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| **MEDICAL UNIVERSITY – PLEVEN** |
| **CENTER FOR DISTANCE LEARNING** |

**CURRICULUM**

**ON**

**ENDOCRINOLOGY AND METABOLIC DISEASES**

FOR REGULAR TRAINING PROGRAM "HEALTH"

EDUCATIONAL - QUALIFICATION DEGREE "MASTER "

***Тable № 1. General information about the clinical discipline.***

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| Title of the studying discipline | Endocrinology and metabolic diseases |
| Specialty in MU-Pleven | Мedicine |
| Year of teaching | Year IV |
| Semester of teaching | Semester VIII (Winter) |
| Assistants with access to the discipline | Assoc. Prof. Dr. Katya Todorova, lecturer  Assist. Prof. Dr. Ginka Rayanova  Assist. Prof. Dr. Silvia Ganeva |
| Creating a virtual classroom (can create more than one) | 1 Virtual classroom of Endocrinology |
| Is there more information about the studying discipline? | Yes |

***Table. № 2. Information about the structural units of the discipline.***

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| **1. PURPOSE AND OBJECTIVES OF TRAINING** |
| Endocrinology is a modern and constantly evolving medical specialty. It studies the function of the endocrine glands in the human body, in norm and pathology, the diseases associated with them and the methods for their diagnosis and treatment. Through its therapeutic methods and means the outcome of a number of endocrine diseases is improved . The aim of the training course is to gain extensive clinical knowledge of the most common endocrine diseases , including etiology, pathogenesis, clinical symptoms, diagnosis, differential diagnosis and treatment. The main task is to make a correct diagnosis and acquire skills in interpreting differentclinical laboratory and hormonal constellations , covering the main nosological entities, and their use in pre-clinical manifestation of the metabolite is N syndrome, sugar is n diabetes, various pre-diabetic conditions, diseases of the pituitary hypothalamic axis, thyroid, adrenal and gonadal . It is compulsory and taught in the eighth semester of the fourth course, graduating with a semester exam within the examination p o Internal Medicine, Part One . The course by course be considered theoretical elements relating to the production and secretion of hormones, their biological activity, hormone-receptor interactions, hormone re d Picture similar , pre g clinical and klininichni appearances of various diseases , processes them for diagnosis and treatment. Special attention is paid to study the fundamental Pathobiochemical and pathophysiological mechanisms underlying the hormonalno- metabolic s violations, their applications in clinical laboratory and hormonal diagnosis, treatment options and prevention . Course is provided with detailed presentations for each lecture Full Text edition on relevant topics included o in "Endocrinology" , in a volume of 80 pages , the textbook on " Internal Medicine - Part I", published by the author team of the department, as well as a manual for functional diagnostics . A test system for control of the knowledge acquired by the trainees has been developed, which includes questions from all areas of endocrinology . |
| **2. TEACHING TEAM (FACULTY TEACHERS)** |
| **Assoc. Prof. Dr. Katya Todorova, lecturer**  **ASSISTANTS IN ENDOCRINOLOGY :**  **1. Assist. Prof. Dr. Ginka Rayanova**   1. **Assist. Prof.** **Dr. Silvia Ganeva** 2. **Assist. Prof.** **Dr. Malvina Todorova** 3. **Assist. Prof. Dr. Victoria Tsvetkova** |
| **3. PROGRAM OF STUDY (CURRICULUM)** |
| The curriculum is developed in the teaching department by habilitated lecturers, who are assigned the discipline. For this purpose, the procedures for this type of educational document, set in the System for maintaining the quality of education, are applied and observed. The structure of the program is discussed and approved by the collective management bodies at the university and meets the requirements of the quality management system. The program is discussed in the department council and is proposed for adoption by the council of the main unit. The curriculum indicates the thematic plan of lectures and exercises and their detailed content in the form of abstracts. The educational content of the program is updated annually in accordance with the development of new diagnostic and therapeutic methods and applied programs, synchronizing with their application in medical practice and science . The program enters into force after approval by the Dean of the Faculty of Medicine.    **CONTENTS OF PROGRAM FOR TRAINING:**hypothalamic-pituitary diseases hyperfunction and hypofunction of the thyroid, parathyroid, adrenal gland, autoimmune thyroid diseases, endocrine disorders of the gonads, diabetes mellitus type 1 and type 2 n atogeneza , diagnosis and treatment; obesity and metabolic syndrome.  **TEACHING METHODS:**Lectures, practical exercises, independent preparation, group practical tasks, seminars.    **ASSESSMENT**: The exam in endocrinology is an integral part of the exam in Internal Medicine - Part I - " Cardiology , Pulmonology and Endocrinology" and includes a practical exam and a theoretical oral exam .  Ongoing assessment during the semester - with tests and colloquia.  File 1. Plan of the exercises in endocrinology *(File 1.pdf)* |
| **4. LECTURE COURSE** |
| The lecture course is designed for students from MU - Pleven in a regular form of education in the specialty " Medicine ". The course includes seven two-hour lectures. For each of them a detailed presentation, a full-text textbook, distributed to the individual lectures and test questions for independent preparation and control of the acquired knowledge are offered. The "Endocrinology" to the textbook of Internal Medicine and the addendum to the textbook, in the form of manuscript proposed oh this course can be used by any other students or medical professionals who want to improve their training in Internal Medicine and endocrinology . It offers teaching material in understandable, well-thought-out, methodically arranged and correctly selected means of expression and forms. In chronological order, are served basics of building the clinical knowledge in the field of endocrinology with included various clinical forms of manifestation of diseases , their methods of diagnosis , their place in the differential - diagnostic process , various therapeutic approaches and outcome of disease .  File 2. Plan of the lectures on endocrinology *(File 2.doc)* |
| **5. ADDITIONAL MATERIALS** |
| In order to expand the knowledge in accordance with the presented curriculum of the discipline, additional study materials are provided. These materials are not included in the main lecture course and its textbook. Nevertheless, they are in the context of the curriculum and the teaching materials offered to it. As additional materials, they are presented mainly through presentations. These presentations are subject to consideration and study in the form of clinical discussions, colleges and seminars within the ten- day state internship in endocrinology.  **Recommended reading**       In this section below is presented the literature needed for training in the discipline. The basic literature is sufficient for successful preparation for the examination procedures, but for deepening the knowledge of the study material it is necessary to use additional sources. These are materials posted on the Internet and literature in the field of the subject. The recommended main and additional literature are listed in the link below.  File 3. Teaching aids *(File 3.pdf)* |
| **6. LABORATORY EXERCISES (ASSIGNMENTS AND ESSAYS, PRACTICAL EXERCISES)** |
| In order to fulfill the goals of the curriculum, in addition to the lecture course, practical exercises , a test and a colloquium are also provided . These elements are mandatory for students and are present as a component in determining the final grade of the student for the semester.    **Practical exercises:**    Practical exercises with a teacher are the main type of classes through which students gain practical skills and habits regarding history taking, physical status, interpretation of laboratory and hormonal tests, diagnosis and differential diagnosis plan and therapeutic behavior in endocrine patients . They rely on the use of basic knowledge of physiology, pathophysiology, biochemistry and propaedeutics of internal medicine to build logical and in-depth clinical thinking and correct clinical approach to the patient and determine the most correct clinical-diagnostic and therapeutic behavior and evaluation of his efficiency. Practice sessions are held at the bedside in hospital rooms and theoretical part of the exercise - in study centers , equipped with computers and multimedia devices. In each of the practical exercises are set common and individual tasks the students, analyzed various clinical cases and make discussion of the disease, its severity, complications occurred, clinical th evolution applied so treatment and effect and of the therapeutic intervention . Students have the opportunity to actively participate in the taking of anamnesis, clinical status, reporting of clinical cases, treatment of a newly admitted patient not only within the practical exercises , but also with the opportunity to visit the shifts of their teaching assistants , and purely theoretically by developing independent scientific work in the form of scientific and paper and and or presentations and co and then they present to their classmates and medical assistants from the Department of Endocrinology at the semester or public service .    **Theses individual practical exercises are set in relation and m and below:**      File 4 . Abstracts of endocrinology exercises *(File 5 .pdf)* |
| **7. EXAMINATION SYNOPSIS (CONSPECTUS FOR THE EXAM)** |
| A syllabus has been developed to finalize the preparation of the course and the semester exam. The purpose of the questionnaire is to her to thematize received knowledge by concentrating on core issues undergone lectures and presented it to the textbook. In the questionnaire included only issues that must be present in some amount in the presentations to lectures or study full text POS o fight. For some of the questions in the syllabus the information is contained only in the presentations to the lectures or are concretized and summarized there. This requires students to carefully read the questions from their exam paper and look for them in the materials presented, including the presentations, all chapters of the textbook and additional materials.     File 5 .  Synopsis for semester exam ... *(File konspekt.pdf)* |
| **8. TEST QUESTIONS AND PROBLEMS (TESTS COURSE)** |
| Knowledge control tests are an element through which the preparation of the students is checked, both after each individual lecture and their independent preparation after passing the full course of the discipline. In tests are included yu Cheney questions with one Verne o alleged is . The test should be solved at the end of the last lecture, after which the students receive a semester certificate.   File 6 . Test for students *( Test file .doc )* |
| **9. GENERAL COMMENTS AND RECOMMENDATIONS** |
| The link to this section contains instructions to students on how to prepare for the course. |
| **10. FORUM ON THE DISCIPLINE** |
| The forum on the course is the place in the Distance Learning System, where the opinions, questions and recommendations on the way of presenting the study material, its content and relevance can be placed. The forum is available to all learners who wish to use it. The information in it should be short and clear in strict compliance with the requirements of academic ethics and good manners. The teachers will take into account your opinions and recommendations on the course and its preparation. Thank you for the understanding. |
| **11. CONSULTATIONS** |
| The consultations on the subject are present. They are recommended and are held in the Clinic of Endocrinology of MU - Pleven according to a schedule announced by the teachers. These consultations explain the methodology and conditions for preparation for the course and the specifics of the practical exam . |

***Table №3. Information about the content of the lectures and the study units to it.***

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| **Lecture № 1: Hypopituitarism, diabetes insipidus, pituitary adenomas .** |
| At first lecture presents the structure and tasks of the course " Endocrinology " , hormonal functional activity and forms they of hormonal control and regulation. The following is an anatomical-physiological description of the hypothalamic-pituitary axis, the causes, mechanisms, clinical symptoms and treatment of pituitary diseases with hyperfunction and hypofunction. There are three main focuses of the lecture:   1. Hypopituitarism - etiology of the disease, prevalence, frequency.   The main reasons for the development of the disease. Pathophysiological mechanisms. Clinical picture. Methods for diagnosis. Treatment of the disease - main groups of drugs, treatment regimens.   1. Diabetes insipidus   - etiology of the disease spreading, frequency.   Clinical manifestation, diagnostic methods - clinical, functional methods - thirst test, differential diagnosis. Treatment - medications, methods of application.   1. Adenoma pituitary - classified k ation, frequency of distribution.   Prolactinomas - classification, frequency of spread. Clinical picture. Methods of diagnosis, differential diagnosis. Healing approaches.    Presentation for lecture № 1 ... (File pr1.pptx) |
| **Lecture № 2: Diseases of the thyroid gland .** |
| At the beginning of this lecture, the diseases of the thyroid gland with hyperfunction are presented . The main focus is thyrotoxicosis, with its clinical manifestation Bazedova disease . They are considered in sequential order: definition, frequency and prevalence, etiology and pathogenesis of the disease, clinical picture with different clinical forms and thyroid-associated ophthalmopathy (TAO). The complications of the disease, the construction of the diagnosis and the differential diagnosis , the criteria for making the diagnosis, the laboratory tests , the functional tests and the instrumental diagnostics by ultrasound of the thyroid gland are indicated . Emphasis is placed on the three main treatment approaches: 1). d rupees medication and method of administration of a drug agent. 2). Surgical treatment - indications, surgical methods, complications. 3). Treatment with radioactive iodine - indications, method of application, complications . Postoperative hypothyroidism and hypoparathyroidism are considered as complications of the performed surgical treatment and radioiodine therapy.          The second part of the lecture follows, which includes diseases of the thyroid gland that occur with hypofunction: primary hypothyroidism, endemic and sporadic goiter and thyroiditis. In this part of the lecture the focus is on Hashimoto's thyroiditis - etiology and pathogenesis, frequency and prevalence, diagnosis and differential diagnosis, ultrasound tomography / ultrasound of the thyroid gland - significance of the ultrasound finding for the diagnosis. Treatment - treatment regimens, way of taking the medication. The lecture presented here is provided with a detailed presentation and supplement to the textbook, which are presented in the links below:    Presentation for lecture № 2 ... (File pr2.pptx)    Appendix Part 1 . ( Thyroiditis G3.docx) |
| **Lecture № 3: Diseases of the parathyroid glands .** |
| The third lecture presents the diseases of the parathyroid glands , which occur as hyper function and hypofunction. At the beginning of the lecture is considered the primary item hyperparathyroidism. The lecture begins with the definition and in a logical order are presented its frequency and distribution, etiology, pathogenesis, pathomorphology, clinical picture, diagnosis - laboratory methods and hormonal tests. Different instrumental methods for objectification of the parathyroid glands are indicated - ultrasound, scintigraphy, CT, MRI, the differences in the differential diagnosis of primary hyperparathyroidism with secondary and tertiary hyperparathyroidism. Relatively detailed clarified other diseases , occurring with hypercalcemia: ectopic form, carcinomas and carcinoma metastasis, myeloma disease poliurichna phase of acute renal failure, hypervitaminosis D , sarcoidosis, acute adrenal insufficiency, hyperthyroidism, treatment with diuretics. The main treatment plan is indicated - rehydration, calcitonin, diuretics - methods and schemes of medication.        Special attention is paid to the primary hypoparathyroidism, presented in the same order of presentation: definition, frequency and distribution , is theology, pathogenesis, pathomorphology. Information is ethion-pathogenic k lasifikatsiya of illness with primary hypoparathyroidism . Focus is on k Linic th picture of the disease - clinical symptoms manifest tetany with increased neuromuscular excitability and latent form , as proven by provocative tests. Analyzed in detail the construction of the e iagnoza minutes by laboratory methods and hormonal analysis and differences in e iferentsialna minutes diagnosis of primary hypoparathyroidism, pseudohypoparathyroidism, transient neonatal hypoparathyroidism and the like . Other causes of hypocalcemia are explained in detail - provoked by alkalosis, pregnancy, infections, treatment with diuretics, genetic forms in children.  Indicated a l , Ece b us th approach in acute and chronic forms, the use of various calcium preparations with various forms of vitaminD, a parathyroid hormone , having itaknati specific indications and method of administration.      Lecture is provided with a presentation , presented and in conjunction and m and below:      Presentation for lecture № 3 ... (File pr3.pptx) |
| **Lecture № 4: Diseases of the adrenal glands .** |
| In a lecture presented here is considered so two topics : overactive and underactive adrenal glands. The introduction to the lecture includes general information about the functional activity of hormones from the three layers of the adrenal glands , the peculiarities of hormonal secretion and hormonal regulation and control. The first part of the lecture begins with primary hypercorticism - Cushing's syndrome , logically represented by: definition, frequency and distribution , etiology, pathogenesis, pathomorphology, pathophysiology. Followed by classification - Itsenko - Cushing's disease , Cushing's syndrome , ectopic form, drug form. Covered are peculiarities in complex Linic th picture of the disease and are displayed major They clinical syndromes. Mentioned main approaches composing e iagnoza minutes - laboratory methods, hormonal studies, diagnostic tests for inhibition of cortisol secretion. Presented are the differences in e iferentsialna minutes diagnosis of different forms of the disease. The main forms of treatment are indicated - surgery, radiation therapy and medication.       The second part of the lecture presents primary hypocorticism, Addison's disease. In its main part, the content of this part is devoted to the definition, frequency and distribution , etiology, pathogenesis, pathomorphology, pathophysiology, classification, clinical picture of the disease-basic clinical syndromes, diagnosis-laboratory methods, hormonal tests, diagnostic tests to stimulate cortisol secretion, differential diagnosis of various forms of the disease - primary, secondary, tertiary adrenal-cortical insufficiency, differential diagnosis with other diseases associated with melanoderma, astheno-adynamia, arterial hypotension, hypoglycemia. An important part is separated of l echenie then - carrying out the replacement terapiya- glucocorticoids and mineralocorticoids - medications shown to include, dose and dosing regimen.  The lecture is provided with a presentation presented in the link below:      Presentation for lecture № 4 ... (File pr4.pptx) |
| **Lecture № 5: Etiology and pathogenesis and diagnosis of diabetes mellitus .** |
| The educational content of this chapter is devoted to diabetes. It includes: o tribution, frequency and distribution , k lasifikatsiya is tiologiya, pathogenesis, pathomorphology, pathophysiology of the two major forms-type 1 and type 2 diabetes mellitus , p statements grupi- obesity and metabolic syndrome. The focus of this lecture is on the diagnosis diabetes mellitus, the differences in clinical symptoms between type 1 diabetes and type 2, the interpretation of the results of oral glucose tolerance test (OGTT), in accordance with the accepted diagnostic criteria of the WHO, the meaning of n rediabetni they conditions - impaired fasting glucose (NGG) and impaired glucose tolerance (NGT).   Special attention is paid to the e iferentsialna minutes diagnosis of polydipsia-poliurichniya syndrome and hyperglycemia minutes . The presented lecture is provided with a presentation and part of the textbook .      Presentation for lecture № 5 ... (File pr5.pptx) |
| |  | | --- | | **Lecture № 6: Treatment of diabetes mellitus type 1 and type 2** | | Specifically, the content of this lecture discusses the main therapeutic approaches used in patients with type 1 and type 2 diabetes mellitus:  1). Training of patients with diabetes mellitus - at the detection of the disease, training - in different periods in the course of the disease.  2). Dietary regime and regime of physical activity.  3). Insulin treatment - indications and contraindications, types of insulin  drugs - pharmacodynamics, analog insulins; dosage and administration regimens.  4). Treatment with oral agents - groups of drugs, dosage, administration regimens.  5). Hypoglycaemia, definition, causes, clinical symptoms and treatment  The lecture is provided with a presentation .        Presentation for lecture № 6 ... (File pr6.pptx) | | **Lecture 7: Acute and chronic complications of diabetes .** | | The seventh lecture of this course presents the acute and chronic complications of diabetes.  Special attention is paid to acute , life-threatening complications of diabetes, ketoacidosis, hypoglycemia, hyperosmolar and lactic acidosis com and . The differences in the etiopathogenesis, the clinical manifestation, the laboratory parameters, the diagnosis , the differential diagnosis and their treatment are indicated . The role of glucose self-control, proper dietary treatment, adequate insulin treatment and timely treatment of concomitant conditions for the prevention of these complications is valued.          Extensively Lectures discuss issues , related with common pathogenetic mechanisms of occurrence of chronic diabetic complications by mikrovaskularin and microvascular type differences, stages in their conduct and methods of their early diagnosis, treatment and prevention . The importance of chronic hyperglycemia is presented as a major risk factor for the occurrence of early vascular-endothelial damage, as well as the  concept of increased oxidative stress to maintain the continuity of already existing complications. The main risk atherogenic factors contributing to the early onset of complications and the possibilities for their treatment are indicated. The main place in the lecture is played by the role of optimized glycemic control to prevent the risk of adverse vascular complications, in order to prolong life expectancy, reduce concomitant cardiovascular morbidity and mortality and improve the quality of life of patients with diabetes.  The lecture presented in this way is provided with a presentation .    Presentation for lecture № 7 ... (File pr7.pptx) | |

***Table №4. Information about the learning tasks (goals, instructions, deadlines, etc.)***

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| **Learning task № 1.**The purpose of the task is to examine and illustrate the practical methods of and zuchavane the main clinical units in endocrinology , opportunities analysis of clinical, laboratory, hormonal and instrumental data and use them in diagnosis Basically this job educational task is aimed at controlling the diseases of the hypothalamic-pituitary axis and the ways of their treatment .  A positive assessment of the implementation of the task is a condition for successful completion of the preparation provided in the content of the first lecture. |
| **Learning task № 2.**Formation of practical skills for diagnostic and treatment approach to an endocrine sick patient with thyroid disease . The aim of the task is to practice the development of a clinical-diagnostic and treatment approach in various patients with hyperfunction and hypofunction of the thyroid gland and to develop skills for the application of the most correct diagnostic and therapeutic techniques .    A positive assessment of the task is a condition for successful completion of the preparation provided in the content of the second lecture. |
| **Learning task № 3.**Development of specific knowledge and skills for monitoring and treatment of patients with diseases of the parathyroid glands, in accordance with the individual most important nosological units in the field of disorders of calcium-phosphorus metabolism.  The aim of the task is to form clinical skills for taking anamnesis, physical status and application of provocative tests for latent hypocalcemia, as well as correct interpretation of the results of various laboratory and imaging studies. The assignment for this academic task is successfully fulfilled when received in the third lectures in January knowledge can be applied in practice . |
| **Learning task № 4.**The purpose of the task is to develop practical skills in classification of individual they types of hypercortisolism or hypocorticism and put into practice the knowledge acquired about the main approaches that build e iagnoza th - laboratory methods, hormonal tests, diagnostic tests for stimulation or suppression of cortisol secretion as well as treatments.  The assignment for this academic task is provided o the content of the fourth lecture. |
| **Learning task № 5.**The aim of the task is to practice in practice the possibility of classifying the types of diabetes mellitus, the differences in clinical symptoms between type 1 diabetes mellitus and type 2, the differential diagnosis of polydipso-polyuric syndrome and hyperglycemia . The task for this learning task is to diagnose diabetes mellitus and interpret the results of OGTT .  A positive assessment of the task is a condition for successful completion of the preparation provided in the content of the fifth lecture. |
| **Learning task № 6.**The purpose of the task is to be exercised in the practice of skills for selection and application of antidiabetic treatment in patients with type 1 diabetes and type 2 diabetes mellitus , e and exert work with insulin in each case the pens and learn better indications minutes and contraindications for insulin treatment , selection of insulin preparations, dosage and regimens, as well as to develop skills for treatment with oral agents - groups of preparations, dosage, regimens. Specific knowledge is developed regarding recommendations for diet treatment, glucose self-control and training.  The assignment for this study task and instructions for its implementation can be found in the content of the sixth lecture. |
| **Learning task № 7**. The purpose of the task is to exert th in practice the differences in clinical symptoms and differential diagnosis of acute complications of diabetes, ketoacidosis, hypoglycemia, lactic acidosis and hyperosmolar Komas, and to learn better therapeutic approaches applied in each of them. In this assignment , the differences between the microvascular and macrovascular complications of diabetes, as well as the possibilities for their prevention, should be well learned.    A positive assessment of the task is a condition for successful completion of the preparation provided in the content of the seventh lecture. |

**October , 2020 Prepared by,**

**/ Assoc. Prof. Dr. Katja Todorova, PhD. /**