MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY
Department of Internal Medicine №1

CONFIRMED by
Vice-rector for scientific and pedagogical work

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September 1st, 2025

WORKING PROGRAM OF ACADEMIC DISCIPLINE

ENDOCRINOLOGY

Level of higher education: second (master's degree)

Field of knowledge: 22 «Health care»

Specialty: 222 «Medicine»

Educational and professional program: Medicine

2025

The work program is based on the educational and professional program "Medicine" for training specialists of the second (master's) level of higher education in the specialty 222 "Medicine" of the field of knowledge 22 "Healthcare", approved by the Academic Council of ONMedU (minutes No. 10 of June 27, 2024) and the educational and professional program "Medicine" for training specialists of the second (master's) level of higher education in the specialty I 2 "Medicine" of the field of knowledge I "Healthcare and Social Security", approved by the Academic Council of ONMedU (minutes No. 10 of June 26, 2025).

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The working program was approved at the meeting of the department of Internal Medicine No.1
Protocol No.1 dated 28.08.2025

Head of the department _____ Yurii KARPENKO

Approved by the guarantor of
the educational and professional program _____ Valeriia MARICHEREDA

Approved by the subject cycle methodical commission for therapeutic disciplines of ONMedU
Protocol No.1 dated 29.08.2025

Head of the subject cycle methodical commission _____ Olena VOLOSHYNA

Revised and approved at a meeting of the department of Internal Medicine №1
Protocol No. __ dated «____» _____ 20_____

Head of department _____ Yurii KARPENKO

Revised and approved at a meeting of the department of the department of Internal Medicine №1
Protocol No. __ dated «_____» _____ 20_____

Head of Department _____ Yurii KARPENKO

1. Description of the academic discipline

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the academic discipline
The total number of: Credits: 1 Hours: 30 Content modules: 1	Field of knowledge 22 "Health care" Specialty 222 "Medicine" Level of higher education second (master's degree)	*Full-time education*
		Compulsory discipline
		Year of training: 6
		Semesters XI-XII
		Lectures (0 hours)
		Seminars (0 hours)
		Practical (18 hours)
		Laboratory (0 hours)
		Independent work (12 hours)
		Final control form – credit

2. The purpose and tasks of the educational discipline, competences, program learning outcomes.

Purpose: Acquisition by the acquirer of higher education of knowledge and formation of elements of professional competences in the field of endocrinology and improvement of skills and competences acquired during the study of previous disciplines.

Tasks:

1. Formation of skills and abilities in the clinical examination of patients with the main diseases of the endocrine system and to be able to analyze their results;
2. Formation of abilities and skills in substantiating clinical diagnosis, drawing up a plan for laboratory and instrumental research of patients with the most common diseases of the endocrine system and their complications;
3. Mastering the ability to determine treatment tactics and prevent the most common diseases of the endocrine system and their complications.

The process of studying the discipline is aimed at forming elements of the following competencies:

General (GC)

GC 1 Ability to abstract thinking, analysis and synthesis.
GC 3 Ability to apply knowledge in practical situations.
GC 4 Knowledge and understanding of subject area and understanding of professional activities.
GC 5 Ability to adapt and act in a new situation.
GC 6 Ability to make informed decisions.
GC 7 Ability to work in a team.
GC 8 Ability to inter-personal interaction.
GC 10. Ability to use information and communication technologies
GC 11 Ability to find, process and analyze information from various sources.

Special (SC):

SC 1. Ability to collect medical information about the patient and analyze clinical data
SC 2. Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results
SC 3. Ability to establish a preliminary and clinical diagnosis of the disease
SC 4. Ability to determine the necessary regime of work and rest in the treatment and prevention of

diseases
SC 5. Ability to determine the nature of nutrition in the treatment and prevention of diseases
SC 6. Ability to determine the principles and nature of treatment and prevention of diseases
SC 7. Ability to diagnose emergency conditions
SC 8. Ability to determine tactics and provide emergency medical care
SC 9. Ability to carry out medical evacuation measures
SC 10. Ability to perform medical manipulations
SC 11. Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility including an early intervention system
SC 15. Ability to carry out a work capacity examination
SC 16. Ability to maintain medical documentation, including electronic forms
SC 17. Ability to assess the impact of the environment, socio-economic and biological determinants on the state of health of an individual, family, population
SC 25. Adherence to professional and academic integrity, to be responsible for the reliability of the obtained scientific results

Program learning outcomes (PLO):

PLO 1 - Have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy.
PLO 2 - Understanding and knowledge of basic and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.
PLO 3 - Specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine and related interdisciplinary problems. including an early intervention system
PLO 4 - Highlight and identify leading clinical symptoms and syndromes (according to list 1); according to standard methods, using preliminary data of the patient's history, data of the patient's examination, knowledge about the person, his organs and systems, establish a preliminary clinical diagnosis of the disease (according to list 2).
PLO 5 - Collect complaints, history of life and diseases, assess the psychomotor and physical development of the patient, the state of organs and systems of the body, based on the results of laboratory and instrumental studies, evaluate information about the diagnosis (according to list 4), taking into account the age of the patient.
PLO 6 - To establish the final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of clinical, additional examination, differential diagnosis, observing the relevant ethical and legal norms, under the control of the managing physician in the conditions of a health care institution (according to list 2).
PLO 7 - Prescribe and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to list 4), patients with diseases of organs and body systems for differential diagnosis of diseases (according to list 2).
PLO 8 - Determine the main clinical syndrome or symptom that determines the severity of the condition of the victim/victim (according to list 3) by making a reasoned decision about the condition of a person under any circumstances (in the conditions of a health care institution, outside its borders) including . in conditions of emergency and hostilities, in field conditions, in conditions of lack of information and limited time.
PLO 9 - Determine the nature and principles of treatment (conservative, operative) of patients with diseases (according to list 2), taking into account the age of the patient, in the conditions of a health care facility, outside its borders and at the stages of medical evacuation, including in field conditions, on the basis of a preliminary clinical diagnosis, observing relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes, in

case of the need to expand the standard scheme, be able to substantiate personalized recommendations under the control of the head physician in the conditions of a medical institution.
PLO 10 - Determine the necessary mode of work, rest and nutrition based on the final clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes.
PLO 14 - Determine tactics and provide emergency medical care for emergency situations (according to list 3) in a time-limited environment according to existing clinical protocols and standards of care.
PLO 15. To organize the provision of medical aid and medical evacuation measures to the population and military personnel in emergency situations and hostilities, including in field conditions
PLO 17 - Perform medical manipulations (according to list 5) in the conditions of a medical institution, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, observing the relevant ethical and legal norms.
PLO 18. To determine the state of functioning and limitations of a person's vital activities and the duration of incapacity for work with the preparation of relevant documents, in the conditions of a health care institution, based on data about the disease and its course, peculiarities of the person's professional activity, etc. Maintain medical documentation regarding the patient and the contingent of the population on the basis of regulatory documents.
PLO 23. Assess the impact of the environment on the state of human health to assess the state of morbidity of the population. PRN24. To organize the necessary level of individual safety (own and the persons he cares for) in case of typical dangerous situations in the individual field of activity.

As a result of studying the academic discipline, the acquirers of higher education should:

To know: etiology, pathogenesis, symptoms and signs, diagnosis, treatment, prevention of common diseases of the endocrine system.

Be able to:

- Collect data on patient complaints, medical history, life history of patients with diseases of the endocrine system and their complications;
- Evaluate information about the diagnosis using a standard procedure, based on the results of laboratory and instrumental studies. Determine the list of necessary clinical laboratory and instrumental studies and evaluate their results (according to list 4).
- Select the leading clinical symptom or syndrome (according to list 1). Establish a preliminary diagnosis, carry out differential diagnosis and determine the clinical diagnosis of the disease (according to list 3).
- Determine the principles of treatment of diseases, the necessary regime of work and rest, the nature of nutrition (according to list 2).
- Diagnose emergency conditions (according to list 3).
- Determine tactics and provide emergency medical aid (according to list 3).

Master the skills:

- Communication and clinical examination of the patient
- Perform medical manipulations (according to list 5) for diseases of the endocrine system.
- Keep medical records.

3. Content of the academic discipline

Content module 1

« Management of patients with basic symptoms and syndromes in Endocrinology»

Topic 1. Management of a patient with metabolic syndrome.

Definition, classification, diagnostic criteria, relevance of the problem all over the world. Drawing up an examination plan, the role of instrumental and laboratory examination methods. Patient

management tactics depending on glycemia, body mass index, blood pressure level. Medical and non-medical treatment. Existing standards of treatment. Primary and secondary prevention.

Topic 2. Management of a patient with chronic complications of diabetes.

Diabetic angiopathies and neuropathies. Classification. Diabetic nephropathy, stages, diagnosis, differential diagnosis, treatment and prevention. Diabetic retinopathy: stages of the process, diagnosis, prevention and treatment. Diabetic neuropathy, classification, diagnosis and treatment. Diabetic foot syndrome: classification, diagnosis, treatment. Principles of treatment of pregnant women with diabetes. Peculiarities of urgent and planned surgical interventions in patients with diabetes. Regime of insulin therapy: traditional and intensified insulin therapy. Complications of insulin therapy: hypoglycemic states, insulin allergy, post-injection lipodystrophy, insulin resistance, chronic insulin overdose (Somogyi syndrome), insulin edema.

Topic 3. Management of a patient with goiter syndrome.

Determination of the size of the thyroid gland. Definition - "goiter". The concept of endemic non-toxic and nodular forms of goiter. Diseases accompanied by thyrotoxicosis. Clinical differences of nodular toxic goiter. Justification of the diagnosis of thyrotoxicosis. Medicinal and surgical treatment of toxic goiter, use of 131-iodine for therapeutic purposes. Differential diagnosis of acute and subacute thyroiditis. Chronic thyroiditis. Justification of the diagnosis of autoimmune thyroiditis. Nodular forms of goiter. Monitoring of patients with thyroid nodules. Pathomorphological classification of tumors of the thyroid gland. Justification of the diagnosis of thyroid cancer.

Content module 2
"Emergency conditions in Endocrinology"

Topic 4. Management of a patient with hypoglycemic coma. Management of a patient with hyperglycemic (ketoacidemic) coma.

Standards of diagnosis and management of patients. Differential diagnosis. Patient management tactics.

Topic 5. Management of a patient with a thyrotoxic crisis.

Standards of diagnosis and management of patients. Differential diagnosis. Patient management tactics

Topic 6. Management of a patient with acute adrenal failure.

Standards of diagnosis and management of patients. Differential diagnosis. Patient management tactics.

4. The structure of the academic discipline

Topic name	Number of hours					
	Total	Including				
		lectures	seminars	practical classes	laboratory classes	ISW
Content module 1 « Management of patients with basic symptoms and syndromes in Endocrinology»						
Topic 1. Management of a patient with metabolic syndrome.	4	0	0	2	0	2
Topic 2. Management of a patient with chronic complications of diabetes.	6	0	0	4	0	2
Topic 3. Management of a patient with goiter syndrome.	6	0	0	4	0	2

Total hours for content module 1	**16**	**0**	**0**	**10**	**0**	**6**
Content module 1 "Emergency conditions in Endocrinology"						
Topic 4. Management of a patient with hypoglycemic coma. Management of a patient with hyperglycemic (ketoacidemic) coma.	6	0	0	4	0	2
Topic 5. Management of a patient with a thyrotoxic crisis.	4	0	0	2	0	2
Topic 6. Management of a patient with acute adrenal failure.	4	0	0	2	0	2
Total hours for content module 2	**14**	**0**	**0**	**8**	**0**	**6**

5. Topics of lectures / seminars / practical / laboratory classes

5.1 Lecture classes are not provided

5.2 Topics of practical classes

№	Topic name	Number of hours
1	**Topic 1. Practical lesson 1.** **Management of a patient with metabolic syndrome.** Definition, classification, diagnostic criteria, relevance of the problem all over the world. Drawing up an examination plan, the role of instrumental and laboratory examination methods. Patient management tactics depending on glycemia, body mass index, blood pressure level. Drug and non-drug treatment. Existing standards of treatment. Primary and secondary prevention.	2
2	**Topic 2. Practical lesson 2.** **Management of a patient with chronic complications of diabetes.** Diabetic angiopathies and neuropathies. Classification. Diabetic nephropathy, stages of development, diagnosis, differential diagnosis, treatment and prevention. Diabetic retinopathy: stages of the process, diagnosis, prevention and treatment. Diabetic neuropathy, classification, diagnosis and treatment. Diabetic foot syndrome: classification, diagnosis, treatment.	2
3	**Topic 2. Practical lesson 3.** **Principles of treatment of patients with diabetes.** Regime of insulin therapy: traditional and intensified insulin therapy. Complications of insulin therapy: hypoglycemic states, insulin allergy, post-injection lipodystrophy, insulin resistance, chronic insulin overdose (Somogyi syndrome), insulin edema. Algorithm for the treatment of type 2 diabetes. Principles of treatment of pregnant women with diabetes. Peculiarities of urgent and planned surgical interventions in patients with diabetes.	2
4	**Topic 3. Practical lesson 4.** **Management of a patient with goiter syndrome**.	2

	Determination of the size of the thyroid gland. Definition of the "goiter". The concept of endemic non-toxic and nodular forms of goiter. Diseases accompanied by thyrotoxicosis. Clinical differences of nodular toxic goiter. Justification of the diagnosis of thyrotoxicosis. Medicinal and surgical treatment of toxic goiter, use of 131-iodine for therapeutic purposes.	
5	**Topic 3. Practical session 5.** **Management of a patient with goiter syndrome**. Differential diagnosis of acute and subacute thyroiditis. Chronic thyroiditis. Justification of the diagnosis of autoimmune thyroiditis. Nodular forms of goiter. Monitoring of patients with thyroid nodules. Pathomorphological classification of tumors of the thyroid gland. Justification of the diagnosis of thyroid cancer.	2
6	**Topic 4. Practical lesson 6.** **Management of a patient with hypoglycemic coma.** Etiology, differential diagnosis, laboratory studies. Algorithms for providing emergency care in outpatient and inpatient conditions.	2
7	**Topic 4. Practical lesson 7.** **Management of a patient with hyperglycemic (ketoacidemic) coma.** Etiology, differential diagnosis, laboratory studies. Algorithms for providing emergency care in outpatient and inpatient conditions.	2
8	**Topic 5. Practical lesson 8.** **Management of a patient with thyrotoxic crisis.** Standards of diagnosis and management of patients. Differential diagnosis. Patient management tactics.	2
9	**Topic 6. Practical lesson 9.** **Management of a patient with acute adrenal insufficiency.** Standards of diagnosis and management of patients. Differential diagnosis. Patient management tactics.	2
Total		**18**

5.3 Seminar classes are not provided

Topics of laboratory classes
Laboratory classes are not provided.

6. Self-employment of a higher education acquirers

№	Title of the topic / types of tasks	Number of hours
1	Topic 1. Preparation for practical class 1	2
2	Topic 2. Preparation for practical class 2	2
3	Topic 3. Preparation for practical classes 4-5	2
4	Topic 4. Preparation for practical classes 6-7	2
5	Topic 5. Preparation for practical class 8	2
6	Topic 5. Preparation for practical class 9	2
TOTAL		**12**

7. Teaching methods

Practical classes: conversation, role-playing, solving clinical situational problems, practicing patient examination skills, demonstrating and practicing the skills of performing manipulations according to list 5, training exercises on differential diagnosis of diseases of the endocrine system.

Independent work: independent work with the recommended basic and additional literature, with electronic information resources, independent work with the bank of test tasks KROK-2, independent mastering of the algorithms of the clinical examination of the patient.

8. Forms of control and evaluation methods (including criteria for evaluating learning outcomes)

Current control: oral survey, testing, evaluation of performance of practical skills, evaluation of communication skills during role-play, solution of situational clinical tasks, evaluation of activity in class.

Final control: credit test

Evaluation of the current educational activity in a practical session:

1. Evaluation of theoretical knowledge on the subject of the lesson:
   - methods: survey, solving a situational clinical problem
   - maximum score – 5, minimum score – 3, unsatisfactory score – 2.
2. Evaluation of practical skills and manipulations on the subject of the lesson:
   - methods: assessment of the correctness of the performance of practical skills
   - maximum score – 5, minimum score – 3, unsatisfactory score – 2.
3. Evaluation of work with the patient on the subject of the lesson:
   - methods: assessment of: a) communication skills of communication with the patient, b) the correctness of the appointment and evaluation of laboratory and instrumental studies, c) compliance with the differential diagnosis algorithm, d) substantiation of the clinical diagnosis, e) drawing up a treatment plan;
   - maximum score – 5, minimum score – 3, unsatisfactory score – 2.

The grade for one lesson is the arithmetic average of all components and can only have an integer value (5, 4, 3, 2), which is rounded according to the statistical method.

Current evaluation criteria in practical training

Estimation	Evaluation criteria
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of the situational clinical problem and interpretation of clinical, laboratory and instrumental research data, expresses his opinion on the subject of the lesson, demonstrates clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational clinical problem and interpretation of clinical, laboratory and instrumental research data with some errors, expresses his opinion on the subject of the lesson, demonstrates clinical thinking.
«3»	The applicant does not have sufficient knowledge of the material, is unsure of participating in the discussion and solution of the situational clinical problem and the interpretation of clinical, laboratory and instrumental research data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of the situational clinical problem and the interpretation of clinical, laboratory and instrumental research data.

A credit is awarded to an applicant who has completed all the tasks of the work program of the academic discipline, actively participated in practical classes, completed and defended an individual assignment and has an average current grade of at least 3.0 and has no academic debt.

Credit is given: at the last lesson. The credit score is the arithmetic mean of all components on a traditional four-point scale and has a value that is rounded using the statistical method to two decimal places.

9. Distribution of points received by applicants of higher education

The obtained average score for the academic discipline for applicants who have successfully mastered the work program of the academic discipline is converted from a traditional four-point scale to points on a 200-point scale, as shown in the table:

Conversion table of a traditional assessment into a multi-point scale

Traditional four-point scale	Multipoint 200-point scale
Excellent ("5")	185 - 200
Good ("4")	151 - 184
Satisfactory ("3")	120-150
Unsatisfactory ("2")	Below 120

A multi-point scale (200-point scale) characterizes the actual success of each applicant in learning the educational component. The conversion of a traditional grade into a 200-point grade is performed by the University's information and technology department using the "Contingent" program according to the appropriate formula: Average grade point average (current grade point average in the discipline) x 40.

Applicants who study in one course (one specialty), based on the number of points scored in the discipline, are ranked on the ECTS scale as follows:

Evaluation on the ECTS scale	Statistical indicator
A	Top 10% applicants
B	The next 25% of applicants
C	The next 30% of applicants
D	The next 25% of applicants
E	The next 10% of applicants

The ECTS scale establishes the applicant's belonging to the group of the best or worst among the reference group of fellow students (faculty, specialty), that is, his rating. When converting from a multi-point scale, as a rule, the boundaries of the grades "A", "B", "C", "D", "E" do not coincide with the boundaries of the grades "5", "4", "3" according to the traditional scale. The grade "A" on the ECTS scale cannot be equal to the grade "excellent", and the grade "B" - to the grade "good", etc. Applicants who received grades "FX" and "F" ("2") are not included in the list of ranked applicants. Such applicants automatically receive an "E" grade after retaking. The "FX" grade is given to applicants who have scored the minimum number of points for current educational activities, but who have not passed the final test. A grade of "F" is given to students who have attended all classroom classes in the academic discipline, but have not achieved a grade point average (3.00) for their current academic activity and are not admitted to the final examination.

10. Methodical support

- Working program of the academic discipline
- Syllabus
- Methodological recommendations for practical classes
- Methodical recommendations for independent work of higher education acquirers
- Multimedia presentations
- Situational clinical tasks

- Scenarios of role-playing games (if necessary)
- Electronic bank of test tasks by subdivisions of the discipline
- **Educational and methodical literature:**

1. Karpenko Y.I., Savelieva O.V., etc. Endocrinology: methodological recommendations for practical classes for applicants of higher education of the 6th year of the second master's level of the specialty "Medicine" / methodological recommendations for practical classes Odesa, ONMedU, 2025. 53p.
2. Karpenko Y.I., Savelieva O.V., etc. Endocrinology: methodological recommendations for independent work of applicants of higher education of the 6th year of the second master's level of the specialty "Medicine" / methodological recommendations for independent work Odesa, ONMedU, 2026. 45 p.

11. Questions for preparing for the test.

1. Management of a patient with metabolic syndrome. Definition, classification, diagnostic criteria, relevance of the problem all over the world. Drawing up an examination plan, the role of instrumental and laboratory examination methods.
2. Tactics of management of patients with metabolic syndrome depending on glycemia, body mass index, blood pressure level. Drug and non-drug treatment. Existing standards of treatment. Primary and secondary prevention.
3. Management of a patient with chronic complications of diabetes. Diabetic angiopathies and neuropathies. Classification. Diabetic nephropathy, stages of the process, diagnosis, differential diagnosis, treatment and prevention. Diabetic retinopathy: stages of the process, diagnosis, prevention and treatment. Diabetic neuropathy, classification, diagnosis and treatment. Diabetic foot syndrome: classification, diagnosis, treatment.
4. Principles of treatment of patients with diabetes. Regime of insulin therapy: traditional and intensified insulin therapy. Complications of insulin therapy: hypoglycemic states, insulin allergy, post-injection lipodystrophy, insulin resistance, chronic insulin overdose (Somogyi syndrome), insulin edema.
5. Type 2 diabetes treatment algorithm. Principles of treatment of pregnant women with diabetes. Peculiarities of urgent and planned surgical interventions in patients with diabetes.
6. Management of a patient with goiter syndrome. Determination of the size of the thyroid gland. Definition of the "goiter". The concept of endemic non-toxic and nodular forms of goiter. Diseases accompanied by thyrotoxicosis. Clinical differences of nodular toxic goiter. Justification of the diagnosis of thyrotoxicosis.
7. Medicinal and surgical treatment of toxic goiter, use of 131-iodine for therapeutic purposes. Differential diagnosis of acute and subacute thyroiditis. Chronic thyroiditis. Rationale for the diagnosis of autoimmune thyroiditis.
8. Nodular forms of goiter. Monitoring of patients with thyroid nodules. Pathomorphological classification of tumors of the thyroid gland. Justification of the diagnosis of thyroid cancer.
9. Management of a patient with hypoglycemic coma. Etiology, differential diagnosis, laboratory studies. Algorithms for providing emergency care in outpatient and inpatient conditions.
10. Management of a patient with hyperglycemic (ketoacidemic) coma. Etiology, differential diagnosis, laboratory studies. Algorithms for providing emergency care in outpatient and inpatient conditions.
11. Management of a patient with a thyrotoxic crisis. Standards of diagnosis and management of patients. Differential diagnosis. Patient management tactics.
12. Management of a patient with acute adrenal insufficiency. Standards of diagnosis and management of patients. Differential diagnosis. Patient management tactics.

12. Recommended Books

The main one:

1. Harrison's Principles of Internal Medicine Self-Assessment and Board Review, 20th Edition 20th Edition.- (August 13, 2021). - 736 pages
2. Oxford Textbook of Endocrinology and Diabetes 3e 3rd Edition. by John Wass (Author), Wiebke Arlt (Author), Robert Semple (Author). - June 22, 2022. - 2656 pages

Additional:

1. Endocrinology and Diabetes: A Problem Oriented Approach 2nd ed. 2022 Edition. - March 4, 2022. - 513 pages
2. A Case-Based Guide to Clinical Endocrinology 3rd ed. 2022 Edition. by Terry F. Davies (Editor) . - January 5, 2022. - 578 pages
3. Polyendocrine Disorders and Endocrine Neoplastic Syndromes (Endocrinology). – 2021. - 448 page

13. Electronic information resources

1) https://diabetes.org/ - American Diabetic Association
2) www.ama-assn.org – American Medical Association
3) www.who.int – The World Health Organization
4) http://bma.org.uk – British Medical Association
5) https://www.guidelinecentral.com/ - Guideline central
6) https://www.thyroid.org/professionals/ata-professional-guidelines/ - American Thyroid Association
7) https://www.endocrine.org/clinical-practice-guidelines - Endocrine Society