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

APPROVED
by Rector of the Educational Institution «Belarusian State Medical University»
_____ S.P.Rubnikovich
_____ 26.06.2025
Reg. # UD-0911-01-44/2526/edu.

ENDOCRINOLOGY

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 «Endocrinology», approved 26.06.2025, registration # УД-0911-01-44/2526/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 Endocrinology of the Educational Institution «Belarusian State Medical University»
(protocol # 17 of 05.05.2025);

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

EXPLANATORY NOTE

«Endocrinology» is an academic discipline of the module «Therapy Module 3», containing systematized scientific knowledge about the etiology, pathogenesis, clinical picture, methods of diagnosis, treatment and prevention of diseases caused by damage to the endocrine system.

The aim of the academic discipline «Endocrinology» is to develop specialized competencies for solving the problems of professional activity in providing medical care to patients with diseases of the endocrine system.

The objectives of the academic discipline «Endocrinology» are to develop students' scientific knowledge about the etiology, pathogenesis, classification, clinical manifestations of diseases of the endocrine system and the skills and abilities necessary for:

examination of patients with endocrine diseases;

interpretation of results of laboratory and instrumental research methods;

diagnosis and treatment of endocrine diseases;

determination of the main criteria for the degree of compensation of the pathological process in the treatment of endocrine diseases and medical rehabilitation of the patient;

preparation of differential diagnostic algorithms, treatment protocols for endocrine diseases;

provision of emergency medical care to patients with life-threatening conditions of endocrine genesis;

prevention of endocrine diseases.

Relations to other educational disciplines

The knowledge, skills and abilities acquired in the study of the academic discipline «Endocrinology» are necessary for the successful study of the following academic disciplines: «Internal Medicine», «Professional Diseases», «Clinical Pharmacology».

A student who has mastered the content of the educational material of the academic discipline should have the following specialized competence: to provide primary and specialized medical care for endocrine diseases, emergency medical care for pre-comatose and comatose states of endocrine genesis.

As a result of studying the discipline «Endocrinology» the student should know:

basic concepts of endocrine diseases;

etiology, pathogenesis, clinical manifestations of endocrinopathies;

classification, course features, differential diagnostics, methods of prevention and treatment of the most common endocrine diseases in adult patients;

methods of laboratory and instrumental diagnostics of endocrine diseases;

criteria for compensation of endocrine diseases;

principles of medical examination and medical rehabilitation, principles of medical and social expertise in endocrine diseases;

issues of deontology in diseases of the endocrine system;

principles of organization of the endocrinology service in the Republic of Belarus;

be able to:

collect anamnesis, objectively examine the patient in order to identify diseases of the endocrine system, draw up a plan for examining the patient;

draw up medical documentation in the presence of endocrine diseases;

prescribe the necessary treatment when verifying diseases of the endocrine system;

interpret the results of hormonal tests, instrumental studies, indicators of the state of carbohydrate metabolism;

conduct a preventive examination of the patient in order to identify latent disorders of carbohydrate metabolism;

give recommendations for the prevention of diseases of the endocrine system;

provide the necessary emergency medical care in pre-comatose and comatose states of endocrine genesis;

master:

physical methods of examining a patient to identify diseases accompanied by dysfunction of the endocrine system;

physical methods of examining a patient with obesity;

skills for examining a patient to identify carbohydrate metabolism disorders;

skills for prescribing treatment and monitoring endocrine diseases;

basic principles for conducting a preventive examination of a patient with subclinical forms of endocrine diseases.

Total number of hours for the study of the discipline is 108 academic hours, including 45 classroom hours and 63 hours of independent student work. Distribution of classroom hours by types of classes: 9 hours of lectures (including 3 hours of supervised student independent work (SSIW)), 36 hours of practical classes.

Form of higher education – full-time.

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

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»	9	108	45	6	3	36	63	credit

THEMATIC PLAN

Section (topic) name	Number of class hours	
	lectures (incl. SSIW)	practical
1. Diabetes Mellitus	**4,5**	**12**
1.1. Classification of diabetes mellitus, diagnostic criteria for various types of the disease	1,5	6
1.2. Modern principles of treatment of diabetes mellitus types 1 and 2. Chronic complications of diabetes mellitus	1,5	6
1.3. Acute complications of diabetes mellitus	1,5	-
2. Diseases of the thyroid and parathyroid glands	**1,5**	**12**
2.1. Diseases of the thyroid gland	1,5	6
2.2. Diseases of the parathyroid glands	-	6
3. Disease of the adrenal glands	**1,5**	**6**
4. Disease of the hypothalamic-pituitary system	**1,5**	**6**
Total hours	**9**	**36**

CONTENT OF THE EDUCATIONAL DISCIPLINE

1. Diabetes Mellitus

1.1. Classification of diabetes mellitus, diagnostic criteria for various types of the disease

Definition of diabetes mellitus (DM). Social significance, epidemiology, etiological classification of DM.

Etiology and pathogenesis of DM types 1 and 2, specific and gestational.

Concept of metabolic syndrome. Insulin resistance.

Main clinical manifestations of DM and their differences depending on the type of DM.

Algorithm for diagnosing carbohydrate metabolism disorders (DM and prediabetes). Modern methods for diagnosing DM, evaluation of the results obtained. Express glycemia analysis using test systems

Ensuring epidemiological safety in the provision of medical care.

Rules of medical ethics and deontology when communicating with comorbid patients.

Care of patients with diabetes mellitus: collecting complaints and anamnesis of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental examination methods; formulating a diagnosis taking into account the compensation of the disease and the severity of complications; carrying out preventive measures. Registration of medical documentation (filling out the medical record of an outpatient / inpatient).

1.2. Modern principles of treatment of diabetes mellitus types 1 and 2. Chronic complications of diabetes mellitus

Goals and objectives of diabetes treatment. Rational nutrition and physical activity of patients depending on the type of diabetes.

Prevention of diabetes types 1 and 2. Innovative method of treating diabetes type 1 based on autologous tolerogenic dendritic cells. Management of patients with prediabetes.

Pathogenetic therapy of diabetes type 1: insulin therapy methods using genetically engineered insulin and insulin analogues, the role of patient education, self-monitoring of glycemia.

Current possibilities of antihyperglycemic therapy for diabetes type 2. Criteria for treatment effectiveness. Preferential provision of patients with diabetes in the Republic of Belarus with drugs and medical devices for self-monitoring. Organization of training in «diabetes schools».

Application of new technologies in the treatment of diabetes and obesity: insulin pumps, daily glycemic monitoring, transplantation, bariatric (metabolic) surgery. Making up a diet taking into account carbohydrate units. Calculating the insulin dose. Methods of administering insulin with an insulin syringe and an insulin pen.

Chronic complications of diabetes: definition of the concept, classification.

Diabetic microangiopathies: general mechanisms of development. Diabetic retinopathy: stages of development, diagnosis, prevention and treatment. Diabetic nephropathy: stages of development, clinical manifestations, diagnosis and tactics of patient management. Diabetic neuropathy: classification, diagnosis, treatment. Diabetic foot syndrome. Features of foot care. Prevention of lower limb amputations in diabetes.

Tactics of managing patients in hypoglycemic and hyperglycemic coma.

Curation of patients with diabetes, chronic complications of diabetes: 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; formulation of a diagnosis taking into account compensation of the disease and the severity of complications; drawing up a treatment plan; implementation of preventive measures. Preparation of medical documentation (filling out the medical record of an inpatient/outpatient).

2. Diseases of the thyroid and parathyroid glands

2.1. Diseases of the thyroid gland

Classification of thyroid diseases. Principles of goiter syndrome diagnostics. Prevalence of thyroid diseases in the Republic of Belarus.

Nodular goiter. Algorithm for examining patients with nodular goiter. Principles of monitoring and treatment of nodular goiter depending on its form.

Acute thyroiditis: definition, etiology, pathogenesis, clinical picture, diagnosis, differential diagnosis, treatment principles.

Subacute thyroiditis: definition, etiology, pathogenesis, clinical picture, diagnosis, differential diagnosis, treatment principles.

Hashimoto's thyroiditis (autoimmune thyroiditis): etiology, pathogenesis, clinical picture, diagnosis, differential diagnosis, treatment principles.

Hypothyroidism syndrome: classification, epidemiology, definition, etiology, pathogenesis, main clinical symptoms. Algorithm for examining a patient with suspected hypothyroidism syndrome. Treatment of hypothyroidism. Tactics for managing patients in hypothyroid (myxedema) coma.

Thyrotoxicosis syndrome: epidemiology, definition, classification, etiology, pathogenesis, main clinical symptoms. Algorithm for examining a patient with suspected thyrotoxicosis syndrome. Thyrotoxic myocardial dystrophy. Autoimmune (endocrine ophthalmopathy). Principles of treating thyrotoxicosis syndrome. Tactics for managing patients in thyrotoxic crisis.

Curation of patients with thyroid diseases: 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; formulation of a diagnosis; drawing up a conservative treatment plan; implementation of preventive measures.

2.2. Diseases of the parathyroid glands

Hyperparathyroidism: definition, classification, epidemiology, etiology, pathogenesis, clinical picture, diagnostics, differential diagnostics, modern principles of treatment. Tactics of patient management in hypercalcemic crisis.

Hypoparathyroidism: definition, classification, epidemiology, etiology, pathogenesis, clinical picture, diagnostics, differential diagnostics, modern principles of treatment. Tactics of patient management in hypocalcemic crisis.

Care of patients with parathyroid diseases: collection of complaints and disease history; objective examination; preparation of an examination plan; interpretation of laboratory and instrumental examination results; formulation of a diagnosis; preparation of a conservative treatment plan; implementation of preventive measures.

3. Disease of the adrenal glands

Hypocorticism syndrome: definition, classification, epidemiology, etiology, pathogenesis, clinical picture (clinical differences between primary and secondary hypocorticism), diagnostics, differential diagnostics, modern treatment principles.

Hypercorticism syndrome: definition, classification, epidemiology, etiology, pathogenesis, clinical picture, diagnostics, differential diagnostics of the syndrome, modern treatment principles.

Hyperaldosteronism syndrome: definition, classification, epidemiology, etiology, pathogenesis, clinical picture, diagnostics, differential diagnostics of primary and secondary hyperaldosteronism, modern treatment principles.

Pheochromocytoma and paraganglioma: etiology, pathogenesis, clinical picture, diagnostics, treatment tactics, disease prognosis.

The concept of adrenal incidentaloma, diagnostic tactics.

Care of patients with adrenal diseases: collection of complaints and disease history; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental examination methods; formulation of a diagnosis; drawing up a treatment plan.

4. Disease of the hypothalamic-pituitary system

Hypersomatotropism syndrome: definition, epidemiology, etiology, pathogenesis, clinical picture (features depending on the age of disease manifestation), diagnostic and treatment tactics.

Hyperprolactinemia syndrome (hyperprolactinemic hypogonadism): definition, epidemiology, etiology, pathogenesis, clinical picture in men and women, diagnostic and treatment tactics.

Hypopituitarism syndrome: definition, epidemiology, etiology, pathogenesis, clinical picture in men and women, diagnostic and treatment tactics.

Diabetes insipidus: definition, epidemiology, etiology, pathogenesis, clinical picture, diagnostics, treatment principles.

Diagnosis of pituitary tumors by MRI using neural networks.

Patient care with hypothalamic-pituitary system diseases: collection of complaints and disease history; objective examination; preparation of a differentiated examination plan; interpretation of results of laboratory and instrumental examination methods; formulation of a diagnosis; preparation of a treatment plan.

EDUCATIONAL DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	Number of class hours		SSIW	Literature	Practical skills	Form of control	
		lectures	practical				of practical skills	of current / intermediate assessment
	9 semester							
	Lectures	**6**	-	**3**				
1.	Diabetes mellitus: definition, classification, etiology, pathogenesis, diagnostics	1,5	-	-				
2.	Diabetes mellitus: treatment and chronic complications of diabetes mellitus	-	-	1,5	1-6			Testing
3.	Diabetes mellitus: acute complications of diabetes mellitus	-	-	1,5	1-6			Testing
4.	Diseases of the thyroid and parathyroid glands	1,5	-	-				
5.	Adrenal diseases	1,5	-	-				
6.	Hypothalamic-pituitary system diseases	1,5	-	-				
	Practical lessons		**36**					
1.	Classification of diabetes mellitus, diagnostic criteria for different types of the disease	-	6	-	1-6	1. Physical examination of patients with endocrine system disease	Performing a practical skill at the patient's bedside, filling out an outpatient / inpatient medical record	Survey, control test
2.	Modern principles of treatment of diabetes mellitus type 1 and 2. Chronic	-	6	-	1-6	1. Calculation of insulin dose taking	Solving situational problems,	Survey, testing,

	complications of diabetes mellitus					into account the diet by the number of carbohydrate units. 2. Physical examination of the legs of patients with diabetes mellitus	performing practical skills at the patient's bedside*; filling out the medical record of an outpatient/inpatient	control test
3.	Thyroid diseases	-	6	-	1, 5, 6	1. Palpation of the thyroid gland. 2. Evaluation of eye symptoms	Performing a practical skill at the patient's bedside / using a simulated participant	Survey, testing, control test*
4.	Diseases of the parathyroid glands	-	6	-	1, 5, 6	Evaluation of Moebius, Chvostek and Trousseau syndrome	Performing a practical skill at the patient's bedside	Survey, testing, control test
5.	Adrenal diseases	-	6	-	1, 5, 6	Evaluation of hirsutism number according to the Ferriman-Galwey scale	Performing a practical skill at the patient's bedside	Testing, control test
6.	Hypothalamic-pituitary system diseases	-	6	-	1, 5, 6	Physical examination of male patients with hypogonadism	Performing practical skills at the patient's bedside*, filling out the medical record of an outpatient / inpatient	Testing, presentation of a report. Credit
	Total hours	**6**	**36**	**3**				

*This is a mandatory form of current certification

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic (relevant):

1. Williams textbook of endocrinology / Melmed, Shlomo, Auchus, Richard J., Goldfine, Allison B. [et al]. – 14th ed. – Philadelphia : Elsevier, 2020. – 1777 p.

Additional:

2. Diabetes mellitus: definitions, prevention, treatment approaches : teaching aid / Y. V. Dydyshko, A. P. Shepelkevich, V. M. Shyshko, T. V. Mokhort, A. I. Shishko, A. G. Mokhort, I. K. Bilodid, N. V. Karlovich. – Minsk : BSMU, 2024. – 64 p.

3. Obesity: definitions, prevention, treatment approaches : teaching aid / Y. V. Dydyshko, A. I. Shishko, T. V. Mokhort, A. P. Shepelkevich, A. G. Mokhort, I. K. Bilodid, N. V. Karlovich.– Minsk : BSMU, 2025. – 54 p.

4. American Diabetes Association Standarts of Medical care in Diabetes : vol. 44 : Diabetes Care : suppl. 1,1. – 2021. – 232p.

Normative regulatory acts:

5. Recommendations by the World Health Organization (WHO), the International Diabetes Federation (IDF), the American Association of Clinical Endocrinologists (AACE), the International Council for Control of Iodine Deficiency Disorders (ICCIDD) accepted in the countries of Europe, Asia and America.

Electronic courseware for the educational discipline «Endocrinology»:

6. https://etest.bsmu.by/course/index.php?categoryid=2.

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 tests in the academic discipline;
studying the topics (issues) designed for independent work;
performing research and creative tasks;
preparing thematic reports, abstracts, presentations;
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;

taking notes of original sources (sections of anthologies, collections of documents, monographs, textbooks);

preparation of tests for the organization of mutual control.

FORMS OF CONTROL OF SUPERVISED STUDENT INDEPENDENT WORK:
testing.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms of current certification are used to diagnose competencies:
survey;
testing;
solving situational problems;
presentation of a report;
control test.

LIST OF AVAILABLE TEACHING METHODS

Traditional method;
active (interactive) methods:
Problem-Based Learning (PBL);
Team-Based Learning (TBL);
Case-Based Learning (CBL);
Research-Based Learning (RBL).

LIST OF PRACTICAL SKILLS

Name of practical skills	Form of practical skills control
1. Physical examination of patients with endocrine system disease (determination of height, weight, calculation of body mass index, measurement and assessment of waist circumference, compliance with age and gender)	Performing practical skills at the patient's bedside; filling out the medical record of an outpatient/inpatient
2. Calculation of the insulin dose taking into account the diet by the number of carbohydrate units	Solution of situational cases
3. Physical examination of the legs of patients with diabetes mellitus (determination of various types of sensitivity, pulsation in the peripheral arteries)	Performing practical skills at the patient's bedside; filling out the medical record of an outpatient/inpatient
4. Palpation of the thyroid gland	Performing a practical skill at the patient's bedside/using a simulated participant
5. Evaluation of eye symptoms	Performing a practical skill at the patient's bedside/using a simulated participant
6. Evaluation of Moebius, Chvostek and Trousseau syndrome	Performing a practical skill at the patient's bedside
7. Evaluation of the hirsute number according to the Ferriman-Galwey scale and other signs of	Performing a practical skill at the patient's bedside

Name of practical skills	Form of practical skills control
virilization	
8. Physical examination of male patients with hypogonadism	Performing practical skills at the patient's bedside, filling out the medical record of an outpatient/inpatient

PROTOCOL OF CURRICULUM APPROVAL

Name of the academic discipline that requires approval	Name of the department	Proposals for changes in the content of the educational institution's curriculum for an academic discipline	The decision taken by the department that developed the curriculum (indicating the date and protocol number)
1. Internal Medicine	Internal Medicine, Gastroenterology and Nutrition with training and advanced training courses	No	Protocol # 17 of 05.05.2025
2. Professional Diseases	Internal Medicine, Gastroenterology and Nutrition with training and advanced training courses	No	Protocol # 17 of 05.05.2025
3. Clinical Pharmacology	Clinical Pharmacology	No	Protocol # 17 of 05.05.2025

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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» — I.L.Kotovich

24.06. 2025

Methodologist of the Educational and Methodological Department of the Office of Educational Activities of the educational institution «Belarusian State Medical University» — S.V.Zaturanova

24.06. 2025