

Ministry of Health of the Russian Federation  
Governmental budget-funded educational institution of higher professional education  
**THE FIRST MOSCOW STATE MEDICAL UNIVERSITY NAMED AFTER  
SECHENOV**

Seen and approved by  
Rector \_\_\_\_\_ P.V. Glybochko

**STEERING DOCUMENT OF THE COURSE  
ENDOCRINOLOGY**

*( course name )*

basic professional curriculum of higher education - residency program

31.00.00 Clinical medicine

*code and name of the enlarged group of specialties (training areas)*

31.08.54 General medical practice (family medicine)

*code and name of study (specialty)*

Course credit value: 3 credit units

## 1. Purpose and objectives of mastering the course.

The **purpose** of mastering the course is the formation and development of the following professional competences by students following the basic professional curriculum of higher education, i.e. the program of residency majoring in 31.08.54 General medical practice (family medicine):

**PC-5** - readiness to determine the patients' pathological conditions, symptoms, syndromes, diseases, and nosological forms in accordance with the International Statistical [Classification](#) of Diseases and Health-Related Issues;

**PC-6** - readiness to monitor and treat the patients in need of medical assistance in the framework of a general practice (family medicine)

Course **tasks** - forming a totality of knowledge, capabilities and skills. After mastering the course, the students must:

### **Know:**

- basic issues of normal and pathological anatomy, normal and pathological physiology of the hematopoietic system and levels of their regulation;
- clinical symptoms and pathogenesis of the main haematological diseases in adults and children, their prevention, diagnosis and treatment, as well as emergency aid methods;
- the fundamentals of pharmacotherapy, pharmacokinetics and pharmacodynamics of the main groups of drugs used to treat the hematological diseases.

### **Be able to:**

- obtain information about the disease, apply the objective methods of the patient examination, identify the common and specific symptoms of the disease;
- interpret the data of laboratory and instrumental methods of hematological diseases;
- determine the indications for hospitalization and counseling of specialists;
- conduct differential diagnostics, substantiate clinical diagnosis, plan and tactics of the patient follow-up;
- prepare medical records provided for by health care legislation.

### **Possess the skills of:**

- examining a patient with hematological disease
- all kinds of injections (subcutaneous, intramuscular and intravenous)
- determining blood group and Rh factor using an express method
- determining individual and biological compatibility of blood
- determining blood suitability for transfusion
- blood transfusion
- drip and jet transfusion of medicines and blood substitutes

## 2. The place of the "Endocrinology" course in the structure of the University OPOP VO .

2.1. The course is optional.

2.2. The study of the course requires the knowledge, capabilities and skills formed by the previous courses/practices:

### Propaedeutics

#### Knowledge of:

- the methods of interview and clinical examination of the endocrine organs;
- main endocrine symptoms and syndromes.

**Capabilities:**

- to determine the functional capacity of the endocrine system;
- to identify basic endocrinological symptoms and syndromes, to make a plan of laboratory and instrumental examination and treatment of patients with diseases of the endocrine system.

**Skills:**

- history collection;
- methods of clinical, laboratory examination, detection of violations on the part of the endocrine organs;
- preparation of examination and treatment program for patients with endocrine diseases.

**Therapy, endocrinology**

**Knowledge of:**

- etiology and pathogenesis, clinical picture, complications and prognosis of endocrine diseases;
- basic principles of diagnostics, treatment and prevention of endocrine diseases.

**Capabilities:**

- to carry out early diagnostics by clinical and laboratory symptoms and syndromes in a timely manner;
- to conduct differential diagnostics, treatment, and prevention of endocrine diseases.

**Skills:**

- fundamentals of diagnostics, prevention and treatment of endocrine diseases.

**3. Requirements for the results of mastering the course.**

The study of the course is aimed at developing the following professional competencies (PC) by the students

N o.	Code competencies	Content of the competence (or a part thereof)	As a result of studying the course, the students must:			
			Know	Be able to	Possess	Evaluation tools*
1.	PC-5	Readiness to determine the patients' pathological conditions, symptoms, syndromes, diseases, and nosological forms in accordance with the International Statistical Classification of Diseases and Health-Related Issues.	Normal anatomy and physiology of the endocrine system in different age periods. Risk factors for diseases/conditions of the endocrine system. Clinical symptoms and pathogenesis of the main syndromes and diseases of the endocrine system in adults and children.	To obtain information about the endocrine disease, apply the objective methods of examination, identify the common and specific symptoms of the disease. To interpret the survey findings. To conduct a differential diagnostics. To substantiate the clinical diagnosis.	Examination of the patient: survey (complaints, medical history); examination of the endocrine system (thyroid gland); interpretation of the testing of blood and urine for the main hormones	Patient supervision Reviews Test

			Diagnostics of endocrine diseases, principles of formulating a diagnosis according to ICD-10.		(thyroid, cortisol, catecholamines, STH, follicle-stimulating), sugar and acetone, glycosylated hemoglobin. Method of reading the X-ray of the skull (sella). Performing glucometry using the express methods: test strips and blood glucose meter, use of test strips to determine the protein, sugar and acetone in urine	
2.	PC-6	Readiness to monitor and treat the patients in need of medical assistance in the framework of a general practice (family medicine)	Methods of providing the curative and preventive care; Fundamentals of pharmacotherapy, pharmacokinetics and pharmacodynamics of the main groups of drugs used for treatment and emergency care in patients with endocrine diseases	Justify the plan and tactics of the patient follow-up. Determine indications for hospitalization and counseling of focused specialists. Provide first aid upon hypoglycemic, ketoacidotic, hyperosmolar coma, acute adrenal insufficiency and thyrotoxic stroke	Methods of treating the patients with frequent endocrine diseases in the hospital and outpatient setting. Techniques of insulin injections. Teaching the patients how to take the antidiabetic drugs and injections of insulin, and monitor the sugar using the test strips and glucose meter	Patient supervision Reviews Test

*\*types of evaluation tools, which can be used in development of competences: colloquium, test, interview by situational tasks, written or computer testing, sample calculations, individual assignments, review, essay*

#### 4. Sections of the course and competences generated during their study:

No.	Competence code	Course section name	Section content in didactic units
<b>ENDOCRINOLOGY</b>			
1.	PC 5	Diagnostics of endocrine diseases	Clinical, laboratory and instrumental diagnostics, as well as differential diagnosis of endocrine diseases in adults and children. Establishing diagnosis according to ICD-10. Interpretation of survey findings. The use of rapid diagnostic methods.
2.	PC 6	Treatment of endocrine diseases	Clinical pharmacology of drugs used in treatment of endocrine diseases. Methods of providing treating and preventive care for the patients with

		endocrine diseases. Planning treatment and preventive measures. Compliance.
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### 5. Distribution of the course credit value.

#### 5.1. Distribution of the course credit value and types of training activities by semesters:

Type of study	Credit value		Credit value by semesters (AH)			
	volume in credit units (CU)	volume in academic hours (AH)	1	2	3	4
Classroom work, including	2	72			36	36
Lectures (L)		6			4	2
Practical training (PT)		36			18	18
Seminars (S)		30			14	16
Intern's independent work (IW)		36			18	18
Interim certification						
test/examination (specify the type)						test
<b>TOTAL</b>	<b>3</b>	<b>108</b>			<b>54</b>	<b>54</b>

#### 5.2. Sections of the course, types of study and forms of current monitoring:

No.	Semester No.	Course section name	Academic work types (in AH)					Evaluation tools
			L	PW	S	IW	total	
1.	3.4	Diagnostics of endocrine diseases	4	18	14	18	54	Patient supervision Case histories Test
2.	3.4	Treatment and prevention of endocrine diseases	2	18	16	18	54	Patient supervision Outpatient cards Test
		<b>TOTAL</b>	<b>6</b>	<b>36</b>	<b>30</b>	<b>36</b>	<b>108</b>	

#### 5.3. Lecture distribution by semesters:

No.	Lecture topics	Volume in AH	Semester
1.	Main endocrinological symptoms and syndromes. Differential diagnostics	2	3
3.	Principles of pharmacotherapy of endocrine diseases	2	3.4
4.	Risk factors and prevention of endocrine diseases	2	4
	<b>TOTAL (total - 6 AH)</b>	<b>6</b>	

#### 5.4. Distribution of the practical work by semesters:

No.	Practical work topics	Volume in AH	Semester
1.	Diabetes mellitus Diagnostics and differential diagnostics. Patient analysis	8	3
2.	Diseases of the thyroid gland. Diagnostics and differential diagnostics. Analysis of clinical cases	4	3
3.	Diseases of adrenal gland. Diagnostics and differential diagnostics. Analysis of clinical cases	2	3
4.	Obesity. Patient analysis	4	3.4
5.	Weight deficit/weight loss. Diagnostics, treatment, prevention.	2	3

	Patient analysis.		
6.	Complications of diabetes mellitus. Early detection and prevention. Analysis of clinical cases. Analysis of patients.	6	3.4
7.	Laboratory diagnostics of diabetes mellitus. Skills of using rapid diagnostics: test strips and glucose meter	4	4
8.	Emergency conditions in endocrinology: hypoglycemic, ketoacidotic, hyperosmolar coma, acute adrenal insufficiency and thyrotoxic crisis.	4	4
9.	Skills in consulting a patient and his family: teaching patients how to take antidiabetic drugs in the form of pills and injections of insulin, and monitor sugar content using test strips and glucose meter. Role game	2	4
	TOTAL (total - 36 AH)	36	

#### 5.5. Distribution of seminar topics by semesters:

No.	Seminar topics:	Volume in AH	Semester
1.	Main symptoms and syndromes of endocrine diseases: polydipsia, polyuria, glycosuria, hyperglycemia and hypoglycemia, menopause, ophthalmopathy. Analysis of patients and clinical situations	8	3
2.	Risk factors for diseases/conditions of endocrine system and metabolic disorders and their correction. Discussion	4	3
3.	Disorders of calcium metabolism, phosphorus, magnesium. Analysis of clinical situations	2	3
4.	Tumors and metastases of the endocrine system organs. Analysis of clinical situations	2	3
5.	Prevention of most common diseases as to endocrine system, metabolic disorders and their complications. Analysis of patients	4	3
6.	Rehabilitation of patients with endocrine disorders. Potentials of a general practitioner. Discussion of reports	2	3
7.	Surgical treatment of diseases as to endocrine organs. Continuity of patient's management with doctors in hospitals and focused specialists	2	3
8.	"Masks" of hypothyroidism. Analysis of patients	2	4
9.	Adverse and toxic effects of drugs in endocrinology: prevention, treatment	4	4
	TOTAL (total - 30 AH)	30	

#### 5.6. Distribution of an intern's independent work (IW) by types and semesters:

No.	IW* type	Volume in AH	Semester
1.	Working with literature	14	3-4
2.	Writing a review	6	4
3.	Preparation for the patient's report duringe clinical analysis and reporting on the topic under discussion	3	4
4.	Work with electronic educational resources placed on the University's educational portal	10	3-4
	Writing case histories and outpatient cards	3	3-4
	TOTAL (total - AH)	36	

\* types of independent work: Working with literature and other sources of information on the studied section, including in interactive form, performance of the assignments stipulated by the work program (group and

(or) individual) in the form of writing of case histories, reviews, essays, preparation of reports, presentations; preparation for participation in interactive classes (role and business games, trainings, game design, computer simulation, discussion), work with electronic educational resources placed on the educational portal of the University, preparation of term papers, etc.

6. Evaluation tools to monitor the performance and results of discipline study.

6.1. Forms of monitoring and interim assessment, types of evaluation tools:

No.	Year	Forms of control	Course section name	Evaluation tools		
				Types	Number of questions in assignment	Number of independent options
1	2	3	4	5	6	7
1.	2	test	Diagnostics of endocrine diseases	tests, case studies	50	2
2.	2		Treatment of endocrine diseases	tests, case studies	50	2

6.2 Examples of evaluation tools:

Test assignments, example:

No.	Assignment
1.	<p><i>Choose one correct answer:</i>            When glycosuria is found, you first need to:            A. Determine the fasting blood glucose level            B. Conduct a glucose tolerance test            C. Prescribe sulfonylureas            D. Limit the consumption of carbohydrates            E. Determine the level of basal insulin            Correct answer: A</p>
2.	<p><i>Choose one correct answer:</i>            The most likely cause of blindness in the patient suffering from diabetes mellitus for a long time is:            A. Glaucoma            B. Cataracts            C. Retinopathy            D. Optic atrophy            E. Conjunctivitis            Correct answer: C</p>
3.	<p><i>Choose one correct answer:</i>            When a diabetic patient comes with complaints about anorexia, nausea, abdominal pain, you should:            A. Recommend starvation            B. Suspect the diabetic ketoacidosis            B. Recommend antacids and follow-up            Correct answer: B</p>
4.	<p><i>Choose one correct answer:</i>            Diabetic autonomic neuropathy is manifested by the following clinical signs, except for:            A. Hypertension            B. Impotence            C. Retention of urine            D. Disappearance of the harbingers of hypoglycemia            E. Orthostatic hypotension</p>

*Case studies*

*Problem No. 1*

A 45-year-old woman visited a family doctor about a diffusely enlarged painless thyroid gland and general weakness. Objective examination revealed bradycardia, puffiness of face and eyelids, rough dry skin and reduced Achilles reflexes. Cervical lymph nodes are not enlarged.

Questions

1. What is may be the most probable diagnosis?
2. What surveys should be prescribed to verify the diagnosis?
3. What treatment is indicated when the diagnosis is confirmed?

*Problem No. 2*

A 35-year-old woman has moderate hypertension, muscle weakness, polyuria and paresthesia with tetanic symptoms. No peripheral edema. Daily urine test for potassium and free cortisol exhibits an increased potassium loss and a normal level of free cortisol. The adrenal computed tomography revealed a localized encapsulated formation in the left adrenal gland.

Questions

1. What may be the most probable diagnosis?
2. What surveys should be prescribed to verify the diagnosis?
3. What tactics is indicated when the diagnosis is confirmed?

*Problem No. 3*

36-years-old patient V. Complaints of continuous palpitations, hand tremors, sweating, weight loss, increased stool up to 4 times a day. Developed the sickness after stress about 6 months ago: the above complaints appeared, the patient was not treated, objectively: general condition is satisfactory. Height 170 cm, weight 56 kg, fussiness, irrational movement, verbosity, rapid speech, trembling fingers, the skin is moist, hot, tender. The heart tones are clear, the 1st tone is amplified. HR 120 per min, pulse 120 per min, arrhythmic. BP 160/40 mm Hg. The thyroid gland is diffusely increased to the 3rd degree, the surface is uneven. No swelling on legs. The liver is not enlarged. Additional studies:

complete blood count and urinalysis are normal. Biochemical blood test: cholesterol 2.6 mmol/l. T3- 12.2 (N 2.5- 5.5), T4 - 32.8 (N 11.5- 23.0), TTG - 0.01 (N 0.2-4.05 nmol/l).

1. Establish and substantiate your diagnosis
2. Specify the additional methods of studies to be carried out to confirm the diagnosis.
3. Specify the reasons for atrial fibrillation (diffuse toxic goiter, cardiosclerosis, rheumatic or toxic-allergic myocarditis, aortic heart defect).
4. Assign the treatment

*Problem No. 4*

44-years-old patient. She complains of general weakness, palpitations, irritability, tremor of hands, poor tolerance of heat. Over the past 3 months, she has lost 6 kg. She thinks that she has been sick for about a year, was followed-up by a therapist and neurologist, but the treatment received has been ineffective.

Objectively: General condition is of moderate severity. Height - 166 cm, weight - 60 kg. The skin has normal color, moist. Thyroid gland is diffusely increased to the 3rd degree, of dense elastic consistency, mobile, painless. Pulse - 100 beats per min, rhythmic. BP 130/70 mm Hg. Additional studies: total lipids - 1.72. g/L. Cholesterol - 4.02 mmol/l, thyroid ultrasound: heterogeneous structure, acoustic areas of fine-focal compaction of thyroid tissue, interspersed with areas of acoustically soft tissue. Biopsy findings: lymphocytic-plasmocytic infiltration, fibrosis areas.

Questions and assignments:



- Evaluate the functional condition of the thyroid gland.
- Establish and substantiate your diagnosis.
- Establish differential diagnosis.
- Specify the patient's management plan.

6.3. Evaluation tools recommended for inclusion into the stock of evaluation tools for the final state certification.

1. Tests.

2. Examination cards, with inclusion of one question on the main sections of the general practice (family medicine), for example:

1. What are basic clinical manifestations of diabetes mellitus?
2. What are the main clinical manifestations of hypothyroidism?
3. What is subclinical hypothyroidism?
4. What study is indicated for a suspected thyroid cancer?
5. What are the side effects of L thyroxin?

7. Educational, methodological and informational support of the course (printed, electronic publications, the Internet and other network resources).

7.1. References:

No	Name according to the bibliographical requirements	Number of copies	
		In the department	In the library
1.	Essential Med Notes. 31st Edition. Toronto Notes for Medical Students, Inc. Toronto, Canada. 2015	1	1
2.	Herold G. und Mitarbeiter. InnereMedizin. 2013	1	1
3.	Pottgießer T., Ophoven S. Die 50 wichtigsten Fälle Innere Medizin. 2. Auflage. 2013. Elsevier GmbH. München. Urban & Fischer	1	1
4.	Bernhard Hellmich. Fallbuch Innere Medizin. 4. Auflage. Stuttgart. Georg Thieme Verlag KG. 2012	1	1
5.	Hahn J.-M. Checkliste Innere Medizin. 7 Auflage. Georg Thieme Verlag. 2012	1	1
6.	Simone Van Hattem, Aart H. Bootsma, H. Bing Thio, Skin manifestations of diabetes Cleveland Clinic Journal of Medicine November 2008 vol. 75 no. 11, 772-787	1	1
7.	Richard S., Subclinical Thyroid Dysfunction Affects the Heart. American Family Physician. April 1. 2003	1	1
8.	Williams T., Mortada R., Porter S., Diagnosis and Treatment of Polycystic Ovary Syndrome. Via Christi Family Medicine Residency, Wichita, Kansas Am. Fam. Physician. 2016 Jul 15;94(2):106-113.	1	1

8. Financial and logistics support of the course

No.	Address of classrooms*, facilities for practical classes, physical culture and sports	Room No.	Room area (m <sup>2</sup> )	Name of equipped classrooms, facilities for practical classes, physical culture and sports with a list of basic equipment*
<i>1</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1.	. 11 Rossilimo St., Bldg. 4, 5th	classroom	40	A classroom for lectures, seminars and

	floor	No. 1		workshops multimedia complex ( <i>laptop, projector, screen</i> )
2	. 11 Rossilimo St., Bldg. 4, 5th floor	classroom No. 2	40	A classroom for lectures, seminars and workshops multimedia complex, interactive whiteboard
3	. 11 Rossolimo St., Bldg. 4	room 556	20	A classroom equipped with simulation machinery
4	. 11 Rossolimo St., Bldg. 5			An in-patient facility with general therapeutic beds
5	. 19 Barrikadnaya St., Bldg. 3	computer classroom	25	a network of multidisciplinary polyclinics "Family Doctor"
6	. 19 Barrikadnaya St., Bldg. 3	a classroom	25	a network of multidisciplinary polyclinics "Family Doctor"

*\*specially equipped rooms (auditoriums, classrooms, laboratories, etc.) for lectures, seminars, practical and clinical practical training during study of the disciplines, including:*

*dissecting room, anatomical museum, corps storage;*

*auditoriums equipped with simulation machinery;*

*offices for work with patients receiving medical care.*

*\*laboratory, tool equipment (specify which), multimedia system (laptop, projector, screen), TV, video camera slide-scope, VCR, PC, video and DVD players, monitors, sets of slides, tables/multimedia visual materials on various sections of the discipline, video clips, blackboards etc.*

9. Educational technology in an interactive form used in the process of teaching the dcourse\*:

Role games, lectures, discussions, training with analysis of patients

*\*simulation technologies: role and business games, training, game design, computer simulation, case studies etc.; non-simulation technologies: lecture (subject, visualization, etc.), discussion (with and without the "brainstorming"), training, programmed instruction etc.*

A total of 20% interactive activities from the scope of classroom work.

9.1. Examples of online educational technologies:

*Exercises*

1. Conduct glucometry by rapid method using test strips
2. Calculate body mass index for a patient, 1.83 m in height having the weight of 96 kg.

*Analytical assignments.*

Term paper "Organization of medical aid to patients with diabetes in the general practice"

Assignment No. 1. Planning the term paper "Organization of medical aid to patients with diabetes in the general practice."

Assignment No. 2. Make a list of basic functions of the GP (FM) for screening of diabetes mellitus in your practice. Indicate which of them can be delegated to a nurse of the general practice.

Assignment No. 3. Make an algorithm of diagnostic measures included in the primary diagnostics of diabetes mellitus for your practice.

Assignment No. 4. Make a road map for a patient with suspected diabetes mellitus.

Describe the duties of the GP personnel as to organizing and monitoring this road map in your practice.

Assignment No. 5. Develop a procedure for interaction with an endocrinologist in your practice.

Assignment No. 6. Make action plan aimed at organizing controlled treatment together with an endocrinologist in your practice.

Assignment No. 7. Work out the activities for clinical examination of patients with diabetes mellitus in your practice.

*Discussion.*

Topic. Risk factors as to diseases/conditions of endocrine system and metabolic disorders and their correction.

Analysis of patients in in-patient environment (therapeutic department) and in the environment of general practice (GP's office)

9.2. Electronic educational resources used during the process of teaching the course:

No.	Name and brief description of electronic educational and information resources (electronic publications and information databases)	Number of copies, access points
<i>1</i>	<i>2</i>	<i>3</i>
1.	<a href="http://emedicine.medscape.com/">http://emedicine.medscape.com/</a>	2
2.	<a href="http://www.aafp.org/home.html">http://www.aafp.org/home.html</a>	2
3.	<a href="http://www.thennt.com/">http://www.thennt.com/</a>	2
4.	<a href="http://www.ebm-netzwerk.de/">http://www.ebm-netzwerk.de/</a>	2
5.	<a href="http://bjgp.org/">http://bjgp.org/</a>	2