

2. SPECIFIC LEARNING OUTCOMES

A. MORPHOLOGICAL SCIENCES (including: anatomy, histology, embryology)

In terms of knowledge, the graduate knows and understands:

- A.W1. anatomical, histological and embryological vocabulary in Polish and English;
- A.W2. the structure of the human body from a topographical (upper and lower limbs, thorax, abdomen, pelvis, back, neck, head) and functional (osteoarticular system, muscular system, cardiovascular system, respiratory system, digestive system, urinary system, sexual systems, nervous system and sensory organs, integument) point of view;
- A.W3. the topographical relationships between the various organs;
- A.W4. basic cellular structures and their functional specialisations;
- A.W5. the micro-architecture of tissues, extracellular matrix and organs;
- A.W6. the stages of development of the human embryo, the structure and function of the foetal membranes and placenta, the stages of development of the various organs, and the effect of harmful factors on the development of the embryo and foetus (teratogenic).

In terms of skills the graduate is able to:

- A.U1. operate an optical microscope, including the use of immersion;
- A.U2. recognise in optical or electron microscope images the histological structures corresponding to organs, tissues, cells and cellular structures, describe and interpret these structures and the relationship between structure and function;
- A.U3. explain the anatomical basis of the physical examination;
- A.U4. deduce relationships between anatomical structures on the basis of diagnostic examinations, in particular radiology (radiographs, examination with contrast agents, computed tomography and nuclear magnetic resonance);
- A.U5. use verbal and written anatomical, histological and embryological terminology.

B. SCIENTIFIC BASICS OF MEDICINE (including: biophysics, molecular biology, biochemistry with elements of chemistry, physiology with elements of clinical physiology, cytophysiology, computer science and biostatistics)

In terms of knowledge the graduate knows and understands:

- B.W1. the water-mineral balance of biological systems;
- B.W2. the acid-base balance and the mechanism of action of buffers and their importance in body homeostasis;
- B.W3. the terms: solubility, osmotic pressure, isotonia, colloidal solutions and Gibbs-Donnan effect;
- B.W4. the basic reactions of inorganic and organic compounds in aqueous solutions;
- B.W5. the physical laws describing fluid flow and factors affecting vascular resistance to blood flow;
- B.W6. the natural and artificial sources of ionising radiation and their interaction with matter;
- B.W7. the physicochemical and molecular basis of the functioning of the sensory organs;
- B.W8. the physical basis of non-invasive imaging methods;
- B.W9. the physical basis of selected therapeutic techniques, including ultrasound and irradiation;
- B.W10. the structure of simple organic compounds that make up the macromolecules present in cells, the extracellular matrix and body fluids;
- B.W11. the structure of lipids and polysaccharides and their functions in cellular and extracellular structures;
- B.W12. the I-, II-, III- and IV-order structures of proteins and post-translational and functional modifications of proteins and their significance;
- B.W13. the function of nucleotides in the cell, the I- and II-order structures of DNA and RNA, and the structure of chromatin;
- B.W14. the functions of the human genome, transcriptome and proteome and the principal methods used to study them, the processes of DNA replication, repair and recombination, transcription and translation and the degradation of DNA, RNA and proteins, and the concepts of regulation of gene expression;
- B.W15. the basic catabolic and anabolic pathways, how they are regulated, and how they are influenced by genetic and environmental factors;

- B.W16. the metabolic profiles of key organs and systems;
- B.W17. the ways in which cells communicate with each other and with the extracellular matrix, and the pathways for transmitting signals within the cell, and examples of disruption of these processes leading to cancer and other diseases;
- B.W18. the processes: cell cycle, proliferation, differentiation and ageing of cells, apoptosis and necrosis and their significance for the functioning of an organism;
- B.W19. to a basic extent the issue of stem cells and their application in medicine;
- B.W20. the basics of stimulation and conduction in the nervous system and higher nervous functions, as well as striated and smooth muscle physiology and blood functions;
- B.W21. the function and regulation mechanisms of all organs and systems of the human body, including the cardiovascular system, the respiratory system, the digestive system, the urinary system and the skin, as well as the relationships existing between them;
- B.W22. the course and regulation of reproductive functions in men and women;
- B.W23. the body's ageing mechanism;
- B.W24. the basic quantitative parameters describing the performance of various systems and organs, including the ranges of norms and demographic factors affecting the values of these parameters;
- B.W25. the relationship between factors disturbing the equilibrium state of biological processes and physiological and pathophysiological changes;
- B.W26. the basic IT and biostatistical tools used in medicine, including medical databases, spreadsheets and basic computer graphics;
- B.W27. the basic methods of statistical analysis used in population-based and diagnostic studies;
- B.W28. the potential of modern telemedicine as a tool to support the work of a doctor;
- B.W29. the principles of scientific, observational and experimental research and *in vitro* studies for the development of medicine.

In terms of skills the graduate is able to:

- B.U1. use knowledge of the laws of physics to explain the effects of external factors such as temperature, acceleration, pressure, electromagnetic field and ionising radiation on the body and its components;
- B.U2. assess the harmfulness of the dose of ionising radiation and comply with radiological protection rules;
- B.U3. calculate the molar and percentage concentrations of compounds and the concentrations of substances in iso-osmotic, mono- and multi-component solutions;
- B.U4. calculate the solubility of inorganic compounds, determine the chemical basis of the solubility or lack thereof of organic compounds and its practical significance for dietetics and therapeutics;
- B.U5. determine the pH of a solution and the effect of changes in pH on inorganic and organic compounds;
- B.U6. predict the direction of biochemical processes in relation to the energy state of cells;
- B.U7. perform simple functional tests assessing the human body as a system of stable regulation (stress tests, exercise tests) and interpret numerical data on basic physiological variables;
- B.U8. use basic laboratory techniques such as qualitative analysis, titration, colorimetry, pH monitoring, chromatography, electrophoresis of proteins and nucleic acids;
- B.U9. operate simple measuring instruments and assess the accuracy of the taken measurements;
- B.U10. use databases, including online databases, and search for required information using the available tools;
- B.U11. choose an appropriate statistical test, perform basic statistical analyses, use appropriate methods for the presentation of results, interpret results of meta-analyses and perform survival probability analysis;
- B.U12. explain the differences between prospective and retrospective, randomised and case-control studies, case reports and experimental studies, and rank them according to the reliability and the quality of scientific evidence;
- B.U13. plan and carry out simple scientific research, interpret the results and draw conclusions from them.

C. PRECLINICAL SCIENCES (including: genetics, microbiology, immunology, pathology, pharmacology with toxicology, elements of pathophysiology)

In terms of knowledge the graduate knows and understands:

- C.W1. the basic concepts of genetics;
- C.W2. the phenomena of gene linkage and interactions;
- C.W3. the proper human karyotype and the different types of sex determination;
- C.W4. the chromosome structure and the molecular basis of mutagenesis;
- C.W5. the principles of inheritance of different numbers of traits, inheritance of quantitative traits, independent inheritance of traits and inheritance of non-nuclear genetic information;
- C.W6. the genetic determinants of human blood groups and serological conflict in the Rh system;
- C.W7. the aberrations of autosomes and heterosomes that cause diseases, including oncogenesis and cancer;
- C.W8. the factors influencing the primary and secondary genetic balance of the population;
- C.W9. the basis for diagnosis of gene and chromosome mutations responsible for inherited and acquired diseases, including cancer;
- C.W10. the benefits and risks of the presence of genetically modified organisms (GMOs) in the ecosystem;
- C.W11. the genetic mechanisms for the acquisition of drug resistance by micro-organisms and cancer cells;
- C.W12. micro-organisms, including pathogenic and those present in the physiological flora;
- C.W13. the epidemiology of viral and bacterial infections, as well as fungal and parasitic infections, taking into account their geographical distribution;
- C.W14. the influence of abiotic and biotic (viruses, bacteria) environmental factors on the human body and human populations and the pathways of their entry into the human body;
- C.W15. the consequences of exposure of the human body to various chemical and biological agents and the principles of prevention;
- C.W16. the invasive forms or stages of development of selected parasitic fungi, protozoa, helminths and arthropods in humans, taking into account their geographical distribution;

- C.W17. the functioning of the parasite-host system and the main symptoms of disease caused by parasites;
- C.W18. the symptoms of iatrogenic infections, the routes of their spread and the pathogens causing lesions in the various organs;
- C.W19. the basics of microbiological and parasitological diagnostics;
- C.W20. the basics of disinfection, sterilisation and aseptic techniques;
- C.W21. the basic development and mechanisms of action of the immune system, including specific and non-specific humoral and cellular immunity mechanisms;
- C.W22. the major histocompatibility complex;
- C.W23. the types of hypersensitivity reactions, types of immunodeficiency and basics of immunomodulation;
- C.W24. the issues of cancer immunology;
- C.W25. the genetic basis of donor and recipient selection and the basis of transplantation immunology;
- C.W26. the pathomorphological nomenclature;
- C.W27. the basic mechanisms of cell and tissue damage;
- C.W28. the clinical course of specific and non-specific inflammations and tissue and organ regeneration processes;
- C.W29. the definition and pathophysiology of shock, with particular reference to differentiation between causes of shock and multi-organ failure;
- C.W30. the aetiology of haemodynamic disorders, retrograde changes and progressive changes;
- C.W31. the issues in detailed organ pathology, macroscopic and microscopic images and the clinical course of pathomorphological changes in individual organs;
- C.W32. the consequences of developing pathological changes on topographically adjacent organs;
- C.W33. the external and internal pathogens, modifiable and non-modifiable;
- C.W34. the clinical forms of the most frequent diseases of individual systems and organs, metabolic diseases and disorders of water-mineral, hormonal and acid-base balance;
- C.W35. the individual groups of medicinal products;
- C.W36. the main mechanisms of action of drugs and their age-dependent transformations in the body;
- C.W37. the impact of disease processes on drug metabolism and elimination;
- C.W38. the basic principles of pharmacotherapy;

- C.W39. the major adverse drug reactions, including those resulting from drug interactions;
- C.W40. the problem of drug resistance, including multi-drug resistance;
- C.W41. the indications for genetic testing to individualise pharmacotherapy;
- C.W42. the basic trends in the development of therapies, in particular the potential of cellular, gene and targeted therapies for specific diseases;
- C.W43. the basic concepts of general toxicology;
- C.W44. the groups of drugs whose abuse can lead to poisoning;
- C.W45. the symptoms of the most common acute poisonings, including those involving alcohol, drugs and other psychoactive substances as well as heavy metals and selected groups of drugs;
- C.W46. the basic principles of diagnostic procedures in poisoning;
- C.W47. the effect of oxidative stress on cells and its importance in disease pathogenesis and ageing processes;
- C.W48. the consequences of vitamin or mineral deficiencies or their excess in the body;
- C.W49. the enzymes involved in digestion, the mechanism of hydrochloric acid production in the stomach, the role of bile, the course of absorption of digestive products;
- C.W50. the consequences of poor nutrition, including prolonged starvation, excessive meals and unbalanced diets, and disturbances in digestion and absorption of digestive products;
- C.W51. the mechanism of action of hormones.

In terms of skills the graduate is able to:

- C.U1. analyse genetic crosses and pedigrees of human traits and diseases, and assess the risk of a child being born with chromosome aberrations;
- C.U2. identify indications for performing prenatal tests;
- C.U3. decide on the need for cytogenetic and molecular tests;
- C.U4. perform morphometric measurements, analyse the morphogram and record disease karyotypes;
- C.U5. estimate the risk of an offspring developing a particular disease based on family predisposition and the influence of environmental factors;
- C.U6. evaluate the environmental risks and use basic methods to detect the presence of harmful agents (biological and chemical) in the biosphere;
- C.U7. recognise the most common human parasites on the basis of their structure, life cycles and disease symptoms;
- C.U8. use the antigen-antibody reaction in current modifications and techniques for the diagnosis of infectious, allergic, autoimmune and neoplastic diseases and blood

disorders;

- C.U9. make preparations and recognise pathogens under the microscope;
- C.U10. interpret microbiological test results;
- C.U11. associate the images of tissue and organ damage with clinical signs of disease, history and laboratory findings;
- C.U12. analyse the reactive, defensive and adaptive phenomena and impairment of regulation caused by the aetiological agent;
- C.U13. perform simple pharmacokinetic calculations;
- C.U14. select drugs in appropriate doses to correct pathological phenomena in the system and in individual organs;
- C.U15. design regimens for rational, empirical and targeted chemotherapy of infections;
- C.U16. prepare records of all formulations of medicinal substances;
- C.U17. use pharmaceutical guides and databases on medicinal products;
- C.U18. assess toxicological risks in specific age groups and in hepatic and renal failure states and prevent drug poisoning;
- C.U19. interpret the results of toxicological tests;
- C.U20. describe the changes in bodily functions when homeostasis is disturbed, particularly the integrated response to exercise, exposure to high and low temperatures, loss of blood or water, sudden verticalisation, and the transition from sleep to wake-up.

D. BEHAVIOURAL AND SOCIAL SCIENCES WITH ELEMENTS OF PROFESSIONALISM (including: sociology of medicine, medical psychology, medical ethics, history of medicine, elements of professionalism, English language)

In terms of knowledge the graduate knows and understands:

- D.W1. the social dimension of health and illness, the impact of the social environment (family, networks of social relations) and social inequalities as well as socio-cultural differences on health, and the role of social stress in health-related and self-destructive behaviours;
- D.W2. the social factors influencing behaviour in health and in illness, particularly in chronic illness;
- D.W3. the forms of violence, models explaining violence in the family and violence in selected institutions, the social determinants of various forms of violence and the role of the doctor in recognising it;
- D.W4. the social attitudes to the meaning of health, illness, disability and old age, the social consequences of illness and disability and socio-cultural barriers, as well as the concept

of health-related quality of life;

- D.W5. the principles and methods of communication with the patient and his/her family to build an empathic, trusting relationship;
- D.W6. the importance of verbal and non-verbal communication in communication with the patient and the concept of trust in interaction with the patient;
- D.W7. the psychosocial consequences of hospitalisation and chronic illness;
- D.W8. the functioning of health system entities and the social role of the doctor;
- D.W9. the basic psychological mechanisms of human functioning in health and in sickness;
- D.W10. the role of the patient's family in the process of treatment;
- D.W11. the issue of the adaptation of the patient and his/her family to the illness as a difficult situation and to related events, including dying and the process of family grieving;
- D.W12. the role of stress in the aetiopathogenesis and course of diseases and coping mechanisms;
- D.W13. the mechanisms, aims and treatment of addiction to psychoactive substances;
- D.W14. the principles of health promotion, its tasks and main lines of action, with particular emphasis on knowledge of the role of healthy lifestyle elements;
- D.W15. the principles of motivating the patient towards healthy behaviour and informing about an unfavourable prognosis;
- D.W16. the main concepts, theories, ethical principles that serve as a general framework for properly interpreting and analysing moral-medical issues;
- D.W17. the rights of the patient;
- D.W18. the principles of teamwork;
- D.W19. the cultural, ethnic and national determinants of human behaviour;
- D.W20. the history of medicine, the medicine of primitive societies and the most ancient civilisations and the characteristic features of medieval medicine;
- D.W21. the features of modern medicine and its most important discoveries;
- D.W22. the process of formation of new specialties within the scope of scientific discipline - medical sciences and achievements of leading representatives of Polish and world medicine;
- D.W23. the foundations of evidence-based medicine.

In terms of skills the graduate is able to:

- D.U1. take into consideration, in the therapeutic process, the subjective needs and expectations of the patient resulting from socio-cultural conditions;
- D.U2. recognise the signs of anti-health and self-destructive behaviour and react appropriately to them;
- D.U3. choose treatment that minimises the social consequences for the patient;
- D.U4. build an atmosphere of trust throughout the diagnostic and treatment process;
- D.U5. interview an adult patient, a child and a family using active listening techniques and expressing empathy, and talk to the patient about their life situation;
- D.U6. inform the patient of the aim, course and possible risks of the proposed diagnostic or therapeutic measures, and obtain the patient's informed consent for these measures;
- D.U7. involve the patient in the therapeutic process;
- D.U8. inform the patient and his/her family of the poor prognosis;
- D.U9. provide advice on compliance with therapeutic recommendations and a healthy lifestyle;
- D.U10. identify risk factors for violence, recognise violence and respond appropriately;
- D.U11. apply basic psychological motivational and supportive interventions;
- D.U12. communicate with colleagues, providing feedback and support;
- D.U13. respect ethical standards in professional activities;
- D.U14. recognise the ethical dimension of medical decisions and distinguish between factual and normative aspects;
- D.U15. respect the rights of the patient;
- D.U16. demonstrate responsibility for improving their own skills and passing their knowledge on to others;
- D.U17. critically analyse medical literature, including literature written in English, and draw conclusions;
- D.U18. communicate with the patient in one of the foreign languages at B2+ level of the Common European Framework of Reference for Languages.

E. NON-INTERVENTIONAL CLINICAL SCIENCES (including: paediatrics, internal medicine, neurology, geriatrics, psychiatry, dermatology, oncology, family medicine, infectious diseases, rehabilitation, laboratory diagnostics, clinical pharmacology)

In terms of knowledge the graduate knows and understands:

- E.W1. the environmental and epidemiological determinants of the most common diseases;
- E.W2. the principles of nutrition for healthy and sick children, including natural feeding, immunisation and keeping a child's health record;
- E.W3. the causes, symptoms, principles of diagnosis and therapeutic management of the diseases that are most frequent in children:
 - 1) rickets, tetany, convulsions,
 - 2) heart defects, myocarditis, endocarditis and pericarditis, cardiomyopathy, cardiac arrhythmias, heart failure, hypertension, vaso-vagal episodes,
 - 3) acute and chronic diseases of the upper and lower respiratory tract, congenital malformations of the respiratory system, tuberculosis, cystic fibrosis, asthma, allergic rhinitis, urticaria, anaphylactic shock, angioedema,
 - 4) anaemias, haemorrhagic diathesis, bone marrow failure, childhood cancers, including solid tumours typical of childhood,
 - 5) acute and chronic abdominal pain, vomiting, diarrhoea, constipation, gastrointestinal bleeding, peptic ulcer disease, inflammatory bowel diseases, pancreatic diseases, cholestasis and liver diseases and other acquired diseases and congenital defects of the gastrointestinal tract,
 - 6) urinary tract infections, congenital defects of the urinary tract, nephrotic syndrome, kidney stones, acute and chronic renal failure, acute and chronic nephritis, systemic kidney diseases, urinary disorders, vesicoureteral reflux disease,
 - 7) growth disorders, thyroid and parathyroid diseases, adrenal diseases, diabetes, obesity, puberty and gonadal function disorders,
 - 8) cerebral palsy, encephalitis and meningitis, epilepsy,
 - 9) the most common childhood infectious diseases,
 - 10) genetic syndromes,
 - 11) connective tissue diseases, rheumatic fever, juvenile arthritis, systemic lupus, dermatomyositis;

- E.W4. the issues of abused children including sexual abuse, mental retardation and behavioural disorders - psychoses, addictions, eating and excretion disorders in children;
- E.W5. the basic methods of diagnosis and treatment of the foetus;
- E.W6. the most common life-threatening conditions in children and the management of these conditions;
- E.W7. the causes, symptoms, principles of diagnosis and therapeutic management of the most common internal diseases affecting adults and their complications:
- 1) cardiovascular diseases, including ischaemic heart disease, heart defects, diseases of the endocardium, heart muscle, pericardium, heart failure (acute and chronic), arterial and venous vascular diseases, hypertension - primary and secondary, pulmonary hypertension,
 - 2) diseases of the respiratory system, including respiratory tract diseases, chronic obstructive pulmonary disease, bronchial asthma, bronchial dilatation, cystic fibrosis, respiratory infections, interstitial lung diseases, pleural diseases, mediastinal diseases, obstructive and central sleep apnoea, respiratory failure (acute and chronic), respiratory cancers,
 - 3) diseases of the digestive system, including diseases of the oral cavity, oesophagus, stomach and duodenum, intestines, pancreas, liver, bile ducts and gallbladder,
 - 4) endocrine diseases, including hypothalamus and pituitary, thyroid, parathyroid gland, cortex of the adrenal gland and suprarenal medulla, ovarian and testicular diseases and neuroendocrine tumours, polyglandular syndromes, different types of diabetes mellitus and metabolic syndrome - hypoglycaemia, obesity, dyslipidaemia,
 - 5) kidney and urinary tract diseases, including acute and chronic renal failure, glomerular and interstitial kidney diseases, renal cysts, kidney stones, urinary tract infections, and urinary tract tumours, in particular of the bladder and kidney,
 - 6) haematopoietic diseases including bone marrow aplasia, anaemia, granulocytopenia and agranulocytosis, thrombocytopenia, acute leukaemias, myeloproliferative neoplasms and myelodysplastic/myeloproliferative neoplasms, myelodysplastic syndromes, mature B and T cell neoplasms, haemorrhagic diathesis, thrombophilia, life-threatening conditions in haematology, blood disorders in diseases of other organs,
 - 7) rheumatic diseases, including systemic connective tissue diseases, systemic vasculitis, arthritis with spinal involvement, metabolic bone diseases, in particular

- osteoporosis and osteoarthritis, gout,
- 8) allergic diseases, including anaphylaxis and anaphylactic shock, and angioedema,
 - 9) water-electrolyte and acid-base disorders: states of dehydration, states of overhydration, electrolyte disturbances, acidosis and alkalosis;
- E.W8. the course and manifestations of the ageing process and the principles of holistic geriatric assessment and interdisciplinary care in relation to the elderly patient;
- E.W9. the causes and main specificities of the most common diseases affecting the elderly and the management of the main geriatric syndromes;
- E.W10. the basic principles of pharmacotherapy of diseases affecting the elderly;
- E.W11. the risks associated with hospitalisation of the elderly;
- E.W12. the basic principles of organising care for the elderly and the responsibilities of a caregiver for the elderly person;
- E.W13. basic neurological symptom clusters;
- E.W14. causes, symptoms, principles of diagnosis and therapeutic management of the most common diseases of the nervous system, including:
- 1) headache, migraine, tension-type headache and headache syndromes, and V nerve neuralgia,
 - 2) cerebrovascular diseases, in particular stroke,
 - 3) epilepsy
 - 4) infections of the nervous system, in particular meningitis, lyme disease, herpes simplex encephalitis, neurotransmission diseases,
 - 5) dementias, in particular Alzheimer's disease, frontotemporal dementia, vascular dementia and other dementia syndromes,
 - 6) basal ganglia diseases, in particular Parkinson's disease,
 - 7) demyelinating diseases, in particular multiple sclerosis,
 - 8) diseases of the neuromuscular system, in particular amyotrophic lateral sclerosis and sciatica,
 - 9) craniocerebral trauma, in particular concussion;
- E.W15. the basic concepts of pathogenesis of mental disorders;
- E.W16. the general symptomatology of mental disorders and the principles for their classification according to the main classification systems;
- E.W17. the symptoms, diagnosis and therapeutic management of the most common mental disorders, including:

- 1) schizophrenia,
- 2) affective disorders,
- 3) neurosis and adjustment disorders,
- 4) eating disorders,
- 5) disorders related to the use of psychoactive substances,
- 6) sleep disorders;

E.W18. the principles of diagnosis and management of psychiatric emergencies, including suicide;

E.W19. the specificity of mental disorders and their treatment in children, adolescents and in old age;

E.W20. the symptoms of mental disorders in the course of somatic diseases, their impact on the course of the underlying disease and prognosis, and the principles of their treatment;

E.W21. the issue of human sexuality and the main disorders associated with it;

E.W22. the legislation on mental health protection, with particular reference to the rules on admission to a psychiatric hospital;

E.W23. the environmental and epidemiological determinants of the most common cancers;

E.W24. the basics of early cancer detection and principles of screening in oncology;

E.W25. the possibilities of modern cancer therapy including multimodal therapy, perspectives of cellular and gene therapies and their adverse effects;

E.W26. the principles of combination therapies in oncology, algorithms of diagnostic and therapeutic management in the most frequent tumours;

E.W27. the principles of diagnosis and therapeutic management of the most common problems in palliative medicine, including:

- 1) symptomatic treatment of the most common somatic symptoms,
- 2) the management of cancer cachexia and the prevention and treatment of pressure sores,
- 3) the most common emergencies in palliative medicine;

E.W28. the principles of palliative management of a patient in a terminal condition;

E.W29. principles of pain treatment, including neoplastic and chronic pain;

E.W30. the concept of disability and invalidity;

E.W31. the role of medical rehabilitation and the methods used in it;

- E.W32. the basic aspects of prevention and the rules of conduct in the event of work-related exposure to hazardous and noxious agents;
- E.W33. the rules concerning the detection of an infectious disease;
- E.W34. the causes, symptoms, principles of diagnosis and therapeutic and prophylactic management of the most common bacterial, viral, parasitic and fungal diseases, including pneumococcal infections, viral hepatitis, acquired immunodeficiency syndrome (AIDS), sepsis and nosocomial infections;
- E.W35. the main characteristics, environmental and epidemiological conditions of the most frequent skin diseases;
- E.W36. the causes, symptoms, principles of diagnosis and therapeutic management of the most common sexually transmitted diseases;
- E.W37. the causes, symptoms, principles of diagnosis and therapeutic management of the most common hereditary diseases;
- E.W38. the causes, symptoms, principles of diagnosis and therapeutic management of the most common diseases and specific problems in the practice of the family doctor;
- E.W39. the types of biological materials used in laboratory diagnosis and the principles for collecting material for tests;
- E.W40. the theoretical and practical background of laboratory diagnostics;
- E.W41. the possibilities and limitations of laboratory tests in emergencies;
- E.W42. the indications for implementing monitored therapy;
- E.W43. the basic pharmacoeconomic terminology.

In terms of skills the graduate is able to:

- E.U1. conduct anamnesis with an adult patient;
- E.U2. carry out a medical interview with a child and its family;
- E.U3. conduct a complete and focused physical examination of an adult patient;
- E.U4. conduct a physical examination on a child of any age;
- E.U5. conduct a psychiatric examination;
- E.U6. conduct an orientation hearing and visual field examination as well as an otoscopic examination;
- E.U7. assess the general condition, state of consciousness and awareness of the patient;

- E.U8. assess the neonate's Apgar score and maturity and examine neonatal reflexes;
- E.U9. match anthropometric and blood pressure measurements with data on centile grids;
- E.U10. assess the stage of sexual maturation;
- E.U11. conduct a balance study;
- E.U12. perform differential diagnosis of the most common diseases of adults and children;
- E.U13. assess and describe the somatic and psychological state of the patient;
- E.U14. recognise immediate life-threatening conditions;
- E.U15. recognise the state of a person under the influence of alcohol, drugs and other stimulants; E.U16. plan diagnostic, therapeutic and preventive procedures;
- E.U17. conduct an analysis of possible adverse reactions to and interactions between individual drugs;
- E.U18. propose individualisation of existing therapeutic guidelines and other methods of treatment in the event of ineffectiveness or contraindications to standard therapy;
- E.U19. recognise symptoms of drug dependence and suggest therapeutic management; E.U20. qualify the patient for home and hospital treatment;
- E.U21. recognise conditions where the patient's life expectancy, functional status or preferences restrict management according to disease-specific guidelines;
- E.U22. make a functional assessment of a patient with disabilities;
- E.U23. propose a rehabilitation programme for the most common diseases;
- E.U24. interpret laboratory test results and identify causes of deviations from the norm;
- E.U25. administer nutritional treatment, including enteral and parenteral nutrition;
- E.U26. plan the management in the event of exposure to a blood-borne infection;
- E.U27. qualify the patient for vaccination;
- E.U28. collect and preserve material for tests used in laboratory diagnosis;
- E.U29. perform basic medical procedures and treatments including:
 - 1) measurement of body temperature (surface and deep), heart rate measurement, non-invasive blood pressure measurement,
 - 2) monitoring of vital signs with a cardiomonitor, pulse oximetry,
 - 3) spirometric examination, oxygen treatment, support and mechanical ventilation,
 - 4) inserting an oropharyngeal tube,
 - 5) intravenous, intramuscular and subcutaneous injections, peripheral venous cannulation, collection of peripheral venous blood, collection of blood for culture, collection of arterial blood, collection of arterialised capillary blood,
 - 6) taking nasal, throat and skin swabs,
 - 7) bladder catheterisation in women and men, gastric probing, gastric lavage, enema,
 - 8) standard resting electrocardiogram with interpretation, electrical cardioversion

and cardiac defibrillation,

9) simple strip tests and blood glucose measurement;

E.U30. assist in performing the following medical procedures and treatments:

1) transfusion of blood and blood products,

2) the drainage of the pleural cavity,

3) the pericardiocentesis,

4) the puncture of the peritoneal cavity,

5) the spinal tap,

6) the fine-needle biopsy,

7) the epidermal tests

8) the intradermal and the scarification tests and interpreting their results;

E.U31. interpret the pharmaceutical characteristics of medicinal products and critically evaluate advertising material for medicines;

E.U32. plan specialist consultations;

E.U33. implement basic medical treatment for acute poisoning;

E.U34. monitor the condition of a patient poisoned by chemicals or drugs;

E.U35. assess pressure sores and apply appropriate dressings;

E.U36. deal with injuries (apply a dressing or immobiliser, dress and stitch up a wound);

E.U37. recognise patient agony and pronounce patient's death;

E.U38. maintain patient medical records.

F. INTERVENTIONAL CLINICAL SCIENCES (including: anaesthesiology and intensive care, general surgery, orthopaedics with traumatology, emergency medicine, oncological surgery, gynaecology and obstetrics, urology, otorhinolaryngology, ophthalmology, neurosurgery, transplantology, diagnostic imaging)

In terms of knowledge the graduate knows and understands:

- F.W1. the causes, symptoms, principles of diagnosis and therapeutic management of the most common diseases requiring surgical intervention, taking into account the specificity of child's age, including in particular:
- 1) acute and chronic abdominal diseases,
 - 2) thoracic diseases,
 - 3) diseases of the limbs and head,
 - 4) bone fractures and organ injuries;
- F.W2. the selected issues in paediatric surgery, including traumatology and otorhinolaryngology, as well as defects and acquired diseases that are indications for surgical treatment in children;
- F.W3. the principles of qualification for basic surgical procedures and invasive diagnostic and therapeutic procedures, the principles of their performance and the most frequent complications;
- F.W4. the principles of perioperative safety, preparing the patient for surgery, administering general and local anaesthesia and controlled sedation;
- F.W5. the postoperative treatment with pain therapy and postoperative monitoring;
- F.W6. the indications and principles of intensive care;
- F.W7. the cardiopulmonary resuscitation guidelines for newborns, children and adults;
- F.W8. the principles of operation of the integrated system of the State Medical Rescue Services;
- F.W9. the female reproductive function, associated disorders and diagnostic and therapeutic management, concerning in particular:
- 1) the menstrual cycle and its disorders,
 - 2) pregnancy,
 - 3) the physiological and pathological childbirth and the puerperium,
 - 4) inflammations and tumours in the genital area,
 - 5) birth control,
 - 6) menopause,
 - 7) the basic gynaecological diagnostic methods and procedures;
- F.W10. the issues surrounding the use of contemporary imaging examinations, in particular:
- 1) the radiological symptomatology of the principal diseases,

- 2) the instrumental methods and imaging techniques used to perform medical procedures,
- 3) the indications, contraindications and preparation of the patient for particular types of imaging examination and contraindications to the use of contrast agents;

F.W11. the issues related to ocular diseases, in particular:

- 1) the causes, symptoms, principles of diagnosis and therapeutic management of the most common ophthalmic diseases,
- 2) the ophthalmic complications of systemic diseases together with their ophthalmic symptomatology and correct methods of management in these cases,
- 3) surgical management of specific ocular diseases,
- 4) the main groups of drugs used in ophthalmology, their side effects and interactions,
- 5) the groups of drugs for general use with which ophthalmic complications and contraindications are associated and their mechanism;

F.W12. the issues in the field of laryngology, phoniatrics and audiology, including:

- 1) the causes, clinical course, treatment methods, complications and prognosis of diseases of the ear, nose, paranasal sinuses, oral cavity, pharynx and larynx,
- 2) diseases of the facial nerve and selected neck structures,
- 3) the principles of diagnostic and therapeutic management of mechanical injuries to the ear, nose, larynx and oesophagus,
- 4) principles of emergency management in otorhinolaryngology, especially laryngeal dyspnoea,
- 5) the principles of diagnostic and therapeutic management of hearing, voice and speech disorders,
- 6) the principles of diagnostic and therapeutic management of head and neck cancer;

F.W13. the cause,s symptoms, principles of diagnosis and therapeutic management of the most common diseases of the central nervous system in terms of:

- 1) cerebral oedema and its sequelae, with particular reference to emergencies,
- 2) other forms of intracranial constriction with their consequences,
- 3) craniocerebral trauma,
- 4) vascular defects of the central nervous system,
- 5) tumours of the central nervous system,
- 6) diseases of the spine and spinal cord;

F.W14. the basic coverage of procedural transplantation, indications for transplantation of irreversibly damaged organs and tissues and related procedures;

F.W15. the principles for suspicion and diagnosis of brain death;

F.W16. the management algorithm for the different stages of accidental hypothermia and post-traumatic hypothermia.

In terms of skills the graduate is able to:

- F.U1. assist in a typical surgical procedure, prepare the surgical field and administer local anaesthetic to the surgical area;
- F.U2. use basic surgical instruments;
- F.U3. comply with the principles of asepsis and antisepsis;
- F.U4. dress a simple wound, apply and change a sterile surgical dressing; F.U5. insert intravenous line;
- F.U6. examine the nipples, lymph nodes, thyroid gland and abdominal cavity in terms of the acute abdomen and perform a finger examination through the rectum;
- F.U7. assess the radiographic findings for the most common types of fracture, particularly long bone fractures;
- F.U8. perform temporary immobilisation of the limb, choose the type of immobilisation necessary for use in typical clinical situations and check the supply of the blood to the limb after applying immobilisation dressing;
- F.U9. treat external bleeding;
- F.U10. perform basic resuscitation using an automated external defibrillator and other emergency procedures as well as first aid;
- F.U11. act in accordance with the advanced resuscitation algorithm;
- F.U12. monitor the patient's condition in the postoperative period based on basic vital signs;
- F.U13. recognise signs and symptoms indicative of abnormal pregnancy (abnormal bleeding, contractile activity of the uterus);
- F.U14. interpret the results of physical examination of a pregnant woman (blood pressure, maternal and foetal heart rate) and the results of laboratory tests indicative of pathologies in pregnancy;
- F.U15. interpret cardiotocography (CTG) recordings;
- F.U16. recognise the beginning of labour and its abnormal duration; F.U17. interpret subjective and physical symptoms during puerperium;
- F.U18. establish recommendations, indications and contraindications for the use of contraceptive methods;
- F.U19. carry out ophthalmic screening;
- F.U20. recognise ophthalmic conditions requiring immediate specialist assistance and provide initial qualified assistance in cases of physical and chemical injury to the eye;
- F.U21. assess the condition of an unconscious patient according to international rating scales;

- F.U22. recognise the symptoms of increasing intracranial pressure;
- F.U23. assess the indications for and participate in the carrying out of a suprapubic aspiration;
- F.U24. assist with typical urological procedures (diagnostic and therapeutic endoscopy of the urinary tract, lithotripsy, prostate puncture);
- F.U25. perform a basic ENT examination of the ear, nose, throat and larynx;
- F.U26. carry out an orientation hearing test.

G. LEGAL AND ORGANIZATIONAL ASPECTS OF MEDICINE (including: hygiene, epidemiology, public health, medical law, forensic medicine)

In terms of knowledge the graduate knows and understands:

- G.W1. the methods for assessing the health status of individuals and populations, various systems of classifying diseases and medical procedures;
- G.W2. the means of identifying and investigating risk factors, the advantages and disadvantages of different types of epidemiological studies, and the measures demonstrating the presence of a cause-and-effect relationship;
- G.W3. the epidemiology of infectious and chronic diseases, ways of preventing their occurrence at different stages of the natural history of a disease, and the role of epidemiological surveillance;
- G.W4. the concept of public health, its objectives, tasks and the structure and organisation of the health care system at national and global level, and the impact of economic conditions on health care capacity;
- G.W5. the legislation on the provision of health services, patient rights, labour law, the basis of the medical profession and the functioning of the medical self-governing body;
- G.W6. the basic legal regulations on the organisation and financing of the health care system, universal health insurance and the principles of organisation of health care entities;
- G.W7. the legal obligations of the medical practitioner in relation to confirmation of death;
- G.W8. the legal regulations and basic methods relating to medical experimentation and the conduct of other medical research, including basic methods of data analysis;
- G.W9. the legal regulations on transplantation, artificial procreation, abortion, aesthetic treatments, palliative care, mental illness;
- G.W10. the basic regulations of pharmaceutical law;
- G.W11. the legal regulations regarding medical confidentiality medical record keeping, criminal, civil and professional liability of the medical practitioner;

- G.W12. the concepts of violent death and sudden death and the differences between injury and trauma;
- G.W13. the legal foundations and principles of the medical practitioner's conduct during examinations of the deceased at the scene and the forensic medical examination of the deceased;
- G.W14. the principles of forensic medical diagnosis and opinion in cases involving infanticide and the reconstruction of the circumstances of a road accident;
- G.W15. the rules on the preparation of expert opinions in criminal matters;
- G.W16. the forensic medical opinion rules regarding fitness to stand trial, biological endpoint and impairment of health;
- G.W17. the concept of medical error, the most common causes of medical errors and the rules governing opinions in such cases;
- G.W18. the principles for collecting material for toxicological and haemogenetic tests.

In terms of skills the graduate is able to:

- G.U1. describe the demographic structure of the population and on this basis assess the health problems of the population;
- G.U2. collect information on the presence of risk factors for infectious and chronic diseases and plan preventive actions at different levels of prevention;
- G.U3. interpret the measures of prevalence of disease and disability;
- G.U4. evaluate the epidemiological situation of diseases commonly occurring in the Republic of Poland and worldwide;
- G.U5. explain to recipients of medical services their basic entitlements and the legal basis for providing these services;
- G.U6. prepare medical certificates for patients, their families and other parties;
- G.U7. recognise, when examining a child, behaviours and symptoms that indicate the possibility that violence against the child may have occurred;
- G.U8. act in such a way as to avoid medical errors;
- G.U9. draw blood samples for toxicological tests and secure material for haemogenetic tests.