

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

Контрольный
экземпляр



APPROVED

by First Vice-Rector, Professor

S.V. Gubkin

10.08.2017
Reg. # *UD-L.603/1718/edu*

ENDOCRINOLOGY

**Curriculum of higher educational institution
in the educational discipline for the specialty:**

1-79 01 01 «General Medicine»

Curriculum is based on the standard educational program “Endocrinology”, approved 08.08.2017, registration # 79-603/mun.

COMPILERS:

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RECOMMENDED FOR APPROVAL:

by the Department of Endocrinology of the Educational Institution “Belarusian State Medical University”
(protocol # 12 of 05.05.2017);

by the Methodological Commission of therapeutic disciplines of the Educational Institution “Belarusian State Medical University”
(protocol #206/1 of 15.05.2017)

EXPLANATORY NOTE

“Endocrinology” is the educational discipline containing systematized scientific knowledge and techniques in the field of endocrinology, etiology, pathogenesis, clinical presentation, diagnostic methods, treatment and prevention of diseases caused by the damage to the endocrine system.

The curriculum of the discipline “Endocrinology” includes the latest scientific data on the diseases of the endocrine system, including etiology, pathogenesis and modern classification. Highly informative diagnostic methods of endocrine disorders are presented. The distinctive features of the curriculum are to assess the course of endocrine diseases, depending on the ethnic characteristics and to focus on the study of modern methods of examination and treatment of patients with endocrine disorders in a variety of geographical conditions with the use of methodological approaches based on the economic features of the countries of residence.

The aim of teaching and learning the discipline “Endocrinology” is to provide the students with the scientific knowledge in timely detection of the endocrine system diseases, familiarize them with the modern, evidence-based diagnosis and treatment of patients with endocrinopathies, the development of methods for the prevention of endocrine diseases.

The tasks of studying the discipline are to develop the students’ academic competences based on the ability to independent educational and information resources search, as well as to acquire and understand the knowledge of:

- basic concepts of endocrine pathology;
- causes and mechanisms of typical diseases of the endocrine system;
- clinical manifestations and early signs of endocrine diseases;
- modern methods of diagnosis and treatment of endocrine diseases;
- factors of causing decompensation of endocrine diseases;
- modern informative methods for laboratory and instrumental examination of the patient;
- the most important manifestations of urgent conditions in endocrinology;
- methods of medical rehabilitation of patients with diseases of the endocrine system;
- prevention methods and after-treatment of endocrine diseases.

The tasks of teaching the discipline include the formation of students’ social, personal and professional competences based on the knowledge and application of:

- cross-disciplinary knowledge and skills, contributing to the formation of clinical thinking according to medical ethics and deontology rules;
- methods of patients’ examination;
- major nosological forms and treatment methods (depending on clinical manifestations, disease etiology, and specific pathogenesis);
- disease compensation degrees;
- rules of designing algorithms of differential diagnosis and treatment of endocrine diseases;

- methods of rendering emergency medical aid to patients with life-threatening disorders of an endocrine genesis;

- recommendation for the prevention of endocrine diseases.

Specific features of training doctors in the specialty 1-79 01 01 General Medicine require purposeful study of endocrine diseases.

Teaching and successful learning of the discipline “Endocrinology” is carried out on the basis of the knowledge and skills previously acquired by the students in the following disciplines:

Internal Illnesses. Physical examination of the patient, and characteristics of the diseases with the clinical manifestations similar to the diseases of the endocrine system.

Pharmacology. Studying of hormonal, anti-hormonal and other medicines used in the endocrine disease management.

Radiodiagnosis and Radiation Therapy. Methods of visualization of the endocrine glands.

Surgical Illnesses. Indications and contraindications to the surgical treatment of endocrine diseases.

Obstetrics and gynecology. Major clinical manifestations, diagnosis and treatment of gonad function disorders in women with endocrine pathology.

Neurology and Neurosurgery. Neurologic symptomatology of endocrine diseases; indications and contraindications to the surgical treatment of diseases of the neuroendocrinal system.

Ophthalmology. Diagnosis of eye diseases (diabetic retinopathy, cataract, endocrine ophthalmopathy) and ophthalmologic symptoms of pituitary adenoma.

As a result of studying the discipline “Endocrinology” the student should know:

- etiology, classification, pathogenesis, clinical picture, diagnosis and differential diagnosis, methods of prevention and treatment of diabetes and other endocrinopathies in adult patients;

- a basis of clinical examination and rehabilitation, medical and social expertise in the principles of endocrine diseases;

- questions of ethics in the endocrine system diseases;

- organization endocrinology services in the Republic of Belarus;

- modern classification of endocrine diseases;

- definition and epidemiology of endocrine diseases;

- the etiology and pathogenesis of the modern concept of the most common the endocrine system diseases;

- symptoms of the most common the endocrine system diseases, especially their flow, the differential diagnosis with other somatic diseases with common clinical symptoms;

- methods of laboratory diagnosis of endocrine diseases;

- instrumental methods of diagnosis of the endocrine system diseases;

- the role of clinicians in the diagnosis;

- criteria for metabolic compensation of the pathological process;

- basic principles and tactics of the modern medical the endocrine system diseases;
- criteria for the diagnosis of emergency conditions in diabetes mellitus, thyrotoxicosis, adrenal insufficiency and other endocrinopathy;
- framework for prevention of endocrine diseases.

be able to:

- objective examination of the patient to detect diseases of the endocrine system, make a plan examination of the patient;
- prepare documentation in the presence of endocrine diseases;
- prescribe the necessary treatment for verification of diseases of the endocrine system;
- interpret the results of hormonal tests; instrumental examinations, indicators of the status of carbohydrate metabolism;
- carry out preventive inspection of the patient in order to identify hidden carbohydrate metabolism;
- to give recommendations for the prevention of diseases of the endocrine system;
- to provide the necessary emergency medical care when prekomatosny and coma state endocrine diseases;

master:

- physical methods of examination for the purpose of detection of diseases accompanied by dysfunction of the endocrine system;
- physical methods of examination of patients with obesity;
- basic rules of choosing proper laboratory and instrumental methods of diagnosis and interpreting the results of hormonal tests and instrumental methods of examination;
- rules of patient examination for the purpose of revealing carbohydrate metabolism disorders;
- skills the purpose of treatment and monitoring of diseases of the endocrine system;
- the main principles of carry out preventive inspection of the patients with subclinical forms of diseases of the endocrine system;
- the ways of providing emergency medical care when prekomatosny and coma state endocrine diseases.

The structure of the training program in the discipline "Endocrinology" is presented in 4 sections.

Total number of hours for the study of the discipline is 64 academic hours. Classroom hours according to the types of studies: lectures - 10 hours, practical classes - 30 hours, student independent work (self-study) - 24 hours.

Current assessment is carried out according to the syllabus of the specialty in the form of a credit (in the 10th semester).

Time of attendance: full-time.

THEMATIC PLAN

Name of section (themes)	Number of class hours	
	lectures	practical classes
1. Diabetes Mellitus	4	10
1.1. Definition, epidemiology, classification, etiology, pathogenesis, clinical manifestations of the main types of diabetes, diagnosis of the disease		5
1.2. Diabetes Mellitus type 1 and type 2: the modern principles of treatment	2	5
1.3. Diabetes Mellitus: late complications of diabetes		
1.4. Diabetes Mellitus: acute complications of diabetes (ketoacidosis, hypoglycemic coma)	2	–
2. Thyroid Gland Pathology	2	10
2.1. Classification of thyroid diseases. Principles of diagnosis of Goiter Syndrome. Thyroid disease associated with iodine deficiency. Nodular Goiter. Thyroiditis	2	5
2.2. Hypothyroidism. Thyrotoxicosis syndrome		5
3. Disease of the Adrenal Glands	2	5
4. Disease of the hypothalamic-pituitary system	2	5
Total hours	10	30

CONTENT OF THE EDUCATIONAL MATERIAL

1. Diabetes Mellitus

1.1. Definition, epidemiology, classification, etiology, pathogenesis, clinical manifestations of the main types of diabetes, diagnosis of the disease

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

The etiology and pathogenesis of diabetes 1 and 2 types, specific and gestational.

The concept of Metabolic Syndrome. Insulin resistance.

The main clinical manifestations of diabetes and their differences depending on the type of DM.

Algorithm for the diagnosis of disorders of carbohydrate metabolism. Modern methods of diagnosis of diabetes and evaluation of results.

Curation of patients with diabetes: collection of complaints and anamnesis of the disease; physical examination; preparation of the plan of survey; interpretation of results of laboratory and instrumental methods of examination; formulation of the

diagnosis taking into account compensation of the disease and severity of complications; prevention. Writing educational history.

1.2. Diabetes Mellitus type 1 and type 2: the modern principles of treatment

The goal of diabetes mellitus treatment. A balanced diet and physical exercise of patients depending on the type of DM. Pathogenetic therapy of type 1 diabetes – methods insulin therapy. The concept of insulin analogues. Modern possibilities antihyperglycemic therapy in type 2 diabetes. Criteria of treatment effectiveness (compensation, subcompensation and decompensation). The organization of teaching in "Schools of Diabetes". The role of teaching the patient with diabetes, the concept of self-control.

New remedies and methods for the treatment of diabetes and obesity: insulin pump, daily monitoring of blood glucose, a transplant, bariatric surgery.

Curation of patients with diabetes: collection of complaints and anamnesis of the disease; physical examination; preparation of the plan of survey; interpretation of results of laboratory and instrumental methods of examination; formulation of the diagnosis taking into account compensation of the disease and severity of complications; the treatment plan, training in the "School of Diabetes" and the patient's motivation. The preparation of the food ration given Bread Units (BU). The calculation of the insulin dose. Methods of insulin injection, insulin syringe and insulin syringe-pen. Writing educational history.

1.3. Diabetes Mellitus: late complications of diabetes

The definition of diabetes late complications, classification.

Diabetic microangiopathy: common mechanisms of development. Diabetic Retinopathy: stages of development, diagnosis, prevention and treatment. Diabetic Nephropathy: stages of development, clinical manifestations, diagnosis and clinical management of patients. Diabetic Neuropathy: classification, diagnosis, treatment. Diabetic Foot Syndrome. Features of examination for the feet. Prevention of lower limb amputations in diabetes.

Curation of patients with chronic complications of diabetes: collection of complaints and anamnesis of the disease; physical examination; preparation of the plan of survey; interpretation of results of laboratory and instrumental methods of examination; formulation of the diagnosis taking into account compensation of the disease and severity of complications; treatment planning; implementation of preventive measures. Writing educational history.

2. Thyroid Gland Pathology

2.1. Classification of Thyroid Gland Pathology. Principles of diagnosis of Goiter Syndrome. Thyroid disease associated with iodine deficiency. Nodular Goiter. Thyroiditis

Classification of Thyroid Gland Pathology. Principles of diagnosis of Goiter Syndrome.

Thyroid Gland Pathology associated with iodine deficiency: definition, epidemiology, etiology, classification, pathogenesis, clinical manifestations, diagnosis, principles of treatment and prevention.

Nodular Goiter. Algorithm of examination of patients with Nodular Goiter. The principles of monitoring and treatment of Nodular Goiter depending on its shape.

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

Subacute Thyroiditis: definition, etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, principles of treatment.

Hashimoto's Thyroiditis (Autoimmune Thyroiditis): etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, principles of treatment.

Curation of patients with diseases of the Thyroid Gland Pathology: collection of complaints and anamnesis of the disease; physical examination; preparation of the plan of survey; interpretation of results of laboratory and instrumental methods of examination; formulation of diagnosis; prevention.

2.2. Thyroid Gland Pathology: Hypothyroidism. Thyrotoxicosis Syndrome

Hypothyroidism: classification, epidemiology, definition, etiology pathogenesis, clinical manifestations, diagnosis and treatment policy. Clinical management of patients in a Hypothyroid (myxedema) coma.

Thyrotoxicosis Syndrome: epidemiology, definition, etiology pathogenesis, classification, clinical manifestations. Algorithm examination of the patient with suspected Syndrome of Hyperthyroidism. Thyrotoxic Myocardiodystrophy. Autoimmune (Endocrine Ophthalmopathy). Principles of treatment Syndrome of Hyperthyroidism. Thyrotoxic crisis.

Curation of patients with Thyroid Gland Pathology: collection of complaints and anamnesis of the disease; physical examination; preparation of the plan of survey; interpretation of results of laboratory and instrumental methods of examination; formulation of diagnosis; prevention.

3. Disease of the Adrenal Glands

Hypocortical Syndrome definition, classification, epidemiology, etiology, pathogenesis, clinical manifestations (clinical differences between primary and secondary Hypocortical Syndrome), differential diagnosis, therapeutic principles of therapy.

Hypercortical Syndrome: definition, classification, epidemiology, etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis and treatment policy.

Hyperaldosteronal Syndrome: determination, classification, etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnostics of primary and secondary Hyperaldosteronal Syndrome and treatment policy.

Pheochromocytoma and Paraganglioma: etiology, pathogenesis, clinical manifestations, diagnosis, treatment policy, prognosis.

The concept of Incidental Adrenal Glands, diagnostic.

Curation of patients with diseases of the Adrenal Gland: collection of complaints and anamnesis of the disease; physical examination; preparation of the plan of survey; interpretation of results of laboratory and instrumental methods of examination; formulation of diagnosis; the treatment plan.

4. Disease of the Hypothalamic-Pituitary System

Hypersomatotropism: definition, epidemiology, etiology, pathogenesis, clinical manifestations (especially depending on the age of onset of the disease), diagnostic and treatment policy.

Hyperprolactinemia (Hiperprolaktinemia Hypogonadism): definition, epidemiology, etiology, pathogenesis, a clinical manifestations in men and women, diagnostic and treatment policy.

Diabetes Insipidus: definition, epidemiology, etiology, pathogenesis, clinical manifestations, diagnostics, treatment policy.

Curation of patient with diseases of the Hypothalamic-Pituitary System: collection of complaints and anamnesis of the disease; physical examination; preparation of a differentiated plan of survey; interpretation of results of laboratory and instrumental methods of examination; formulation of diagnosis; the treatment plan.

EDUCATIONAL DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	number of hours		Self-studies	Equipment	Form of control
		lectures	practical			
1. Diabetes Mellitus						
1.1	Definition, epidemiology, classification, etiology, pathogenesis, clinical manifestations of the main types of diabetes, diagnosis of the disease	2	5	4	Personal computers slide projector, glucometer	cases; tests
1.2	Diabetes Mellitus type 1 and type 2: the modern principles of treatment		5			
1.3	Diabetes Mellitus: late complications of diabetes		5	4	Personal computers slide projector	tests; control questioning; essays; case based assessment
1.4	Diabetes Mellitus: acute complications of diabetes (ketoacidosis, hypoglycemic coma)	2	-	-		
2. Thyroid Gland Pathology						
2.1	Classification of Thyroid Gland Pathology. Principles of diagnosis of Goiter Syndrome. Thyroid disease associated with iodine deficiency. Nodular Goiter. Thyroiditis	2	5	4	Personal computers slide projector, ultrasonogramms radiographs	tests; control questioning; essays; case based assessment
2.2	Hypothyroidism. Thyrotoxicosis syndrome					
3. Disease of the Adrenal Glands						
		2	5	4	Personal computers slide projector, ultrasonogramms tomogramms,	cases; tests.
4. Disease of the Hypothalamic-Pituitary System						
		2	5	4	Personal computers slide projector, ultrasonogramms tomogramms, radiographs	tests; case based assessment; Credit
		10	30	24		

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic (relevant):

1. Essential Endocrinology and Diabetes: Includes Free Desktop Edition / Richard I. G. Holt, Neil A. Hanley. 2012. 374 p.

Additional:

1. Мохорт, Т.В. Клиническая эндокринология: учебник /Т.В. Мохорт, З.В. Забаровская, А.П. Шепелькевич. – Минск: Выш.шк., 2015. 523 с.: ил.

2. Дедов, И.И. Эндокринология: учебная литература для студентов медицинских вузов / И.И.Дедов, А.Г.Мельниченко, В.В.Фадеев. М.: Медицина, 2007. 425с.

3. Мохорт, Т.В. Тактика выбора антигипергликемической терапии: методическое пособие для врачей / Т.В. Мохорт. Минск, 2016. 37 с.

4. Хмара, И.М. Диагностика, клиника, лечение и мониторинг узлового зоба: учебно-методическое пособие / И.М. Хмара [и др.]. Минск: БГМУ, 2015. 28 с.

5. Шепелькевич, А.П. Первичный гиперпаратиреоз: современные подходы к диагностике и лечению: учебно-методическое пособие / А.П. Шепелькевич [и др.]. Минск: БГМУ, 2015. 28 с.

6. Мохорт, Т.В. Неотложные состояния при сахарном диабете / Т.В. Мохорт, З.В. Забаровская А.П. Шепелькевич.- Минск: БГМУ, 2011. 21 с.

Normative regulatory acts:

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.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms are used for competences assessment:

1. Oral form:
 - cases and tests;
2. Written form:
 - tests;
 - control questioning;
 - essays;
 - case based assessment;
3. Oral-written form:
 - Credit.

LIST OF PRACTICAL SKILLS

1. Physical examination of patients with diabetes with an assessment of the sensitivity of the lower limbs (tactile, pain, vibration, temperature).
2. Physical examination of patients with Thyroid Gland Pathology, including palpation.
3. Physical examination of patients with diseases of the Adrenal Glands and gonads.
4. Physical examination of patients with obesity (definition of body mass index, waist circumference, index of insulin resistance).
5. Performing Express-analysis of blood glucose using test systems.
6. The preparation of the food ration given Bread Units (BU). The calculation of the insulin dose. Methods of insulin injection, insulin syringe and insulin syringe-pen
7. The ways of providing emergency medical care when:
 - prekomatosny and coma state endocrine diseases;
 - Thyrotoxic crisis, Hypothyroid coma.
 - Addisonic crisis

LIST OF LECTURES

1. Diabetes Mellitus: classification, epidemiology, etiology, pathogenesis, clinical manifestation, diagnosis, treatment
2. Diabetes Mellitus: early and late complications
3. Thyroid Gland Pathology
4. Disease of the Adrenal Glands
5. Disease of the Hypothalamic-Pituitary System

LIST OF PRACTICAL STUDIES

10 semesters

1. Diabetes Mellitus (DM): definition, epidemiology, classification, etiology, and pathogenesis of type 1 and 2 diabetes, diagnosis, clinical manifestation. Obesity as a risk factor for developing DM2. The types of obesity, diagnosis, treatment.

2. Diabetes Mellitus: modern principles of treatment of type 1 and 2 diabetes (diet therapy, physical activity, therapy). Modern methods of treatment of type 1 diabetes. Principles of prescribing antidiabetic drugs in type 2 diabetes (sulfonylureas, biguanides, insulinotherapy). Evaluation of treatment efficiency (criteria of compensation of diabetes).

Late complications of diabetes: diabetic microangiopathy and macroangiopathy. Diabetic foot syndrome. Diagnostic criteria. Modern principles of treatment.

3. Thyroid Gland Pathology. Classification. Principles of diagnosis of Goiter Syndrome. Thyroid disease associated with iodine deficiency (endemic goiter, sporadic goiter). Pathology of the Parathyroid Glands

4. Thyroid Gland Pathology: Hypothyroidism, Thyrotoxicosis Syndrome: etiology classification, pathogenesis, clinical manifestations, diagnosis and treatment policy. Thyroiditis (subacute, autoimmune, chronic fibrous) – etiology, pathogenesis, clinical manifestations, diagnostic, modern principles of treatment.

5. Disease of the Adrenal Glands: Hypercortical Syndrome, Hyperaldosteronism, Pheochromocytoma, Hypocortical Syndrome. Disease of the Adrenal Glands classification.

Hypercortical Syndrome: definition, classification, epidemiology, etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis and treatment policy.

Hyperaldosteronal Syndrome: determination, classification, etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnostics of primary and secondary Hyperaldosteronal Syndrome and treatment policy.

Pheochromocytoma and Paraganglioma: etiology, pathogenesis, clinical manifestations, diagnosis, treatment policy, prognosis.

Hypocortical Syndrome: definition, classification, epidemiology, etiology, pathogenesis, clinical manifestations, differential diagnosis, therapeutic principles of therapy.

6. Disease of the Hypothalamic-Pituitary System

Hypersomatotropism: definition, epidemiology, etiology, pathogenesis, clinical manifestations, diagnostic and treatment policy.

Hyperprolactinemia: definition, epidemiology, etiology, pathogenesis, a clinical manifestations in men and women, diagnostic and treatment policy.

Diabetes Insipidus: definition, epidemiology, etiology, pathogenesis, clinical manifestations, diagnostics, treatment policy.

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

Dean of the Medical Faculty for
International Students

10.08. 2017

V.V. Davydov

Methodologist of Educational
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S.A. Kharytonava

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