

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

Reg.#UD 12.04.2023  
609/23<sup>29</sup> elect.

DISEASES OF THE PROSTATE

Curriculum of the elective course  
in the academic discipline "Urology" for the specialty:

1-79 01 01 «General Medicine»

Curriculum is based on the educational program «Urology», approved 16.11.2017, registration # UD-L.609/1718/edu.

**COMPILERS:**

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**RECOMMENDED FOR APPROVAL:**

by the Department of Urology of the Educational Institution «Belarusian State Medical University»  
(protocol № 10 of 28.03.2023);

by the Methodological Commission of Surgical diseases of the Educational Institution «Belarusian State Medical University»  
(protocol № 3 of 12.04.2023)

## EXPLANATORY NOTE

Elective course «*Diseases of the Prostate*» is an in-depth study of the etiopathogenesis, clinical presentations, laboratory and instrumental diagnostic methods, management and prevention of the most common diseases of the prostate, as well as pathological conditions (lower urinary tract symptoms, erectile dysfunction, reproductive disorders and etc.) caused by these disease conditions.

The Curriculum of the elective course «*Diseases of the Prostate*» is aimed at the latest scientific data exploration in theory of urology and practice on this topic.

The aim of the elective course «*Diseases of the Prostate*» study is to form students' competencies for the diagnosis and management of diseases of the prostate, and is the basis for an additional study of these conditions.

The objectives of the elective course study are to form students' scientific knowledge about basic concepts of the etiology and pathogenesis, clinical manifestations, presentations and the diagnostic methods of the most common diseases of the prostate, the choice of either conservative or surgical management of the prostate diseases.

Teaching and successful study of the elective course «*Diseases of the Prostate*» is carried out on the basis of the knowledge and skills acquired by the student in the following sections of the discipline «*Diseases of the Prostate*»: Benign prostatic hyperplasia, Prostate cancer, Acute and chronic prostatitis, Erectile dysfunction.

**As a result of the elective course «Diseases of the prostate» study the student should**

**know:**

- the frequency, etiology and pathogenesis of acute and chronic prostatitis, benign prostatic hyperplasia (BPH), prostate cancer (CaP);
- stages of BPH, clinical and pathological classification of CaP;
- clinical presentations of acute and chronic prostatitis, BPH and CaP;
- diagnosis of acute and chronic prostatitis, BPH, prostate cancer (CaP) and complications of these diseases;
- conservative and surgical treatment of patients with acute and chronic prostatitis, BPH and CaP.
- causes of male infertility following diseases of the prostate, spermogram (seminal fluid) levels, and methods for evaluating erectile function;

**be able to:**

- examine patients with acute and chronic prostatitis, BPH and CaP;
- evaluate the results of clinical, laboratory and instrumental methods of examination in suspected cases of disease of the prostate, and make or arrive at correct diagnoses;
- make differential diagnosis between diseases of the prostate;



- determine indications for conservative and surgical management of patients with acute and chronic prostatitis, BPH and CaP;
- detect the effect of diseases of the prostate on male infertility and correct the pathospermia of erectile dysfunction;

**master:**

a) methods:

- palpation of the prostate via digital rectal examination (DRE);
- palpation and percussion of the urinary bladder;
- palpation of patient's kidneys in lying and standing positions;
- algorithm for the examination and evaluation of patients with acute and chronic prostatitis, BPH and CaP;
- care for patients with acute and chronic urinary retention , permanent cystostomy and nephrostomy;

b) skills:

- proper medical documentation of patients with acute and chronic prostatitis, BPH and CaP;
- digital rectal examination (DRE);
- proper insertion of elastic urethral catheter into the urinary bladder following acute and chronic urinary retention;
- suprapubic puncture / cystostomy following acute urinary retention and the inability to insert elastic catheter;
- carrying out retrograde contrast-enhanced cystography in cases of suspected bladder diverticuli and retrograde urethrography in cases of suspected urethral stricture.

**Total number** of hours for the study of the elective is 40 academic hours.  
Classroom hours according to the types of studies: practical classes - 25 hours;  
student independent work (self-study) - 15 hours.

Intermediate assessment is carried out according to the syllabus of the specialty in the form of a credit (9 semester).

## THEMATIC PLAN

| Name of the section (topic)  | Number of class hours |
|--|-----------------------|
|  | practical             |
| <b>1. Lower urinary tract symptoms (LUTS)</b>  | <b>5</b>              |
| <b>2. Benign prostatic hyperplasia</b>   | <b>5</b>              |
| <b>3. Prostate cancer</b>  | <b>5</b>              |
| <b>4. Acute and chronic prostatitis</b>  | <b>5</b>              |
| <b>5. Erectile dysfunction following diseases of the prostate, sexual function of the aging male</b> | <b>5</b>              |
| <b>Total hours</b>   | <b>25</b>             |

## CONTENT OF EDUCATIONAL MATERIAL

### 1. Lower urinary tract symptoms (LUTS)

The frequency of LUTS in men at different age brackets; list of diseases that most often lead to urinary disorders. Bladder capacity, residual urine, number of voiding times per day, urge to urinate /void, and other criteria that reflect bladder function and urination. LUTS as an interdisciplinary problem. Terminology and clinical features of urinary disorders. Bladder hyperactivity.

The formation and development of LUTS in patients with benign prostatic hyperplasia, prostate cancer, bladder tumors, urinary tract infections, bladder and urethral stones, other urological diseases, and pathological conditions. Risk factors for the formation of LUTS. The formation of LUTS with a combined pathology of the organs of the urinary system and other systems of the body (polyuria, diseases of adjacent organs - the uterus, rectum).

Practical expediency of a urine analysis, full blood count; biochemical blood analysis ,bacteriological urine studies; keeping of daily spontaneous voiding chart; patient filling out the questionnaire on the system summary assessment of urinary disorders (IPSS). Significance of clinical, radiological, and urodynamic methods of investigations in the diagnosis and differential diagnosis of the causes of LUTS.

Indications for conservative management, lifestyle modification, weight loss, correction of feeding habits and its regimen; therapeutic physical training; types of physiotherapeutic effects; drug therapy:  $\alpha$ -adrenergic antagonists ( $\alpha$ 1-blockers), 5 $\alpha$ -reductase inhibitors, muscarinic receptor antagonists, anticholinergics, combination of drugs, herbal remedies, etc.), assessment of the effectiveness of conservative management and its duration. Relative and absolute indications for surgical management. Methods for the prevention of LUTS, their effectiveness.

Definition of the concept according to the European Association of Urologists. Etiology and pathogenesis. Clinical presentations. Clinical, laboratory and instrumental methods of investigations. Management.



## **2. Benign prostatic hyperplasia**

The prevalence of the disease at different age brackets, etiology and pathogenesis of BPH. Morphological changes in prostate tissues following the progression of BPH. The value of 5-alpha reductase in the metabolism of testosterone, growth factors, and types of growth of BPH. Clinical course of BPH. Urinary retention (ishuria), types of urinary retention (ishuria). First aid for acute urinary retention. Staging of the course of BPH, clinical presentations of the disease at various stages.

Examination Protocol for patients with suspected case of BPH: mandatory (history, International Prostate Symptom Score (I-PSS) and question about quality of life (QOL), objective examination including digital rectal examination, urinalysis), recommended (assessment of kidney function, identification of prostate-specific antigen in the blood serum, uroflowmetry, voiding chart analysis) and optional («pressure stream» investigations, transabdominal or transrectal examination of the prostate, the study of the anatomy of the upper urinary tract using ultrasound scan and excretory urography, urethro-cystoscopy) methods of investigation. Differential diagnosis of BPH with chronic prostatitis, CaP, urethral strictures, neoplasms of the bladder, bladder neck sclerosis.

Conservative management of BPH: follow-up, drug management, non-surgical management. Indications and contraindications for various types of conservative management of BPH, possible complications.

Types of surgical management of BPH. Indications and contraindications for surgical management of BPH. Minimally invasive managements (stents, Urolift, Rezum, TIND, embolization of arteries of the prostate, aquablation) laser treatments, HF Enucleation. Early and late complications of surgical management, prevention of complications.

## **3. Prostate cancer**

The prevalence of CaP at different age brackets, etiology and pathogenesis.

Risk factors for the disease. Mortality from the disease; its dependence on timely diagnosis.

Clinical and pathological classification of CaP by the TNM system.

Clinical presentations of the disease in the early and late stages. Metastasis, pathways and types of metastasis.

Investigations (clinical, laboratory, instrumental): criteria for assessing the level of PSA, signs of the disease detected during digital rectal examination and ultrasound examination of the prostate, MRI, CT, osteoscintigraphy. The role of routine examinations and screening for early detection of the disease. Indications and role of prostate biopsy in the choice of management. The concept of Gleason score, the concept of prostatic intraepithelial neoplasia (PIN). Differential diagnosis (with BPH, chronic prostatitis, prostatic abscess, calculi, bladder neoplasms and etc.).

Indications for conservative methods of management. General principles and possible complications of radiation therapy, hormone therapy, chemotherapy. Primary and secondary hormone resistance. Immediate and long-term results.



Indications for surgical management of prostate cancer. Types of surgical management (open access radical prostatectomy, laparoscopic and robot-assisted radical prostatectomy). Early and late complications. Immediate and long-term outcome of management.

#### **4. Acute and chronic prostatitis**

The prevalence of prostatitis in different age brackets. US National Institute of Health classification (1995). The Reasons why chronic prostatitis has remained a problematic issue in urology for many decades.

Routes of infection into the prostate. The spectrum of uropathogens following acute and chronic bacterial prostatitis. The role of urethritis in the onset and development of prostatitis. Urinary disorders as one of the main causes in the pathogenesis of prostatitis. Etiology and pathogenesis of chronic abacterial prostatitis.

Clinical presentations of different forms of acute prostatitis (catarrhal/follicular, parenchymatous, abscess). The clinical presentation of chronic prostatitis with respect to the stage of the disease (exacerbations, remissions, latent course).

Sequence of clinical, laboratory and instrumental methods of investigation. Diagnostic significance of Meares-Stamey's urine test, digital rectal examination, results of transrectal ultrasound scan to determine the level of localization of the inflammatory process.

Indications and contraindications for conservative or surgical management, complications of surgical management. Indications for prostate massage. The duration of the course of conservative management with respect to the category of prostatitis, the criteria for healing.

#### **5. Erectile dysfunction following diseases of the prostate, sexual function of the aging male**

Definition of concept. Dynamics of testosterone levels with respect to age. Causes of age-related hypogonadism, the influence of the most common somatic diseases (hypertension, hyperlipidemia, diabetes mellitus, obesity, prostate diseases and etc.). Clinical presentations. Hormone replacement therapy and urological effects.

Sexual function of men at different age brackets. Qualitative assessment of the components of sexual intercourse (libido, erection, ejaculation, orgasm) of the aging male. Erectile Dysfunction as a predictor of somatic diseases. Diagnosis of erectile dysfunction in patients with diseases of prostate, scale for assessing sexual function; indications for conservative and surgical management.

The definition of «male infertility», the dynamics of the ability to reproduce offspring with respect to age. Etiology and pathogenesis of reproductive disorders of the aging male with diseases of the prostate. Diagnosis of the most frequent disorders of the composition of the ejaculate of the aging male, prognosis of conception depending on the severity of the disorder. Management of male infertility (conservative, surgical, using reproductive-assisted technologies), indications, it's effectiveness.

Personalized medicine and prevention of prostate diseases. The role of routine check-ups by a specialist urologist. Primary, secondary, tertiary prevention of acute and

chronic prostatitis, benign prostatic hyperplasia, prostate cancer: components of the types of prevention for each of the above mentioned diseases, duration and expected outcomes.

Medical rehabilitation and outpatient follow-up program for patients with established prostate diseases with respect to the disease stage, age, complications and comorbidity. Criteria for the route of assessing a personal rehabilitation, its duration, and indications for deregistration.



### ACADEMIC DISCIPLINE CURRICULAR CHART

| Section, topic # | Section (topic) name   | Number of hours | Self-studies | Form of control  |
|------------------|--|-----------------|--------------|--|
|                  |  | practical       |              |  |
| 1                | Lower urinary tract symptoms   | 5               | 3            | Discussion; quiz; test; reports on classroom exercises with their oral defense; reports on home practice exercises with their oral defense; computer based tests (CBT) |
| 2                | Benign prostatic hyperplasia   | 5               | 3            | Discussion; quiz; test; reports on classroom exercises with their oral defense; reports on home practice exercises with their oral defense; CBT                        |
| 3                | Prostate cancer  | 5               | 3            | Discussion; multiple choice questions (MCQs); quiz; CBT  |
| 4                | Acute and chronic prostatitis  | 5               | 3            | Discussion; MCQs; reports on classroom exercises with their oral defense; reports on home practice exercises with their oral defense.                                  |
| 5                | Erectile dysfunction following diseases of the prostate, sexual function of the aging male | 5               | 3            | Discussion; MCQs; reports on classroom exercises with their oral defense; reports on home practice exercises with their oral defense; CBT; credit.                     |
|                  |  | 25              | 15           |  |

## INFORMATION AND INSTRUCTIONAL UNIT

### LITERATURE

#### Basic:

1. Urology: textbook / A.V.Strotsky and etc.]; ed. A.V.Strotsky. – Minsk: New Knowledge, 2018. – 224 p.
2. Urology: textbook for students of higher medical educational institutions of 4-th accreditation level / S.P.Pasiechnikov [et al.]; ed. by S.Pasiechnikov. – Vinnytsia : Nova Knyha, 2016. – 393 p.
3. Smith and Tanagho's general urology / eds. J.W.McAninch, T.F.Lue. – New York [etc.]: McGrawhill Medical, 2018. – 726 p.

#### Additional:

4. Zebentaev, A.A. Urology : lecture course for students of medical universities / A.A.Zebentaev, P.V.Plotnikov. – Vitebsk: VSMU, 2017. – 188 p
5. Campbell-Walsh urology / J.W.Alan [et al.]. – 11<sup>th</sup> ed. – Philadelphia: Elsevier, 2016. – 4903 p.

#### Regulatory legal acts:

6. European Association of Urology. Guidelines / Eur. Assoc. of Urol. – 2017ed. – Nederland: EAU, 2017.

### LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms are used for competences assessment:

- 1.Oral form:
  - discussion;
  - quiz.
- 2.Written form:
  - test;
- 3.Oral and written form:
  - reports on classroom exercises with their oral defense;
  - reports on home practice exercises with their oral defense;
  - credit.
4. Technical form:
  - computer based tests (CBT).
5. Simulation form:
  - simulator for transurethral catheterization of the bladder in males,
  - simulator for transurethral catheterization of the bladder in females,
  - prostate examination simulator,
  - simulator for examination of the organs of the scrotum in males,
  - simulator for the training of external sexual organs care in male.



### LIST OF AVAILABLE TEACHING METHODS

Traditional method (lecture, laboratory practicals);

Active (interactive) methods:

training based on simulation technologies;

Problem-Based Learning (PBL);

Team-Based Learning (TBL);

Case-Based Learning (CBL);

Research-Based Learning (RBL).


others.

### LIST OF PRACTICAL SKILLS

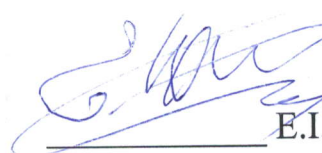
- insertion of elastic urethral catheter into the urinary bladder following acute urinary retention;
- suprapubic puncture of the bladder following acute urinary retention and the inability to insert elastic (metallic) catheter;
- palpation of patient's kidneys in lying and standing positions;
- palpation and percussion of the urinary bladder;
- carrying out retrograde contrast-enhanced cystography in suspected cases of diseases of the bladder;
- urological examination of patients with lower urinary tract symptoms, chronic pelvic pain syndrome, benign prostatic hyperplasia, prostate cancer, prostatitis, acute urinary retention, macrohematuria (gross hematuria), sexual disorders in males due following diseases of the prostate.
- care for patients with total urinary incontinence, nephrostomy, ureterocutaneostomy, urinary retention, requiring systematic catheterization of the bladder;
- proper medical documentation of patients with diseases of the prostate.

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

Dean of the Medical Faculty of International Students of the Educational Institution «Belarusian State Medical University»

12.04, 2023

  
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