neoplasms of the bladder (surgical, radiation, chemotherapy, combined, use of the BCG vaccine). Surgical methods for the treatment of neoplasms of the bladder. Indications for surgical treatment of bladder tumors. Follow-up of patients with bladder tumors.

Neoplasms of the urethra in men and women

Classification, clinical manifestations, diagnostics, treatment of neoplasms of the urethra.

Penile cancer

Prevalence, classification, the role of phimosis and recurrent balanoposthitis in the etiopathogenesis of penile cancer. Clinical manifestations, diagnostics, treatment, prevention of penile cancer.

Testicular and epididymal neoplasms

Pathogenetic significance of testicular trauma and ectopia in the development of neoplasms. The importance of timely reduction in cryptorchidism for the prevention of testicular neoplasms. Classification of testicular neoplasms. Pathways of dissemination and metastasis in malignant neoplasms of the testicle. Modern methods of diagnostics of malignant neoplasms of the testicles and their metastases. Differential diagnostics of scrotal masses (tumors, orchiepidimitis, hydrocele of the testicular membranes, hematoma of old ruptures of the tunica albuginea).

Combined treatment of testicular tumors: surgery, radiation therapy, chemotherapy.

Patient management: collection of complaints and disease history; objective examination; preparation of an examination plan, interpretation of laboratory and instrumental examination results; diagnosis; preparation of a treatment plan.

7. Benign prostatic hyperplasia

Benign prostatic hyperplasia (BPH): etiology and pathogenesis, prevalence of the disease in different age periods. Pathological anatomy of changes occurring in the prostate gland against the background of its hyperplasia.

Clinical picture of BPH. Urinary retention (ischuria): types, first aid in case of acute urinary retention, symptoms (irritative, obstructive), diagnostics. The concept of scoring the symptoms of BPH using the IPSS and QOL scales. Differential diagnostics of benign prostatic hyperplasia with chronic prostatitis, prostate cancer, urethral strictures, bladder tumors, sclerosis of the bladder neck. Staging of BPH, clinical manifestations of the disease at different stages.

Conservative treatment, indications and contraindications for various types of conservative treatment of BPH. Types of surgical treatment, indications and contraindications for surgical treatment of BPH. Complications of BPH, prevention of complications.

Follow-up of patients with BPH.

8. Prostate cancer

Prostate cancer (PC): etiology, pathogenesis, pathological anatomy, concept of PIN, classification, prevalence. Clinical course of prostate cancer. Metastasis and types of metastases in PC.

Clinical manifestations, laboratory diagnostics, instrumental studies of PC. Multifocal biopsy of the prostate gland. Differential diagnostics of PC with chronic prostatitis, BPH, prostate abscess, prostate and bladder stones, tuberculous lesions of the prostate gland, bladder neoplasms.

Conservative methods of treating PC. General principles of hormone therapy and its possible complications. Primary and secondary hormonal resistance. Indications for surgical treatment of PC. Types of surgical treatment, immediate and long-term treatment results. The role of preventive examinations of the population in the early detection of PC. Patient supervision: collection of complaints and anamnesis of the disease; objective examination; preparation of an examination plan, interpretation of the results of laboratory and instrumental examination methods; diagnosis; preparation of a treatment plan.

EDUCATIONAL DISCIPLINE «UROLOGY» CURRICULAR CHART

Section, topic #	Section (topic) name	Number of class hours		Supervised student independent work	Literature	Practical skills	Form of control	
		lectures	practical				of practical skills	of current / intermediate assessment
	10 semester							
	Lectures	**6**	**-**	**3**				
1.	Semiotics and diagnostics of urological diseases	1,5	-	1,5	1 - 3, 5 - 7			Computer testing
2.	Urolithiasis	1,5	-	1,5	1 - 3, 5 - 7			Computer testing
3.	Kidney tumors	1,5	-		1, 2, 5 - 7			
4.	Benign prostatic hyperplasia and prostate cancer	1,5	-		1, 2, 5 - 7			
	Practical lessons	**-**	**45**	**-**				
1.	Introduction to the discipline «Urology». Signs and symptoms of genitourinary diseases. Examination of a patient with urological pathology	-	6	-	1 - 3, 5 - 7	1. Hygienic hand rubbing and surgical hand disinfection. 2. Palpation of the patient's kidneys in a lying and standing position. 3. Palpation and percussion of the urinary bladder. 4. Palpation of the scrotum organs	Visual assessment of skill performance. Performing a practical skill at the patient's bedside*	Computer testing; survey; solving situational problems; assessment based on a business game

2.	Non-specific inflammatory diseases of the genitourinary system	-	6	-	1 - 3, 5 - 7	Examination of patients with acute renal failure, anuria, acute pyelonephritis	Performing a practical skill at the patient's bedside	Control test; computer test survey; solving situational problems; assessment based on a business game
3.	Urolithiasis	-	6	-	1 - 3, 5 - 7	Examination of patients with renal colic, macrohematuria, anuria, acute obstructive pyelonephritis	Performing a practical skill at the patient's bedside	Control test; computer test survey; solving situational problems; assessment based on a business game
4.	Anomalies of the kidneys and urinary tract. Nephroptosis	-	6	-	1, 2, 4 - 7	1. Examination of patients with renal colic, acute urinary retention, macrohematuria, acute renal failure, anuria, «acute scrotum» syndrome. 2. Care for patients with total urinary incontinence, permanent cystostomy, nephrostomy, urethrocutaneostomy, urinary retention syndrome requiring systematic bladder catheterization	Performing a practical skill at the patient's bedside	Control test; computer test survey; solving situational problems; assessment based on a business game
5.	Injuries (trauma) of the urogenital system	-	6	-	1, 2,	Examination of	Performing a	Control test;

					5 - 7	patients with acute urinary retention, macrohematuria, damage to the genitourinary organs and «acute scrotum» syndrome	practical skill at the patient's bedside	computer test survey; solving situational problems; assessment based on a business game
6.	Neoplasms of the genitourinary organs	-	5	-	1, 2, 5 - 7	1. Examination of patients with renal colic, acute urinary retention, macrohematuria, anuria. 2. Care for patients with total urinary incontinence, permanent cystostomy, nephrostomy, ureterocutaneostomy	Performing a practical skill at the patient's bedside	Control test; computer test survey; solving situational problems; assessment based on a business game
7.	Benign prostatic hyperplasia	-	5	-	1, 2, 5 - 7	1. Digital rectal examination of the prostate gland. 2. Catheterization of the bladder with an elastic catheter in acute urinary retention	Performing a practical skill on simulation equipment*	Control test; computer test; survey; solving situational problems; assessment based on a business game
8.	Prostate cancer	-	5	-	1, 2, 5 - 7	1. Digital rectal examination of the prostate gland. 2. Catheterization of the bladder with an elastic catheter in case of acute urinary	Performing a practical skill on simulation equipment.* Filling out the educational medical record	Control test; computer test*; survey*; solving situational problems; assessment based on a

						retention. 3. Preparation of medical documentation	of an outpatient (inpatient) patient*	business game. Credit
	Total hours	**6**	**45**	**3**				

*This is a mandatory form of current certification

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic (relevant):

1. Penn Clinical Manual of Urology / ed.by. Thomas J. Guzzo, Robert, C. Kovell, Justin B. Ziemba, Dana A. Weiss, Alan J. Wein. – 3rd ed. – Elsevier, 2024. – 1136 p.

Additional:

2. 3. Urology primer. An introduction to clinical urology / P. Rashid, V. Bhoopathy, R. He, K. Loh, R. Shanmugasundaram. – Uronorth Group, 2024. – 336 p.
3. General Urology : Urological Symptoms, Urinary Tract Infection, Basic Urological Emergencies, Urolithiasis / A. A. Gavrusev, E. I. Yushko, A. V. Strocki. – Minsk : BSMU, 2020. – 23 p.
4. Urogenital Trauma. Congenital Genitourinary Anomalies. / A. A. Gavrusev, E. I. Yushko, A. N. Jeremiah. – Minsk : BSMU, 2024. – 25 p.
5. Urology : lecture course for students of medical universities / A. A. Zebentaev, P. V. Plotnikov. – Vitebsk : VSMU, 2017 – 188 p.

Normative regulatory acts:

6. Guidelines European Association of Urology, 2025. – 2347 p.

Electronic courseware for the educational discipline «Urology»:

7. https://etest.bsmu.by/course/view.php?id=290.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

The time allocated for independent work can be used by students for:
preparing for lectures, practical classes;
preparing for credit in the academic discipline;
studying the topics (issues) designed for independent work;
preparing thematic reports, abstracts, presentations;
taking notes of educational literature;
compilation of a thematic selection of literature sources, Internet sources.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF SUPERVISED STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

APPROXIMATE LIST OF TASKS FOR SUPERVISED STUDENT INDEPENDENT WORK:

preparation of thematic reports, abstracts, presentations;
computer testing;
preparation of tests for the organization of mutual control.

FORMS OF CONTROL OF SUPERVISED STUDENT INDEPENDENT WORK:

computer testing.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms of current certification are used to diagnose competencies:
computer testing;
control test;
survey;
solving situational problems;
assessment based on a business game.

LIST OF AVAILABLE TEACHING METHODS

Traditional method;
active (interactive) methods:
- training based on simulation technologies;
- Problem-Based Learning (PBL);
- Team-Based Learning (TBL);
- Case-Based Learning (CBL).

LIST OF PRACTICAL SKILLS

Name of practical skills	Form of practical skills control
1. Catheterization of the urinary bladder with an elastic catheter in case of acute urinary retention, observing the principles of antisepsis	Performing practical skills on simulation equipment
2. Palpation of the patient's kidneys in a lying and standing position	Performing a practical skill at the patient's bedside
3. Palpation and percussion of the urinary bladder	Performing a practical skill at the patient's bedside
4. Palpation of the scrotum organs	Performing a practical skill at the patient's bedside
5. Digital rectal examination of the prostate gland	Performing practical skills on simulation equipment
6. Examination of patients with renal colic, acute urinary retention, macrohematuria, acute renal failure, anuria, damage to the genitourinary organs, acute obstructive pyelonephritis, acute scrotum syndrome	Performing a practical skill at the patient's bedside
7. Care for patients with total urinary incontinence, permanent cystostomy, nephrostomy, urethrocutaneostomy, urinary retention syndrome requiring systematic bladder catheterization	Performing a practical skill at the patient's bedside
8. Preparation of medical documentation	Filling out the educational medical record of an outpatient (inpatient) patient
9. Hygienic hand rubbing and surgical hand disinfection	Visual assessment of skill performance

LIST OF SIMULATION EQUIPMENT USED

1. A simulator for catheterization of the urinary bladder in men.
2. A simulator for catheterization of the urinary bladder in women.
3. A simulator for digital rectal examination of the prostate gland.

PROTOCOL OF THE CURRICULUM APPROVAL
BY OTHER DEPARTMENTS

Title of the discipline requiring approval	Department	Amendments to the curriculum in the academic discipline	Decision of the department, which designed the curriculum (date, protocol #)
1. Surgical Diseases	Surgery and Transplantology with a course of advanced training and retraining	No amendments	Protocol # 9/4 of 30.04.2025
2. Oncology	Oncology with a course of advanced training and retraining	No amendments	Protocol # 9/4 of 30.04.2025
3. Traumatology and Orthopedics	Traumatology and Orthopedics with a course of advanced training and retraining	No amendments	Protocol # 9/4 of 30.04.2025
4. Internal Diseases	Internal Medicine, Gastroenterology and Nutrition with a course of advanced training and retraining	No amendments	Protocol # 9/4 of 30.04.2025

COMPILERS/AUTHORS:

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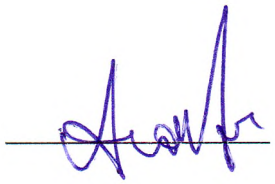

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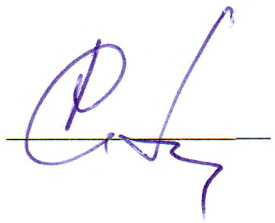

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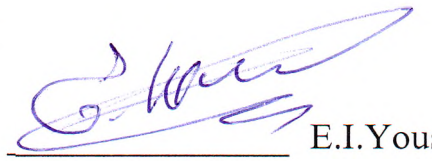

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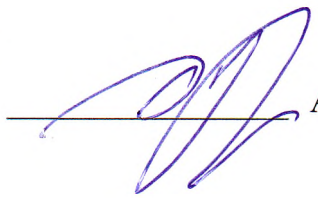

A.A.Raguzin

Curriculum content, composition and the accompanying documents comply with the established requirements.

Head of the Office of Educational Activities of the educational institution «Belarusian State Medical University»
24.06.2025

I.L.Kotovich

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S.V.Zaturanova