

MD Educational Program of
David Tvildiani Medical University

1. Introduction

MD Curriculum of David Tvildiani Medical University is a highest medical education program, after successful graduation of which the the academic degree of Doctor of Medicine (MD) is awarded.

MD can apply for State Examinations to get a license, and after completing residency program obtain the right of independent medical practice.

State examinations are different in every country:

For Georgia – it is the State Licensing Examination;

For USA it is United States Medical Licensing Examination, which consist of three steps:

Step I – Basic Medical Sciences

Step II – Clinical Sciences

Step III – Clinical Skills Assessment.

In order to be eligible to sit these exams a student must be enrolled or have graduated from a medical school, which is listed in the World Directory of Medical Schools by World Health Organization. AIETI Medical School of David Tvildiani Medical University is listed in this Directory Since 1995. Our students are eligible to take USMLE Step 1 after completing Basic Medical Sciences Curriculum, USMLE Step 2 – after completng Clinical Scinces, and Step 3 – after getting the MD Degree.

2. The Program

Original MD program has been created by our University professors in 1992 and in 1997 the copyright was issued on it (#1- 01/21-34). The program was created as an innovative teaching method (DTMU MD program) integrated around organ-systems.

The program enlights human organ systems teaching appropriate chapters of different disciplines: Thus, rather than studying Histology, Anatomy, Biochemistry and other sciences in Separate Semesters, we teach for example, Embryology and Histology of Gastro-Intestinal system, followed by it's Gross anatomy, Physiology, Biochemistry of digestion, Microbiology, Pathology with it's clinical manifestations, and Pharmacology. This allows our students better understand the interdisciplinary

mechanisms of the disease and gives a firm knowledge of medicine of the whole system. Our experience has proven, that this approach helps the students better remember material, and achieve better score on the USMLE exams.

Medical simulations is significant step in the development of curriculum; students are able to train in management of trauma, injections, life-saving basic methods, etc. in a “safe-to-patients” settings.

During studying clinical sciences students are involved in real patients care and even assist experience Surgeons during operations.

After completing clinical sciences students are enrolled in clerkship programs, working under supervision of experienced physicians in the leading hospitals of Georgia.

Students can choose to take clerkship in the hospitals of his home country with a special agreement of that hospital with David Tvildiani Medical University.

3. The Goal of the Program

The goal of the program is to prepare medical staff of high professional level and practical skills;

Objective of the program is organizing content/volume of academic courses, as well as teaching and learning which will facilitate:

- Obtaining modern knowledge in Basic Medical and Clinical Sciences;
- Obtaining clinical skills necessary for corresponding level of study (I stage of medical study);
- Developing ethical values important for the profession;
- Readiness for continuous study and development during future professional activity.

4. Duration of the Academic Year and Amount of Credits

Program of Medical Doctor lasts for 6 years and comprises 360 credits.

Academic year consists of 40 weeks (240 working days) and two semesters – fall semester (20 weeks) and spring semester (20 weeks). Between semesters there are vacations.

According to European Credit Transfer and Accumulation System 20 weeks semester of academic year consists of 30 credits, distributed between academic courses.

1 credit considers 30 working hours, out of which 16 hours are classroom hours and 14 hours are devoted to the student’s independent work.

5. Program Content, Description and Organization

6 year period of study contains 3 stages : courses of Basic medical and Clinical sciences, and Clinical clerkship.

- Course of Basic Medical Sciences.
5 semesters (2.5 years) are devoted to it. Basic Medical course consists of 150credits .

On year I, programs of academic courses are organized in a way to better understand general part of each discipline. This material is a necessary basis for studying human organ systems at II year. Also, delivery of principles of medical ethics significant for the development of physician and future staff is started.

II year entirely and III year fall semester (III-V semesters) are devoted to study of human organ systems. Chapters of basic and sciences are horizontally integrated, and make 9 modules of organ systems;

- Musculoskeletal System and Principles of Clinical Diagnosis
- Hematopoietic System and Infections
- Cardiovascular System
- Respiratory System
- Digestive Tract and Nutrition
- Nervous System
- Urinary System
- Reproductive System
- Endocrine System

System learning in module starts with embryology, then the structure of its constituent organs at macroscopic (anatomy), microscopic (histology) levels, as well as normal functioning (physiology and biochemistry) is discussed. After this, etiology, pathogenesis (microbiology, pathology – pathanatomy and pathophysiology) of each system diseases, clinical assessment of pathologic processes, typical clinical characteristics of diseases, diagnostics and communication with patient, principles of developing management plan and conservative treatment (pharmacology) measures are studied.

Currently, following disciplines participate in modular (133 credits) and non-modular (17 credits) teaching:

1. Human Anatomy
2. Histology and Embryology
3. Physiology
4. Biochemistry

5. Pharmacology
6. Microbiology
7. Immunology
8. Medical Genetics and Molecular Biology
9. Pathology
10. Behavioral Science
11. Biostatistics
12. Principles of Clinical Diagnosis with Clinical Assessment of Pathologic Processes
13. Biomedical Ethics
14. Principles of Scientific Research
15. Clinical Skills
16. Topographic Anatomy
17. Elective Subjects

- Course of Clinical Medicine

Five semesters (VI - X) are devoted to it. Clinical Medicine Course consists of 150 credits, including elective subjects – 10 credits.

Currently, following disciplines participate in modular (141 credit) and non-modular (not less than 9 credits) teaching:

1. Internal Medicine, containing:

- a) Cardiology
- b) Pulmonology
- c) Gastroenterology
- d) Nephrology
- f) Endocrinology and Metabolism
- g) Rheumatology and Systemic Disorders
- h) Hematology
- i) Allergology and Clinical Immunology
- j) Clinical pharmacology
- k) Differential Diagnosis and Treatment of Internal Diseases

2. Surgery, containing:

- a) General Surgery
- b) Specialty Surgery

- c) Oncology
- d) Urology
- e) Traumatology and Orthopedics
- f) Otorhynolaryngology
- g) Ophthalmology
- 3. Obstetrics and Gynecology
- 4. Pediatrics
- 5. Infectious Diseases
- 6. Nervous Diseases
- 7. Psychiatry
- 8. Public Health and Epidemiology
- 9. Medical Rentgenology and Radiology
- 10. Dermatology and Venerology
- 11. Preventive Medicine and Ecology
- 12. Principles of Scientific Research
- 13. Clinical Skills
- 14. Legal Aspects of Medical Activity
- 15. Elective subjects

- Clinical Clerkship

One academic year (VI year) is devoted to it. Students have clinical rotations in following clinical disciplines:

1. Internal Medicine:
 - 1.1. Syndromal Differential Diagnosis of Internal Diseases and Emergency Therapy
 - 1.2. Rational Pharmacotherapy
 - 1.3. Physiotherapy and Rehabilitation.
 - 1.4. Family Medicine
2. Surgical Disorders.
 - 2.1. Pediatric Surgery
 - 2.2. Anesthesiology and Reanimatology

- 2.3. Emergency Surgery
3. Obstetrics and Gynecology
4. Pediatrics
5. Infectious disorders
6. Nervous disorders
7. Clinical Skills
8. The extent of elective subjects at VI year is 6 credits

Acquisition of scientific skills is conducted through 5 academic courses which in total make 10 credits, out of which 6 credits are devoted to theoretical aspects (Principles of Scientific Research 1, 2, 3) and the rest 4 credits – to scientific works.

Elective (additional) way for acquiring of scientific skills considers:

Course of Project Writing – 2 credits

Delivery of developed project (received by research departments) - 8 credits

Defense of Thesis – 10 credits

6. Themes of Curriculum

Themes of Curriculum are:

- Basic and Clinical Sciences
- Clinical and Communication Skills
- Public and Population Health
- Personal and Professional development

These themes are implemented along entire vertical of the curriculum. Their objectives and short contents and some details of their delivery are given below.

6.1. Basic and Clinical Sciences

This theme contains knowledge about (i) normal structure, function of human and development at all levels of organization – from molecular and cellular to organ systems and entire body; (ii) diseases, disorders and changes caused by development damage, their treatment, internal and external factors affecting results.

The graduate can demonstrate the following:

- Understands normal and damaged structure of human body, function and behavior in the context of diagnostics, management and prevention of health problems.
- Uses the best existing evidence for prevention or treatment of disease, symptoms management and minimization of disability.
- Clinical data analysis, considering peer-reviewed publications, for assessment of their validity and possibility of generalization.
- Participates in generation, interpretation and dissemination of medical knowledge.
- Understands the limitations of existing medical knowledge.

At the stage of Clinical Medicine and during Clinical Clerkship some sessions discuss concepts of basic sciences and most of them focus on clinical use of knowledge. During clinical rotations numerous study possibilities address this theme. At the level of clinical clerkship the students have possibility to use this knowledge in ambulatory and hospital practice for wide range of clinical situations.

6.2. Clinical and Communication Skills

This theme develops clinical and interpersonal skills required for medical practice. It contains training in communication with patients and colleagues, history taking and clinical examination, other clinical skills including basic life support. Age, ethnicity, social condition and disability are considered in communication.

The graduates demonstrate the following:

- 6.2.1.1. Ability to listen, identify patient's, his/her family and caregiver's opinions, address them, use measures needed for effective communication.
- 6.2.1.2. Ability to find clinical symptoms and signs through patient interview and examination, interpret them. Use received information for planning further examination.
- 6.2.1.3. An ability to keep data obtained in the result of observation, as well as an ability to communicate with others concerning these data.
- 6.2.1.4. Ability to conduct clinical procedures required for enrollment into residency programs, particularly procedures significant for management of life-threatening situations.
- 6.2.1.5. Ability to help patients and their family members in preserving health.

At basic and clinical levels the students have an ability to work in small groups of clinical skills classes (the course "Principles of Clinical Diagnosis with Clinical Assessment of Pathologic Processes"), in the

form of role playing and communication with standardized patients, clinical skills, in the format of training courses in clinical skills; At the level of clinical medicine perfection of clinical and communication skills at ambulatory/hospital patient's bedside is added in conditions of wide range of disorders.

6.2.2. Public and Population Health

Contains key issues of public health, social determinants of health and illness, effect of social, economic and environmental factors on health and society; strategies of society health improvement (not limited to disease treatment), acknowledgment of effect of poverty, unemployment, homelessness (other social factors) on health.

The graduate can demonstrate following:

6.2.2.1. Acknowledges factors affecting population health and the role of these factors in health support, prevention and disease treatment.

6.2.2.2. Acknowledges legal, social, economic, historical and political context of medical practice.

6.2.2.3. Has an ability to identify and analyze society related health issues, is able to contribute constructively in discussion of these issues.

At the stage of basic and clinical study discussion of these issues is possible in PBL classes; The students have possibility to study social health and sociologic issues affecting health via integrated way, in patient-centered context. At clinical stage significant topics are delivered in the format of lectures and seminars via discussion of particular cases;

6.2.3. Personal and Professional Development

Contains acknowledgement of necessity of ethical behavior, life-long learning, group work, respect-based relationship with patients and colleagues. Issues of legal ethics, economics and quality of patient care, including regulations of medical field, consent for treatment, care standards. Development of critical evaluation skills is conducted by analysis of published articles. Statistical approaches/methods are taught to develop skills for data analysis.

The graduate demonstrates following knowledge/skills:

6.2.3.1. Ethical behavior considering needs of patients and their family; considers need of confidentiality and expresses respect to individual autonomy, allows patients and their family members to make decisions concerning informed issues of medical care.

6.2.3.2. Acknowledges that decisions on disease or results are frequently made in ambiguous situation, when the doctor has to make quick, most rational decision based on the best evidences and specific needs of the patient.

6.2.3.3. Use of evidence-based knowledge when making clinical decision.

6.2.3.4. Acknowledgement of statistical approaches in data analysis.

6.2.3.5. Has an ability to work as a group member and take responsibility in relevant situations.

6.2.3.6. An ability of organizing and management of notes, records, information including use of corresponding technologies.

6.2.3.7. Ability to teach, help peers, make presentations, etc.

Ethics seminars and forums with presentations and discussions on real situations ethical issues at the stage of basic and clinical sciences belong to the theme as well;

At the stage of clinical medicine and clinical clerkship students have possibility to practice these skills when communicating with patients and colleagues.

7. Modules of Curriculum

7.1. Musculoskeletal System and Principles of Clinical Diagnosis

The objective of the course is to learn medical aspects of musculoskeletal system with interdisciplinary approach: including pathology, histology, physiology, biochemistry. Issues of system histomorphology, normal functioning and metabolism are discussed; principles of this system`s trauma, healing and degenerative changes, pathology of inflammatory, tumorous, metabolic, nutritional and congenital pathologies and principles of clinical manifestations. Physical examination, symptoms, signs and methods of diagnosis with clinical assessment of pathologic processes of this body system. As well as significant aspects of pathology (definition, classification, pathogenesis mechanism, and related syndroms) generally related to neoplastic process.

The module helps students to learn:

- Structure and function of musculoskeletal system.
- Interrelation between the function and disfunction.
- Histomorphologic properties of bones, joints, muscles.
- Mechanism and structure of contraction, muscle excitability and conduction of excitation from nerve to muscle.
- Norm and disorders of musculoskeletal system, anatomic (micro-, macroanatomic), physiological and pathophysiologic bases of physical signs.
- Describe frequent traumas of musculoskeletal system.
- Developmental malformations/disorders of bones, joints, soft tissues.
- Tumors of bones, joints, soft tissues, tumorous disorders.
- Inflammatory and traumatic damage of bones and joints.
- Characteristics of common arthritic conditions.
- Concept of disorders, illness. Acknowledge meaning and function of medical interviewing.
- Peculiarities of medical interviewing in specific populations and situations.

- Aspects of general physical examination.
- Interpretation of instrumental examinations (X-ray, Ct, MRI, Nuclear Imaging);
- Interpretation of laboratory data and putting them into clinical context.
- Epidemiology of bone system, effect on life quality, significance of keeping physical activity/healthy life style in prevention of musculoskeletal system problems.
- Effect of chronic pain syndroms on patient's life.
- Normal structure and function of skin.
- Competent history taking during clinical conditions with skin problems.
- Differential diagnosis and management plans with frequent and significant dermatologic disorders.
- Psychological effects caused by skin problems.

7.2 Hematopoietic System and Infections

The module contains two topics: hematopoietic system and infectious disorders: It is oriented to the discussion of normal development, functions, exchange of blood corpuscles; as well as studies various disorders and pathologies of this system, iron homeostasis, blood coagulation, principles of clinical manifestations and aspects of modern treatment; discusses issues of infectious disorders, medical microbiology, pathology, clinical manifestations and diagnostics.

The module helps students to learn:

- Normal development, function and exchange of red blood cells, white blood cells and thrombocytes.
- Red blood cells and iron homeostasis and metabolism.
- Pathophysiology, pathochemistry, pathomorphology and etiology (including infectious) aspects of various diseases of red blood cells and iron homeostasis.
- Cellular and biochemical mechanisms of blood coagulation; pathophysiology of diseases of homeostasis and thrombosis.
- Corresponding diagnostic evaluation of patients with blood disorders.
- Pathogenesis of infection and basic principles of antimicrobial pharmacotherapy; viral structure, genetics of metabolism and main characteristics of classification.
- Mechanism of action, pharmacokinetics, clinical use, toxicity of antitumor drugs.
- Principles of epidemiology, prevention of viral hepatitis and other viral diseases; issues related to patients life style with active viral disease.
- Role of labor protection management in health organizations; responsibility of system workers for health care of themselves, colleagues and patient.

7.3 Cardiovascular System

The objective of the module is delivery of principles of scientific research needed for acknowledgement of cardiovascular system disorders in relevant clinical contexts with integrated teaching of system anatomy, histology, physiology and pharmacology; facilitates understanding of fundamental concepts

by the students which is the basis and/or the reason for cardiovascular disorders, symptoms and signs. The module discusses mechanisms, manifestations, clinical examination and management of cardiovascular disorders and significant aspects of public health.

The module helps the students to learn:

- Anatomic, physiologic and pathophysiologic basis of cardiovascular system functioning in norm and disorders/diseases, physical signs, clinical assessment and treatment.
- Heart failure based on preload and afterload understanding.
- Valvular disorders based on understanding of cycle of heart work.
- Ischemic heart diseases – with basis of their pathology, pathophysiology.
- Normal ECG; Common disorders of cardiovascular system reflected on ECG; Understanding spread of electric waves through heart.
- Disorders of cardiovascular system: basic issues (anatomy and physiology) valuable for diagnostics, symptoms and signs, examination technique, diagnostic procedures.
- Activity mechanism, pharmacokinetics, clinical use, toxicity of medicines affecting cardiovascular system.
- Basic understanding of methods (ECG, chest X-ray, load tests, ultrasound, heart catheterization, CT, MRI, Scintigraphy) used for examination of patients with cardiovascular disorders, data interpretation and analysis in clinical context.
- Interpretation of laboratory data of patients with cardiovascular disorders and analysis in clinical context.
- Standardised basic physical examination of system.
- Management of cardiovascular disorders and emergency conditions (therapeutic and surgical).
- Use of cardiovascular disorders for understanding significant issues of public health (factors affecting society and public health such as tobacco, diet, load, healthy life style and disorder).
- Ethical aspects of resource management in relation with cardiovascular disorders.

7.4 Respiratory System

The aim of the module is to learn medical aspects of human respiratory system through interdisciplinary approach: structural organization and development of respiratory system, system functioning, physiologic processes and properties are discussed at the level of macroanatomy and histomorphology together with anatomy, histology, physiology, pathology, principles of clinical diagnosis and pharmacology; Pathophysiologic aspects and pathomorphologic issues of respiratory system disorders for making basis of physical examination and functional assessment of the system;

The objective of the module is also to learn pharmacologic agents used for the treatment of respiratory system and issues of diagnostics. Teaching of history taking, physical examination, making correct medical notes/records, as well as discussion of significant aspects of population health.

The module helps students to learn:

- Physical signs of the norm and disorders/diseases of respiratory system, anatomic (micro- and macroanatomic), physiologic and pathophysiologic bases of clinical evaluation and treatment.
- Anatomy of the chest and lungs.
- Exchange of oxygen and carbon dioxide between air and blood and transport of gasses in blood.

- Basic principles of acid-base balance, acid-base disturbances and compensatory reactions.
- Issues of basic pathology and pathophysiology of obstructive, restrictive and pulmonary vascular disorders.
- Characteristics of patients with pulmonary disorders (history, clinical symptoms and signs). Technique of examination, diagnostic procedures.
- Action mechanism, pharmacokinetics, clinical use, toxicity of pharmacologic agents affecting respiratory ways and lungs.
- Basic interpretation of methods (chest X-ray, function tests, CT, MRI, Nuclear Imaging) used for examination of patients with respiratory system disorders, data interpretation and analysis in clinical context.
- Interpretation of laboratory data of patients with respiratory system disorders and analysis in clinical context.
- Standardised physical examination of the system.
- Management of respiratory system disorders and emergency situations (therapeutic and surgical).
- Use of respiratory disorders for acknowledgement of issues significant for public health (factors affecting society and public health such as tobacco, healthy life style, diet, environmental factors, working and living conditions).
- Ethical aspects of management of resources related to respiratory system disorder.

7.5. Digestive Tract and Nutrition

The module helps to understand scientific principles of gastroenterology through analysis of key clinical issues; discusses system structure and function during the norm and disorders, as well as in relation with basic sciences and clinical practice. Facilitates understanding of issues of mechanisms, clinical manifestations and management of gastrointestinal disturbances.

The module helps the students to learn:

- Structure and function of digestive system (including liver)
- Physical signs of norm and disorders/diseases of digestive system, anatomic (micro- and macroanatomic), physiologic and pathophysiologic bases of clinical evaluation and treatment.
- Processes and mechanisms responsible for symptoms and signs of gastrointestinal system and liver dysfunction
- Eating - digestion of nutrients and absorption, metabolism at the level of entire body, creation of energy on biochemical level, requirement of nutrients, obesity, hunger, role of vitamins and minerals.
- Typical characteristics of digestive system disorders, history, clinical symptoms and signs, examination technique, diagnostic procedures.
- Pharmacologic agents affecting digestive tract: action mechanism, pharmacokinetics, clinical use, toxicity.
- Basic acknowledgement of methods (GI X-ray, endoscopy, CT, MRI, ultrasound, Nuclear Imaging) used for examination of patients with gastrointestinal problem, data interpretation and analysis in clinical context.
- Interpretation of laboratory data of patients with gastrointestinal disorders and analysis in clinical context.
- Standardised basic physical examination of the system.

- Management of gastrointestinal disorders and emergency conditions (therapeutic and surgical).
- Risk-factors, social and behavioral aspects of gastrointestinal disorders.
- Influence of gastrointestinal chronic disorders and syndroms on patient's life.

7.6 Nervous System

The module serves to discuss the nervous system as a whole and gives basic knowledge of nervous system disorders. Learns wide list of nervous system problems, from cellular- neurophysiologic basis to person's neurobiologic and behavioral issues. The course discusses examination methods and strategies used in behavioral science.

The module helps the students to learn:

- Neurobiologic and psycho-social factors significant for human brain and its functions.
- Factors organizing human behavior: perception, memory, affect, attention.
- Behavioral disorders and methods of their diagnostics; neuroanatomic and physiologic mechanisms of complex human behavior.
- Identification of biologic systems and action mechanisms of psychotropic medicines; Influence of medicine on human behavior, cognition and emotions.
- Dynamic interaction of biosocial systems and human behavior.
- General reactions of motor unit and issues of its pathology.
- Pathology of peripheral nerves' disorders and valuable issues for clinical evaluation.
- Issue of pathology of CNS disturbances/disorders.
- Pathology of cerebrovascular disorders and its understanding in the view of clinical pathology as a base for diagnostics and treatment.
- Disturbance in antenatal brain development and perinatal damage.
- Skull and spinal cord trauma.
- Nervous system tumors pathology, symptoms and signs, examination technique and diagnostic procedures.
- Pathology, symptoms and signs of CNS infections, examination technique and diagnostic procedures.
- Pathology of various genetic metabolic disturbances.
- Medicines affecting nervous system: classification, action mechanism, pharmacokinetics, clinical use, side effects and toxicity, drug interaction.
- Needs of patients with dementia, organization of multidisciplinary care and coordination
- Functions of an attorney of disabled patient.

7.7. Urinary System

The objective of the module is to understand the system, structural organization and development, discussion of physiologic, adaptive and pathophysiologic characteristics of system functioning and regulation; Study of congenital and acquired disorders of the system, as well as issues of mechanisms,

clinical manifestations and management of urinary system disorders.

Teaching of history taking, physical examination, making correct medical notes concerning the patient having urinary system pathology including use of theoretical knowledge in relation with clinical case.

The module helps the students to learn:

- Issues of basic anatomy, histology and development of kidneys and their blood circulation.
- Relationship between tubular structure and function.
- Control of renal blood circulation and glomerular filtration and the role of kidneys in acid-base balance.
- Fluid distribution in the body including water passage.
- Water-salt balance and participation of disturbance in establishment of pathologic syndrome (eg: hypertension and edema).
- Assessment of kidney function (including plasma clearance).
- Main clinical syndroms of urinary system; modern approaches of diagnostics and treatment.
- Congenital anomalies, tumors, obstructive disorders of kidneys and urinary system.
- Typical characteristics, history, clinical symptoms and signs, examination technique, diagnostic procedure of urinary system disorders.
- Pharmacologic agents acting on urinary system: action mechanism, pharmacokinetics, clinical use, toxicity.
- Basic understanding of methods (ultrasound, CT, MRI, Nuclear imaging) used for examination of patients with urinary system problems, data interpretation and analysis in clinical context.
- Interpretation of laboratory data of patients with urinary system disorders and analysis in clinical context.
- Standardised basic physical examination of the system.
- Management of urinary system disorders and emergency conditions (therapeutic and surgical).
- Influence of urinary system chronic disorders and syndroms on patients' life.

7.8.Reproductive System

The module serves to understand molecular, genetic, chromosomal basis of health and disorder. In relation to woman health it covers physical, mental, ethical, economic, environmental and social-political aspects;

– influence on preserving health in woman's entire life cycle, including pregnancy. In relation with infants contains discussion of intrauterine life and newborns, age-related changes of the system in women and men.

The module helps the students to learn:

- History taking from patients.
- Interpretation of data of patient's anamnesis, physical examination and mental status

examination.

- Gynecologic patient's physical examination.
- Developing gynecologic patient's management plan.
- History taking and examination of pregnant.
- Discussion of contraception issues.
- Screening of infectious disorders during pregnancy.
- Invasive and non-invasive screening in pregnant.
- Pregnancy complications
- Physiologic and pathologic labor
- Obstetric examination (combined, cervix, etc.)
- Determination of blood loss after delivery
- Arrangement of gynecologic procedures and examinations, interpretation of examination results.
- Identification of communication and cultural issues to be considered during family history taking and associated skills.
- Identification of sources for helping refugees and asylum seekers.
- Epidemiologic evidences influencing women decision on whether to take hormone replacement therapy.
- Key ethical and legal issues arising in relation to refugees and asylum seekers.

7.9. Endocrine System

Discusses functioning of endocrine system in the norm and during pathology: issues of endocrine system structural organization and development at macro- and microanatomical level, components of the system, their functioning, biochemical characteristics of relationship and regulation and physiology and pathophysiology of processes. Facilitates understanding of pathomorphologic basis of congenital and acquired disorders of the system, study of issues of clinical and laboratory diagnostics and treatment.

History taking, physical examination, study of making medical notes/records from patients with endocrine system pathology including synthesis of theoretical and practical knowledge.

The module helps the students to learn:

- Structural, biochemical and physiologic principles of normal functioning of endocrine system.
- Anatomy of endocrine system organs (micro- and macroanatomy) and normal physiologic effects of hormones.
- Regulation of hormone production of endocrine system organs.
- Pathology and pathophysiology of endocrine disorders, including endocrine tumors, as well as hormone deficit/excess.
- Principles of epidemiology, clinical manifestations and treatment of endocrine system disorders.

- Pharmacologic agents acting on endocrine system: action mechanism, pharmacokinetics, clinical use, toxicity.
- Basic understanding of methods (ultrasound, CT, MRI, Nuclear Imaging) used for examination of patients with endocrine problems, data interpretation and analysis in clinical context.
- Interpretation of laboratory data of patients with endocrine system disorders and analysis in clinical context.
- Standardised basic physical examinations of the system.
- Management of endocrine disorders and emergency conditions (therapeutic and surgical).
- Issues of epidemiology of endocrine disorders on the example of diabetes mellitus and thyroid gland disorders.

8. Strategy of Teaching and Learning

Educational philosophy of DTMU MD program is based on a curriculum design and delivery which serves to achieve program learning outcomes. Principles base on facilitation of students learning, independent thinking, collaborative work and initiative. Implementation of abovementioned is possible with:

- (i) the strategy, which makes the program background and
- (ii) the methods of teaching/learning used in the program.

(i) Educational strategy is – delivery of spiral curriculum with integrated system based approach using problem based learning and outcome-based education, through the mandatory and elective components of the curriculum.

(ii) Teaching/learning methods used in program

Curriculum teaching and learning strategy is based on the following:

- Student-centered
During planning, delivery and assessment of the curriculum more focus is made on learning, but not on teaching, in whole the objective is to focus students more on understanding the material. Different learning methods are chosen for effective support of students.
- Directed self-learning
Means that teacher makes objectives/tasks and the responsibility of the students is to implement them: responsibility for the learning is shared between the teacher and student through student's active (non-passive) participation.
- Promoting

Teaching methods and the role of the teacher is determined as promoter of searching; the program contains didactic teaching (mostly on the first stage of the curriculum, I and III topics of the course) and is embedded in a way that gives necessary information to the student to think and understand what he/she has learned.

- **Integrated (Deep-Learning)**
The goal is to give clinical meaning to everything what the student learns to make learning process interesting and relevant, in the same time, we need the students to know scientific principle of the medicine so that deep understanding of basic medical sciences to make background for the clinical skills and practice. The students also have to understand why they study these issues, be able to use information critically and not to learn for “examination”, which they forget immediately after passing. This approach is included for facilitation of deep learning.
- **Understandable learning objectives**
Understandable learning objectives work as communication measure between students and teachers, it makes understandable what is learned and assessment of learning outcomes.
- **Use of spiral curriculum**
The program bases on cyclicity around 9 modules of curriculum. The cycle makes three spirals. I spiral of the cycle is the stage of basic and clinical sciences; where in human system based modules explain the mechanisms of system normal and pathologic functioning, clinical (meaning) assessment of pathologic processes;. At II spiral deeper revision of organ systems is done by working at real patients cases, more focus on patients medical and social, health problems, communication peculiarities; III spiral is clinical clerkship, based on students previous experience (I, II spiral) with the purpose of his/her (knowledge, skills) consolidation and preparation for practice (residency program).
- **Structured around educational module**
At the stage of basic and clinical study module content is delivered during the sessions of academic week which is also included in problem based learning (PBL week) and case-based learning (Principles of Clinical Diagnosis with Clinical Assessment of Pathological Processes) in order the students to have additional measures for understanding the relevance of their learning to the future clinical practice.

8.1. Methods of Learning

- Problem-Based Learning (PBL)
Students work in small groups with facilitator at series of clinical problems
- Case-Based Learning (CBL)
Students work in small groups on principles of clinical diagnosis with assessment of the pathological processes;
- Competency-Based Learning
The students work to reach experience in particular (specific) list of competencies, e.g.: cardiopulmonary resuscitation, communication skills with patients, etc.
- Portfolio-Based Learning
At the stage of clinical study students fill log-book where they write information related to the curated patients, acquired skills, discussed ethical issues, ambulatory, hospital, cases and skills seen at other clinical institutions. In defined components (in case of reaching) they are awarded with credits. Student's personal education plans are also part of the portfolio; the student can identify (we expect from them) own strengths and weaknesses.
- e - Learning
There are important e-resources for self-education in the library, including for preparation to PBL and CBL, training in clinical skills, preparation of presentation, scientific project, etc.
- Patient Oriented Learning
Students study from real patients in the ambulatory and hospital environment, rehabilitation center, etc.
- Lectures
Lectures are important academic resources for curriculum. It is encouraged the lectures to be interactive as much as possible; focused to present big (macro) picture, to clarify difficult issues and/or summarize particular material, so that book material can be learned more effectively.
- Discussions in large group
Discussions in the group are used for debates. Some issues of ethics are delivered by this way. The students duty is to present specific opinions and justify the new position.

- Discussions in small groups /workshops
The students have discussions in small groups – despite PBL and CBL tutorials, for example discussion of scientific works at Journal Club format.
- Posters
Presentation of project works in the framework of academic module/course (e.g.: principles of scientific research).
- Observation of clinical practice
Students study through observation of clinicians and patients communication ;
- Clinical experience under supervision
Students have to obtain as much experience as possible through communication with patients. Constructive feedback given by the staff significantly influences their education; this is possible by either observation of patients or presenting the data to the staff members or students by presentation.
- Group learning
The students work in groups including in the format of PBL and case-based learning where they learn to listen others, respect others' and different opinions, get accustomed to group discussion, share responsibility on group work, agree the opinions and develop other interpersonal skills. Importance of group work is emphasized during learning of clinical and communication skills and during all clinical rotations.
- Role-play
Role-play is valuable for learning of issues in which the students might have less personal experience, including e.g: communication with “problematic” patients, from different cultural environment, etc. Simulated patients may be involved here; which also helps the feedback related to the academic sessions and evaluation of students.
- Presentations
During the program the students make presentations for other students and the staff. Some presentations are verbal, some are posters, some individual or prepared in groups, some in small groups (e.g.: PBL tutorial), some in bigger groups.
- Peer Tutoring
There is valid evidence that humans learn an issue much better when they teach. PBL and CBL stimulate peer tutoring; in DTMU; there is a big experience of tutoring basic sciences to junior students by senior students. Clinical skills (there are three such interest groups at the university: surgery, obstetrics and gynecology and neurology).
- Practical Classes

Practical classes are necessary resource so as to facilitate the students in understanding scientific knowledge on human body; in correlation of knowledge with clinical problem in PBL and CBL format and in discussion of patients seen during clinical rotations.

- Training of Clinical Skills

The students have access to labs of clinical skills where they study clinical skills in safe environment, models and mannequins are the means for training in such skills, which is impossible by practice on each other. Sessions of clinical skills are embedded in curriculum from basic and clinical sciences level and continue in the years of clinical practice.

Starting from Year III students are also involved in real operations and manipulations, working as assistants to experienced Physicians.

9. Assessment Strategy

9.1. Introduction

The goal of MD program is to prepare humane, clinically competent practicing doctors with skills of clinical reasoning and life-long learning. Assessment strategy is used to facilitate reaching this goal. Although, it is generally accepted that assessment is main characteristic of learning, we hope that our students will not be oriented only on passing exams; assessment is integrated in curriculum to facilitate the educational approach.

MD program facilitates obtaining knowledge and development of problem-solving skills through group- and self-directed learning. Assessment framework helps this approach through acknowledgment and motivation, gives direction to progress adequacy and gives the student feedback on issues which need further work.

Assessment tests judgement and use of knowledge, skills (clinical assessment, procedure skills, critical thinking) and professional behavior.

9.2. Key Principles of Assessment

Assessments should be valid and reliable in context.

Formative assessments are used in order to inform students quite frequently about their progress. The staff has to be informed concerning each student in order to conduct repeated activities for helping the student to solve the problem. Formative assessments are used mainly for the purpose of feedback, however, it also takes part in assessment if the student has passed the course.

Summative assessments can be also used for the feedback to students, either formative or summative (Semester) results are included in students' personal files concerning their achievements.

9.3. General Criteria of Assessment in Themes according to the Education Stages

General criteria of assessment in each theme and descriptors for education in each stage are given below.

9.3.1. Basic and Clinical Sciences

- Adequate knowledge and understanding of human normal and disordered structure, function, behavior.
 - Ability to use this knowledge for diagnostics, management and prevention of health problems (use of theory in practice).
 - Ability to organize and present information in coherent, logical and complete form.
- I. Stage – study of basic and clinical sciences in the context of clinical meaning, “paper-based” patients, standardized patient cases.
 - II. Stage – use of obtained knowledge at first level on “real” patients.
 - III. Stage – integration of obtained knowledge (through all parts of the program) and preparation for the first year of residency.

9.3.2. Clinical and Communication Skills

- Ability to obtain and interpret clinical symptoms and signs by interview and examination of patients, record and relate them to each other; use them in relation with other existing clinical data to develop management plan with patient and other professionals.
 - Shows and understands necessity of doctor-patient relationship, ability to listen to patient and his/her family members and uses all means for effective communication.
 - Ability to conduct important clinical procedures including solving emergency clinical situations.
- I – stage studies how to conduct clinical procedures and effective communicate with patients (mainly standardised or virtual patient) either in classroom environment or on real patient.
 - II - stage – is done in more experienced, clinical and communication skills in hospital and ambulatory patients, environment through intensively monitored practice.

III - stage - is quite competent in clinical procedures and communication with patients, is preparing for residency program in conditions of limited supervision.

9.3.3. Public and Population Health

- Shows understanding of political, organizational and economical frameworks in which Medicine works in Georgia and globally.
- Shows knowledge in issues and techniques included in study of disorders influence at population, public and individual level.
- Evaluates rights and needs for persons with mental and physical disabilities.
- Shows knowledge of social and psychological load of persons with chronic disorders and/or disabled ones and their caregivers.
- Shows understanding of knowledge in issues (including screening) of health support and prevention of disorders.
- Evaluates needs for local society in relation with delivery and access to services.
- Shows knowledge in principles of control of contagious disorders.

I-stage - Studies psychological, social and population issues in the context of health and disorders by cases, seminars.

II-stage During rotations in clinical medicine shows knowledge related to the importance of context of psychological, social and health services for patients.

III-stage shows patient-centered practice in conditions of limited supervision in ambulatory and hospital settings.

9.3.4 Personal and Professional Development

- Shows understanding of medical practice, professions, professional behavior.
- Shows understanding of legislation related to the medical field.
- Agrees to necessity of use of evidence-based medicine in making clinical decision.

- Shows basic understanding of statistical approaches for data analysis and an ability to choose the most suitable statistical method for specific situation.
- An ability to evaluate publication critically.
- An ability to collaborate as a team member.
- Shows skills of writing information, organization and management, including use of corresponding information technologies.

I –stage Learns principles of professional practice and effective learning.

II-stage During clinical rotation in conditions of supervision and monitoring trains in using professional standards and requirements.

III- stage Shows professional standards and requirements in the context of limited supervision.

9.4. Methods of Assessment

- Multiple choice questions, where the students choose the best answer from several possible answers. Most of the questions are asked in the format of clinical scenarios or vignettes.
- Mini-Cases, which are involved in practical classes of diagnostics course are also included, for example, in clinical skills training course.
- Questions of Problem Analysis, where the students are given short vignettes in which either context or stimuli for questions are delivered, which requires data interpretation, critical analysis and knowing mechanisms of patient's problems from students.
- Objective Structured Clinical Examination (OSCE), where students perform the tasks from their structured list, which may contain practical procedures, methods of interview or data interpretation.
- Clinical Cases, e.g.: Mini-CEXs, where observation on students, their communication with standardized and/or real patient is done, and where they also answer the questions asked by the examiner.
- Direct Observation of Procedural Skills, where students are observed to see how they fulfil particular procedures to prove competency (e.g.: measuring pressure, etc.).

- Case-Based Discussion (CBD), where students are asked questions by structured way on cases in which they are actively included.
- Portfolio, set of evidences which represents the skills obtained by students, how to deliver and accept constructive critics for their personal development and study.
- Reports, Oral Presentations or Posters fulfilled during particular academic modules (e.g.: Principles of Scientific Research).
- Progress Test – currently the students take international progress test delivered by EBMA twice a year which also allows giving feedback to students; for possibility of personal development and defining their own learning objectives by analysing of student's individual need. Where it is possible assessment is done in clinical context and written assessments are used like practicing doctor's duties, such as: for example: patient notes – history collected during personal supervision of patient by the student, examination results, diagnostics and management plans.
- Writing Critical Evaluation about journal article.
- Scientific Research Project for grant application.
- Interpretation of Patient Data.
- Use of electronic recipe system (e-prescription) at relevant level.

Examiners

DTMU plans according training course in assessment for all examiners. Responsible examiners are required to attend the course developed in the framework of staff development program by DTMU Medical Education Center (MEC).

The staff who develops written or OSCE or MINI CEXs exam questions are required to attend the workshop on Item-Writing. For examiners in OSCE it is required to attend the course organized in the framework of the staff development program and participation in preparatory session arranged before the exam.

Feedback and Students Progress

Student's feedback is considered by the Dean's office in each part of assessment or topic, scores by individual components. Mentioned is delivered individually verbally or in written form,.

Students progress is monitored by the Dean, course leader, clinical teachers and supervisors in order to identify timely the weaknesses for facilitation and need of repeated teaching/study and/or training.