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MINISTRY OF HEALTH OF UKRAINE

ODESA NATIONAL MEDICAL UNIVERSITY

Department of Family Medicine and Polyclinic Therapy



CONFIRMED by

Prorector for scientific and pedagogical work

Eduard BURYACHKIVSKIY

September 1st, 2024

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WORKING PROGRAM IN THE DISCIPLINE

"MANAGEMENT OF DIABETES IN THE PRACTICE OF A FAMILY DOCTOR"

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

Field of knowledge: 22 «Health care»

Specialty: 222 «Medicine»

Educational and professional program: Medicine

2024

The working program is compiled on the basis of the educational and professional program "Medicine" for the training of specialists of the second (master's) level of higher education in the specialty 222 "Medicine" of the field of knowledge 22 "Health care", approved by the Academic Council of ONMedU (Minutes No.10 dated 27/06/2024).

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The working program is approved at the meeting of the department of family medicine and polyclinic therapy
 Protocol No. 1 dated 29/08/2024.

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Protocol No. ___ dated ___/___/20__.

Head of the Department _____

1. Description of the discipline:

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the discipline
Total number: Credits of ECTS: 3,0 Hours: 90 Content modules: 4	Field of knowledge 22 «Health care» Specialty 222 «Medicine» Level of higher education second (master's degree)	<i>Full-time (day) education</i> <i>Elective course</i>
		<i>Course: 6</i>
		<i>Semester: XI - XII</i>
		<i>Lectures (0 hours)</i>
		<i>Seminars (0 hours)</i>
		<i>Practical classes (30 hours)</i>
		<i>Laboratories (0 hours)</i>
		<i>Independent work (60 hours)</i>
		<i>including individual tasks (0 hours)</i>
		<i>Form of final control – Credit Test</i>

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

Purpose: deepening, expanding and concretizing by the student of higher education knowledge and formation of elements of professional competences in the field of endocrinology, in particular the essence of type 2 diabetes, etiopathogenesis, risk factors, management tactics for acute and chronic complications, approaches to diagnosis and the appointment of hypoglycemic therapy with the aim of achieving compensation of carbohydrate metabolism, maintenance of normal body weight and prevention of specific complications of diabetes.

The tasks of the discipline are the following:

1. To improve the skills and abilities of diagnosing disorders of carbohydrate metabolism and its complications.
2. To expand the knowledge about non-drug treatment of patients living with diabetes.
3. To improve the skills in the correct selection of hypoglycemic therapy to achieve compensation of carbohydrate metabolism and prevent complications.
4. To acquire the skills in timely prevention of acute and chronic complications of type 2 diabetes.
5. To expand the knowledge about the role of the family doctor in the management of patients with diabetes.

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

General competencies are:

- GC 1. Ability to abstract thinking, analysis, and synthesis.
- GC 3. Ability to apply knowledge in practical situations
- GC 4. Knowledge and understanding of the subject area and understanding of professional activity
- GC 5. Ability to adapt and act in a new situation.
- GC 6. Ability to make reasonable decisions
- GC 7. Ability to work in a team
- GC 8. Ability to interpersonal interaction
- GC 11. Ability to search, process and analyze information from various sources

- GC 12. Determination and persistence in relation to assigned tasks and assumed responsibilities
 GC 13. Awareness of equal opportunities and gender issues.
 GC 16. Ability to evaluate and ensure the quality of the work performed

Special competencies are:

- SC1 – Ability to collect medical information about the patient and analyze clinical data.
 SC2 – Ability to determine the list of laboratory and instrumental studies and evaluate their results.
 SC3 – Ability to establish a preliminary and clinical diagnosis of the disease.
 SC6 – Ability to determine the principles and nature of treatment and prevention of diseases.
 SC7 – Ability to diagnose emergency conditions.
 SC8 – Ability to determine tactics and provide emergency medical help.
 SC16 – Ability to maintain medical documentation, including electronic forms.
 SC26 – The ability to determine the management tactics of persons subject to dispensary supervision.

Program learning outcomes are:

- PLO 1. Having a thorough knowledge of the structure of professional activity. Being 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 fundamental and clinical biomedical sciences, at a level sufficient for solving professional tasks in health care.
- PLO 3. Specialized conceptual knowledge that 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. Identify 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, life anamnesis, 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, and evaluate information about the diagnosis (according to list 4), considering the age of the patient.
- PLO 6. To establish a final clinical diagnosis by making a reasoned decision and analyzing the received subjective and aim data of clinical, additional examination, carrying out 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) of patients with diseases of organs and body systems for differential diagnosis of diseases (according to list 2).
- PLO 8. Determine the primary clinical syndrome or symptom that determines the severity of the victim's/victim's condition (according to list 3) by making a reasoned decision about the person's condition under any circumstances (in the conditions of a health care facility, outside its borders), including in conditions of emergency and hostilities, in field conditions, in conditions of lack of information and limited time.
- 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 in emergency situations (according to list 3) in limited time conditions according to existing clinical protocols and treatment standards.

PLO 16. Form rational medical routes for patients to organize the interaction with colleagues in their own and other institutions, organizations, and institutions; to apply tools for the promotion of medical services in the market, based on the analysis of the needs of the population, in the conditions of the functioning of the health care institution, its division, in a competitive environment.

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, and observing the relevant ethical and legal norms.

PLO 21. Searching for the necessary information in the professional literature and databases of other sources, analyzing, evaluating and application of this information.

PLO 30. Determine the management tactics of persons subject to dispensary supervision.

As a result of studying the discipline, the student has to

Know:

- etiology and pathogenesis and risk factors for the development of type 2 diabetes
- basic clinical-instrumental and laboratory methods of research for the detection of type 2 diabetes
- diagnostic criteria for diagnosing type 2 diabetes
- signs and principles of diagnosis of acute and chronic complications of type 2 diabetes
- principles of treatment and prevention of type 2 diabetes
- principles of prescribing insulin therapy for a patient with type 2 diabetes

Be able:

- to diagnose type 2 diabetes and draw up a patient examination plan
- to conduct a differential diagnosis between type 1 and type 2 diabetes
- to carry out differential diagnoses of various emergency conditions in type 2 diabetes
- to determine the tactics and provide emergency medical care in case of emergencies, and the need for hospitalization
- to draw up a treatment plan for a patient with type 2 diabetes
- to apply what you have learned in a clinical situation
- to keep medical documentation

3. The content of the educational discipline

Content module 1.

Diabetes. Etiology. Pathogenesis. Clinic. Diagnosis and differential diagnosis.

Theme 1. Type 2 diabetes, epidemiology, etiology, pathogenesis, and classification

Definition of type 2 diabetes. Epidemiology of diabetes in the world, the prognosis of morbidity. Etiology and pathogenesis of diabetes. Type 2 diabetes: role of genetic predisposition, obesity, external risk factors. Insulin resistance and impaired insulin secretion. Current classification of diabetes according to the American Diabetes Association and the World Health Organization.

Theme 2. Clinic, diagnosis and differential diagnosis, screening of type 2 diabetes

The main clinical symptoms of diabetes. Diagnosis of diabetes. Screening for type 2 diabetes and testing for risk factors. Diagnostic criteria for diabetes and other categories of hyperglycemia. Additional research methods. Differential diagnosis of type 2 diabetes with other diseases.

Theme 3. Type 1 diabetes: epidemiology, etiology, pathogenesis and classification

Definition of type 1 diabetes. Epidemiology of diabetes in the world, prognosis of morbidity. Etiology and pathogenesis of diabetes. Type 1 diabetes: role of genetic predisposition, obesity,

external risk factors. Insulin resistance and impaired insulin secretion. Current classification of diabetes according to the American Diabetes Association and the World Health Organization.

Theme 4. Clinic, diagnosis and differential diagnosis, screening of type 1 diabetes

The main clinical symptoms of diabetes. Diagnosis of diabetes. Screening for type 1 diabetes and testing for the presence of risk factors for the disease. Diagnostic criteria for diabetes and other categories of hyperglycemia. Additional research methods. Differential diagnosis of type 1 diabetes with other diseases.

Content module 2.

Principles of pharmacological and non-pharmacological treatment of patients.

Theme 5. Modification of the lifestyle of patients with diabetes as a method of compensating for the disease and preventing complications and improving the prognosis

Management of diabetes. Lifestyle modification of type 2 diabetes patients, namely physical activity, balanced diet, weight control, and rejection of bad habits. Glycemic goals in diabetes.

Theme 6. Treatment of type 2 diabetes and indications for switching to insulin therapy. Methods of controlling the level of glucose in the blood

Algorithm to treat type 2 diabetes. Drug therapy: modern drugs to treat type 2 diabetes, their mechanism of action, features of use, and contraindications. Indications for insulin therapy. Blood glucose monitoring. Glucometer and rules for working with it. Modern methods of controlling the level of glucose in the blood.

Content module 3.

Acute and chronic complications of type 2 diabetes. Treatment and prevention.

Theme 7. Acute complications of type 2 diabetes, their treatment, and prevention

Acute complications of type 2 diabetes. Ketoacidosis states with diabetic coma. Peculiarities of their course, symptoms and differential diagnosis, methods of diagnosis, and treatment. Hyperosmolar diabetic coma. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment. Hypoglycemic coma, hypoglycemic states. Etiology, pathogenesis, clinic, diagnosis, treatment.

Theme 8. Chronic complications of type 2 diabetes, their treatment, and prevention

Chronic complications of diabetes. Micro- and macrovascular complications of type 2 diabetes. Diabetic nephropathy, clinic, differential diagnosis, diagnosis, treatment, and prevention. Diabetic retinopathy: stages of the process, diagnosis, prevention, and treatment. Diabetic neuropathy, classification, clinic, diagnosis, and treatment. Diabetic foot: classification, diagnosis, treatment. Prognosis of type 2 diabetes.

Theme 9. The role of the family doctor in the management of patients with type 2 diabetes

Peculiarities of management of patients with type 2 diabetes mellitus by a family doctor. The concept of reimbursement. Prescribing sugar-lowering drugs under the "Affordable Medicines" program. Indications for referral of a patient with type 2 diabetes to narrow specialists.

Theme 10. Psychological aspects in the management of patients living with a chronic disease, namely diabetes.

Psychological prerequisites for the occurrence of diseases of the endocrine system, namely diabetes. Psychological characteristics of people with type 2 diabetes. Screening questionnaires

on the "quality of life" of people with type 2 diabetes. Peculiarities of psychological management of patients with type 2 diabetes.

Content module 4.

Intensification of treatment of type 2 diabetes.

Theme 11. Basic principles of insulin therapy.

Characteristics of the insulins. Indications and contraindications for insulin therapy. Classification of insulins of ultrashort, short, intermediate and long action, insulin analogues. Regimes of insulin therapy.

Theme 12. General rules of insulin therapy.

Principles of starting insulin therapy. Insulin injection technique. Typical errors of insulin therapy. Choosing the right dose of insulin. Rules for correction of insulin dose. Schemes of titration of different insulins in type 2 diabetes.

Theme 13. Complications of insulin therapy.

Complications of insulin therapy: hypoglycemic states, insulin allergy, post-injection lipodystrophy, insulin resistance, chronic insulin overdose (Somoji syndrome), insulin edema and their prevention.

Theme 14. Modern devices for insulin therapy.

Devices for insulin injection. Rules of their use. Insulin pump: advantages and disadvantages. Rules of use. Devices for monitoring glycemia.

Theme 15. Myths related to insulin.

Myths and phobias that arise in patients at the beginning of insulin treatment. Methods of their debunking by a family doctor.

4. The structure of the educational discipline

Themes	Number of hours					
	Total	including				
		lectures	seminars	practical classes	laboratories	Independent work
Content module 1.						
Diabetes. Etiology. Pathogenesis. Clinic. Diagnosis and differential diagnosis.						
Theme 1. Type 2 diabetes, epidemiology, etiology, pathogenesis, and classification	6	0	0	2	0	4
Theme 2. Clinic, diagnosis and differential diagnosis, screening of type 2 diabetes	6	0	0	2	0	4
Theme 3. Type 1 diabetes: epidemiology, etiology, pathogenesis and classification	6	0	0	2	0	4

Theme 4. Clinic, diagnosis and differential diagnosis, screening of type 1 diabetes	6	0	0	2	0	4
<i>Total by content module 1</i>	24	0	0	8	0	16
Content module 2.						
Principles of pharmacological and non-pharmacological treatment of patients.						
Theme 5. Modification of the lifestyle of patients with diabetes as a method of compensating for the disease and preventing complications and improving the prognosis	6	0	0	2	0	4
Theme 6. Treatment of type 2 diabetes and indications for switching to insulin therapy. Methods of controlling the level of glucose in the blood	6	0	0	2	0	4
<i>Total by content module 2</i>	12	0	0	4	0	8
Content module 3.						
Acute and chronic complications of patients with type 2 diabetes. Treatment and prevention.						
Theme 7. Acute complications of type 2 diabetes, their treatment, and prevention	6	0	0	2	0	4
Theme 8. Chronic complications of type 2 diabetes, their treatment, and prevention	6	0	0	2	0	4
Theme 9. The role of the family doctor in the management of patients with type 2 diabetes	6	0	0	2	0	4
Theme 10. Psychological aspects in the management of	6	0	0	2	0	4

patients living with a chronic disease, namely diabetes.						
<i>Total by content module 3</i>	24	0	0	8	0	16
Content module 4.						
Intensification of treatment of type 2 diabetes.						
Theme 11. Basic principles of insulin therapy.	6	0	0	2	0	4
Theme 12. General rules of insulin therapy.	6	0	0	2	0	4
Theme 13. Complications of insulin therapy.	6	0	0	2	0	4
Theme 14. Modern devices for insulin therapy.	6	0	0	2	0	4
Theme 15. Myths related to insulin.	6	0	0	2	0	4
<i>Total by content module 4</i>	30	0	0	10	0	20
Total hours	90	0	0	30	0	60

5. Themes of lectures / seminars / practical classes / laboratories

5.1. Themes of lectures

Lectures are not provided.

5.2. Themes of seminars

Seminars are not provided.

5.3. Themes of practical classes:

No.	Theme	Hours
1	Theme 1. Type 2 diabetes, epidemiology, etiology, pathogenesis, and classification	2
2	Theme 2. Clinic, diagnosis and differential diagnosis, screening of type 2 diabetes	2
3	Theme 3. Type 1 diabetes: epidemiology, etiology, pathogenesis and classification	2
4	Theme 4. Clinic, diagnosis and differential diagnosis, screening of type 1 diabetes	2
5	Theme 5. Modification of the lifestyle of patients with diabetes as a method of compensating for the disease and preventing complications and improving the prognosis	2
6	Theme 6. Treatment of type 2 diabetes and indications for switching to insulin therapy. Methods of controlling the level of glucose in the blood	2
7	Theme 7. Acute complications of type 2 diabetes, their treatment, and prevention	2
8	Theme 8. Chronic complications of type 2 diabetes, their treatment, and prevention	2

9	Theme 9. The role of the family doctor in the management of patients with type 2 diabetes	2
10	Theme 10. Psychological aspects in the management of patients living with a chronic disease, namely diabetes.	2
11	Theme 11. Basic principles of insulin therapy.	2
12	Theme 12. General rules of insulin therapy.	2
13	Theme 13. Complications of insulin therapy.	2
14	Theme 14. Modern devices for insulin therapy.	2
15	Theme 15. Myths related to insulin.	2
	Total	30

5.4. Themes of laboratories

Laboratories are not provided.

6. Independent work of the student

No.	Theme	Hours
1.	Preparation for practical classes 1	4
2.	Preparation for practical classes 2	4
3.	Preparation for practical classes 3	4
4.	Preparation for practical classes 4	4
5.	Preparation for practical classes 5	4
6.	Preparation for practical classes 6	4
7.	Preparation for practical classes 7	4
8.	Preparation for practical classes 8	4
9.	Preparation for practical classes 9	4
10.	Preparation for practical classes 10	4
11.	Preparation for practical classes 11	4
12.	Preparation for practical classes 12	4
13.	Preparation for practical classes 13	4
14.	Preparation for practical classes 14	4
15.	Preparation for practical classes 15	4
	Total	60

7. Teaching methods

Practical classes:

- verbal methods: conversation, explanation, discussion, discussion of the acute issues;
- visual methods: illustration (including multimedia presentations);
- practical methods: testing, solving situational tasks (including calculation ones), checking the skills of working with a glucometer.

Independent work:

- independent work with recommended basic and additional literature, with electronic information resources, preparation for seminar classes;
- independent performance of an individual task, preparation of a presentation to defend an individual task.

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

Ongoing control:

- oral control: individual survey on the theme;

- written control: assessment of the situational task solutions (including calculation), assessment of the performance of an individual task;
- test control: assessment of performance of tests on the theme.

Final control: Credit Test.

Assessment of the ongoing learning activity at the practical classes:

1. Assessment of the theoretical knowledge on the theme:
 - methods: individual survey on the theme, participation of the students in the discussion of problem situations; assessment of performance of tests on the theme;
 - the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.
2. Assessment of practical skills on the theme:
 - methods: assessment of the solution of situational tasks (including calculation) on the theme;
 - the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.

Assessment of the individual work:

1. Assessment of the quality of the performance of the individual work:
 - the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.
2. Assessment of the presentation and defense of an individual work, participation in the assessment of the business plan of the competitors and its critical analysis:
 - the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.

The score for one practical class is the arithmetic average of all components and can only have an integer value (5, 4, 3, 2), which is rounded statistically.

Criteria of ongoing assessment at the seminar class

Score	Assessment criterion
Excellent «5»	<p>The student participates actively in the seminar class. He/she demonstrates profound knowledge and provides full and detailed answers. He/she participates actively in discussing problem situations. He/she uses additional educational and methodological and scientific literature. The student knows how to form his attitude to a certain issue and conveys his/her attitude to the issue, gives appropriate examples. He/she knows how to find the most adequate forms of conflict resolution.</p> <p>The tests are completed in full, all 100% of the answers are correct, the answers to the open questions are complete and justified.</p> <p>The student freely solves situational tasks (including calculations), confidently demonstrates practical skills on the theme of seminar class and correctly interprets the data obtained. He/she expresses his own creative opinion on the theme, demonstrates creative thinking.</p>
Good «4»	<p>The student participates in the seminar class. He/she have mastered the material of the seminar class and shows the necessary knowledge, but answers the questions with some mistakes. He/she participates in discussing problem situations. He/she uses the basic educational and methodological and scientific literature. The student expresses his own opinion on the theme of seminar class.</p> <p>The tests are completed in full, not less than 70% of the answers are correct, the answers to the open questions are generally correct, but there are some mistakes in definitions.</p> <p>The student correctly solves situational tasks (including calculations), but admits minor inaccuracies and demonstrates more standardized practical skills on the theme of seminar class with correct interpretation of the received data. He/she expresses his own opinion on the theme, demonstrates creative thinking.</p>
Satisfactory «3»	<p>The student sometimes participates in the seminar class. He/she partially intervenes and asks questions, answers the questions with mistakes. He/she passively works in practical exercises. He/she demonstrates fragmentary</p>

	<p>knowledge of the conceptual apparatus and literary sources. The tests are completed in full, not less than 50% of the answers are correct, the answers to the open questions are illogical, with obvious significant errors in definitions. The student does not have sufficient knowledge of the material to solve situational problems (including calculations). He/she uncertainly demonstrates practical skills on the theme of seminar class and interprets the data with significant errors, does not express his/her opinion on the topic of the situational problem.</p>
Unsatisfactory «2»	<p>The student does not participate in the seminar class, just observes the learning process. He/she never speaks out or asks a question. He/she is disinterested in the study of the material. The student gives incorrect answers to questions, demonstrates poor knowledge of the conceptual apparatus and literary sources. The test has not been completed. The situation task has not been completed.</p>

Credit Test is considered, if the student has completed all the tasks of the working program of the educational discipline. He/she took actively participated in the practical exercises, and completed an individual work. The student has an average current rating of at least 3.0 and has no academic debt.

9. Distribution of points, obtained by the student

The average grade in the discipline is converted to the national grade and converted to points on a multi-point scale (200-point scale).

Conversion of traditional assessment into 200-point is carried out by the information and technical department of ONMedU by the special program by the formula:

$$\text{Average score (current academic performance)} \times 40.$$

Conversion table of traditional to multi-point

National score for the discipline	The sum of scores for the discipline
Excellent («5»)	185 – 200
Good («4»)	151 – 184
Satisfactory («3»)	120 – 150
Unsatisfactory («2»)	Less than 120

10. Methodological support

- Working program in the discipline
- Syllabus
- Methodological recommendations for the seminar classes in the discipline
- Methodological recommendations for the individual work of students
- Multimedia presentations
- Situational tasks (including calculation)
- Tests on the theme

11. Questions for the ongoing control

1. Etiology and pathogenesis of type 2 diabetes.
2. Modified and unmodified risk factors for the development of type 2 diabetes.
3. Mechanism of development of insulin resistance.

4. Modern classification of type 2 diabetes.
5. Diagnostic criteria of prediabetes.
6. Testing of patients with risk factors for the development of type 2 diabetes.
7. Clinical manifestations of type 2 diabetes.
8. Compensation criteria for type 2 diabetes.
9. Additional research methods for type 2 diabetes.
10. With which diseases should differential diagnosis of type 2 diabetes be carried out?
11. Physical activity with type 2 diabetes and rules for their implementation.
12. Nutrition principles for type 2 diabetes.
13. Types of glucometers. Rules for using a glucometer.
14. Modern methods of controlling the level of glucose in the blood.
15. System of continuous monitoring of blood glucose level.
16. Groups of hypoglycemic drugs. Indications and contraindications for their use.
17. Mechanism of action of hypoglycemic drugs.
18. Side effects of the use of hypoglycemic drugs.
19. Indications for switching to insulin therapy.
20. Complications of insulin therapy and methods of their correction.
21. Diabetic ketoacidotic and lacticidemic coma. Causes and mechanism of development.
22. Hyperosmolar diabetic coma. Causes of hyperosmolar coma. Mechanism of development.
23. Hypoglycemia. Causes and mechanism of development.
24. Emergency care and prevention in case of occurrence of diabetic comas.
25. Damage to the cardiovascular system. Early symptoms and principles of diagnosis and treatment.
26. Damage to the eyes. Early symptoms and principles of diagnosis and treatment.
27. Damage to the kidneys. Early symptoms and principles of diagnosis and treatment.
28. Damage to the nervous system. Early symptoms and principles of diagnosis and treatment.
29. Diabetic foot syndrome. Early symptoms and principles of diagnosis and treatment. Foot care and shoe selection rules.
30. Basic principles of prevention of chronic complications of type 2 diabetes.

12. Recommended literature

Basic:

1. American Diabetes Association Professional Practice Committee; 2. Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes—2022. *Diabetes Care* 1 January 2022; 45 (Supplement_1): S17–S38. <https://doi.org/10.2337/dc22-S002>
2. American Diabetes Association Professional Practice Committee; 9. Pharmacologic Approaches to Glycemic Treatment: Standards of Medical Care in Diabetes—2022. *Diabetes Care* 1 January 2022; 45 (Supplement_1): S125–S143. <https://doi.org/10.2337/dc22-S009>
3. Amboss. Diabetes mellitus. [Electronic resource]. Available at: <https://next.amboss.com/us/article/3g0SE2#Lce3258caade66b268ab5a8ffecc84361>
4. Amboss. Complications of diabetes mellitus. [Electronic resource]. Available at: <https://next.amboss.com/us/article/3s0Suh#L428d3f2697b2c804ca98c62ec3ad6c18>
5. Hyrina O.M. Family medicine: in 3 books. — Book 1. General Issues of Family Medicine: textbook / O.M. Hyrina, L.M. Pasiyeshvili, O.M. Barna et al. – Kyiv, 2016.
6. International Diabetes Federation. IDF Diabetes Atlas, 10th ed, issue 2021. [Electronic resource]. Available at: <http://www.diabetesatlas.org>

Additional:

1. BMJ Best Practice. Amar Puttanna, Partha Kar. Type 2 diabetes in adults. [Electronic resource]. Available at: <https://bestpractice.bmj.com/topics/en-gb/24/guidelines>
2. Harrison's Principles of Internal Medicine, Twenty-First Edition (Vol.1 & Vol.2). Joseph Loscalzo, Anthony Fauci, Dennis Kasper, Stephen Hauser, Dan Longo, J. Larry Jameson. – McGraw Hill / Medical. 2022. – 2 / 15164 p.

13. Electronic information resources

1. American Diabetes Association. <https://www.diabetesjournals.org>
http://care.diabetesjournals.org/content/41/Supplement_1/S1
2. European Association for the study of Diabetes. <https://www.easd.org>
3. Centers for Disease Control and Prevention <https://www.cdc.gov/>
4. NICE | The National Institute for Health and Care Excellence <https://www.nice.org.uk/>
5. <https://pubmed.ncbi.nlm.nih.gov/28526183/>
6. <https://pubmed.ncbi.nlm.nih.gov/29412061/>
7. <https://pubmed.ncbi.nlm.nih.gov/27622231/>
8. <https://pubmed.ncbi.nlm.nih.gov/31345518/>
9. <https://pubmed.ncbi.nlm.nih.gov/27453739/>
10. On-line calculators: [Body mass index calculator, BMI](#)
[Glomerular filtration rate](#)
[PROCAM, SCORE, Framingham, IRIS II](#)