

APPROVED BY

First Pro-rector for scientific
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2019

**WORKING PROGRAMM OF DISCIPLINE
"CLINICAL IMMUNOLOGY AND ALLERGOLOGY"
for the 5th year students of Medical Faculty**

at higher medical educational establishments of III - IV accreditation levels

Specialties:

7.110101 "Medicine"

7.110104 "Pediatrics"

7.110105 "Medical and preventive care"

Discussed and approved

at the faculty meeting at the department of
Clinical Immunology and Allergology
Minutes No. 1
as of “ 30 ” August 2019

Approved by

the field-specific methodological commission for
therapeutic discipline
Minutes No. 1
as of “ 12 ” _sep____2019

Head of the Department

_____ MD, Prof. V.V.Chopyak

Head of Comission

_____ MD, Prof. O.M. Radchenko

LVIV 2019

The program was discussed and approved:

At the meeting of the Heads of Departments and Courses of Clinical Immunology and Allergology of higher educational establishments of Ministry of Health of Ukraine on 23 November 2017 (Kyiv, Bogomolets Kiev National Medical University).

By the Commission for the branch of "Medicine" at Scientific and Methodological Council of the Ministry of Education and Science of Ukraine (on 06 April 2018).

The work program was discussed and approved by the Central methodical commission at Danylo Halytsky Lviv National Medical University on

" " _____ 2019, Protocol №

Attachment
to the syllabus of the subject “Clinical immunology and allergology”
for the 5th year foreign students of medical faculties 1, 2
on the specialties “General medicine”, “Paediatrics”, “Medical and preventing care”
for 2019/2020 academic year

Methods and means of standardized formative assessment of the learning process

Methods of assessment/test performance

Formative assessment is carried out during every practical class according to specific objectives of each theme.

During every practical class from the section “Fundamental immunology” the student answers 10 test questions; during every practical class from the sections “Applied immunology” and “Immunotherapy” the student answers 10 test questions and 3-5 case tests (tests on the theme of practical class; standard questions, with the tasks necessary for understanding a current theme; tasks on the lecture course and individual student’s work related with current class; demonstrates the knowledge and practical skills on the theme of practical class).

Criteria of the assessment of student’s formative academic activity

The teacher estimates the knowledge of students according to the 4-point scale asking questions for oral control and estimation. Every theme of the same module should have the same value.

Excellent (“5”) – the student gives correct answers to 90-100% of A format tests. Student answers correctly and thematically to the standardized questions of the current theme including questions on the lecture course and self-guided work; connects the theory and practice and demonstrates correctly the accomplishment and knowledge of practical skills; interprets the test results fluently, solves highly complicated situational tasks, is able to generalize the material, knows methods of patient examination in the sufficient degree required for the medical professional; completed planned individual work (designing the tables, schemes on the theme).

Good (“4”) – a student gives correct answers to 70-89% of A format tests. Student answers correctly and thematically to the standardized questions of the current theme including questions on the lecture course and self-guided work; demonstrates correctly the accomplishment and knowledge of practical skills; correctly uses theoretical knowledge to solve practical tasks; can solve easy and medium-complicated situational tasks; gained necessary practical skills and ways of their usage in the amount which is higher than necessary minimum.

“Satisfactory” (“Passing grade”) (“3”) – a student gives correct answers to 50-69% of A format tests. Student doesn’t give full answers to the standardized questions of the current theme including questions on the lecture course and self-guided work, requires additional questions; is not able to give clear, logical response. Makes mistakes while presenting the theme and demonstrating practical skills; solves only the easiest situational tasks, knows only the necessary minimum of examination methods.

“Unsatisfactory” (“Poor”) (“2”) – a student gives correct answers to less than 50% of A format tests; doesn’t know the material of the current theme, can’t make a structured and logical report, doesn’t give answers to additional questions, doesn’t understand the theme; makes significant mistakes during the report and demonstration of practical skills.

The student’s knowledge is estimated by the 4-point scale («5», «4», «3», «2») during every class according to the criteria of the assessment of student’s formative academic activity. The received marks are converted into points.

The following conversion of traditional mark into points is implemented in the program:

Usual mark	Conversion into points
	Part 1 Clinical immunology and allergology 10 classes + final control (FC)
«5»	15
«4»	12
«3»	9
«2»	0

Maximum number of points that can be obtained by a student for his/her formative academic activity for the module is 120 points. It is counted by multiplying the number of points that correspond to the mark “5” and the number of practical classes in the module.

Minimum number of points that can be obtained by a student for his/her formative academic activity for the admission to the FMC is counted by multiplying the number of points that correspond to the mark “3” and the number of practical classes in the module.

Assessment of self-guided work: material for the self-guided work that is included in the theme of practical class together with classroom studies is estimated during the formative control of the theme during the corresponding classroom lesson.

Final control: is performed after learning of all themes of the module during the last practical class. Students, who accomplished all types of work according to the syllabus, made up all classes and received the number of points which is not less than minimal during the module.

Methods and means of standardized final control: it consists of two stages. The first stage – written answer to the format A tests. The second stage – oral and written answers to the control questions (text questions) or case tasks.

The conversion of the points for the specialties “General medicine”, “Paediatrics”, “Medical and preventing care” : «5» - 15 points, «4» - 12 points, «3» - 9 points. Total points for the formative control: maximum number of points – 129, minimum – 72.

The conversion of the points for the specialty “Dentistry” «5» - 30 points, «4» - 24 points, «3» - 18 points. Total points for the formative control: maximum number of points – 129, minimum – 72.

Maximum number of points for the final control is **80**. The module is passed if a student received 50 and more points; the module is failed if a student got **less than 50 points**.

Approximate academic plan on the subject

“Clinical immunology and allergology”

For the students of medical faculties on the specialties:

7.110101 «General Medicine», 7.110104 «Paediatrics»,

7.110105 “Medical and preventive care”

Structure of educational subject	Total hours, including				Year of study	Type of control
	Total (hours/ credits)	Classroom		SGW		
		Lectures	Practical classes			
Total hours/ Credits ECTS	60/2	6	24	30	5	Credit
Part 1: <u>Basics of clinical immunology and allergology</u>	60 hours / 2 credits ECTS	6	22	30	5	Final control
Content thematic parts – 3						

Including final control 1			2			Final control
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Note: 1 credit ECTS – 30 hours; classroom load – 50%, SGW – 50%;

Approximate structure of credit transfer – part 1
Basics of clinical immunology and allergology

Theme	Lectures	Practical classes	Self-guided work	
			SGW	
<u>Content thematic part 1: IMMUNOLOGIC STATUS, ASSESSMENT PRICIPLES AND WAYS OF IMMUNE CORRECTION</u>				
1. Structure and principles of immune system functioning. Immune inflammation. Age-related immunity.	2	3	5	
2. Assessment of the state of immune system.		3	5	
3. Immunotropic therapy, immune rehabilitation, immune prevention.		3		
Total hours – 22	2	9	10	
Credits ECTS -0,7				
<u>Content thematic part 2: IMMUNODEFICIENCY DISEASES AND IMMUNO-DEPENDENT PATHOLOGY</u>				
4. Immune diagnostics and immune therapy in cancer patients. Immune diagnostics and immune therapy in patients after transplantations.		3		
5. Congenital and acquired immunodeficiency diseases. HAV/AIDS	2	3	10	
6. Autoimmune diseases (immune diagnostics, immune therapy). Immune-dependent infertility.		3		
Total hours – 31	2	9	10	
Credits ECTS -1,6				
<u>Content thematic part 3 ALLERGIC DISEASES</u>				
7. Atopic diseases: immune pathogenesis, clinics, diagnostics, treatment	2	3	5	
8. Acute allergic conditions.		2	5	
Final test.		1		
Total hours – 22	2	6	10	
Credits ECTS -0,7				

Total

6

24

30

THEMATIC PLAN OF LECTURES
for the 5-year students of medical faculties on clinical immunology and allergology

№	Lecture theme	Hours
1.	Tasks of clinical immunology and allergology. Assessment of the state of immune system.	2
2.	Immunodeficiency diseases. HIV-infection: diagnostics, treatment, prevention.	2
3.	Autoimmune diseases: immune diagnostics and immunotherapy. Allergic diseases: clinics, diagnostics, treatment.	2
Total		6

THEMATIC PLAN OF PRACTICAL CLASSES
for the 5-year students of medical faculties on clinical immunology and allergology

Content thematic part 1: IMMUNOLOGIC STATUS, ASSESSMENT PRICIPLES AND WAYS OF IMMUNE CORRECTION

No	Theme	Hours
1	Structure and principles of immune system functioning. Immune inflammation. Age-related immunity.	3
2	Assessment of the state of immune system.	3
3	Immunotropic therapy, immune rehabilitation, immune prevention.	3
Total		9

Content thematic part 2: IMMUNODEFICIENCY DISEASES AND IMMUNO-DEPENDENT PATHOLOGY

№ з/п	Theme	Hours
4	Immune diagnostics and immune therapy in cancer patients. Immune diagnostics and immune therapy in patients after transplantations.	3
5	Congenital and acquired immunodeficiency diseases. HAV/AIDS	3
6	Autoimmune diseases (immune diagnostics, immune therapy). Immune-dependent infertility.	3
Total		9

Content thematic part 3: ALLERGIC DISEASES

<i>№ з/п</i>	<i>Theme</i>	<i>Hours</i>
7	Atopic diseases: immune pathogenesis, clinics, diagnostics, treatment	3
8	Acute allergic conditions. Final	2 1
Total		6
Total for three content thematic parts		24

TOPICS OF SELF-GUIDED WORK for the 5-year students of medical faculties on clinical immunology and allergology

<i>№ з/п</i>	<i>Theme</i>	<i>Hours</i>
1.	Mucosal immunity: laboratory diagnostics and approaches to correction	5
2.	Assessment of the state of antibacterial, anti-fungal and anti-parasite immunities in patients	5
3.	Herpetic immunotropic infections	10
4.	Hey fever: diagnostics and immune therapy	5
5.	Medication allergy	5
Total		30

7. LIST OF QUESTIONS FOR THE STUDENTS' PREPARATION FOR THE FINAL CONTROL

1. Subject and tasks of clinical immunology and allergology. History of the development of immunology.
2. Current understanding of the structure, functions and development of the immune system. Central and peripheral immune organs.
3. Peculiarities of immune system functioning in children of different age and elderly people
4. Cellular congenital protective factors, their interaction in the realization of the immune response.
5. Monocyte-macrophage system: functions, peculiarities, role in the development and realization of the immune response.
6. Killing effect as the component of immune-biological surveillance. Main types of killer-cells, their function and properties. Role of blood granulocytes in the formation of immune response.
7. Humoral factors of congenital immunity.
8. Complement system. Biological consequences of complement system activation.
9. Antigens: structure, functions. Haptens.
10. Stages of maturation and differentiation of T- and B-cells.
11. T-cells. Structure of T-cellular receptor. Sub-population of T-lymphocytes. Main markers and differentiation clusters.
12. T-helper cells of the 1st and 2nd types. The importance of functional balance between T-helper cells (Th1\Th2).
13. Regulatory T-cells, main functions.
14. Apoptosis as a special type of cell death. Its role in functional and pathological processes.
15. B-cells. Main markers and functions. Receptor structure recognizing antigen. Definition of T-dependent and non-T-dependent types of immune response.
16. Immunoglobulins: structure, functions, classes. Role of immune complexes in the development of pathology.

17. Cytokines – mediators of immune system. Interleukins, classification, classes and participation in immune processes.
18. Growth factors, tumour-necrosis factors, interferons and adhesion molecules. Characteristics. Participation in the development of immune system.\
19. Immunological system of mucous membranes. Lymphoid tissue associated with gastro-intestinal tract.
20. Current understanding of the structure and functions of major histocompatibility complex. Structure of HLA antigens. Susceptibility to diseases depending on the HLA-phenotype.
21. Main classification principles of immunodeficiencies. Congenital combined immune deficiencies and immunodeficiencies of B-, T-cell mediated immunities: mechanisms of development, peculiarities of clinical course, immunodiagnostics and treatment.
22. Congenital immunodeficiencies of phagocyte-mediated immune system and complement system: mechanisms of development, peculiarities of clinical course, immunodiagnostics and treatment.
23. Definition of acquired immunity. Causes, clinical signs, immunodiagnostics, immunotherapy.
24. Syndrome of long-term fever: etiology, clinical, instrumental, laboratory and immunological diagnostic criteria, differential diagnostics, main principles of immunotherapy and immune prevention.
25. Syndrome of lymphadenopathy: etiology, clinical, instrumental, laboratory and immunological diagnostic criteria, differential diagnostics, main principles of immunotherapy and immune prevention.
26. Immune pathogenesis, stages of development, classification of HIV-infection/AIDS.
27. Clinical and laboratory diagnostic criteria, principles of HIV-infection/AIDS treatment.
28. Main principles of HIV-infection/AIDS prevention in Ukraine. Medical personnel as risk-group persons for the development of HIV-infection/AIDS.
29. Stresses, neuro-humoral and immune regulation disturbances. Fatigue syndrome.
30. Classification of harmful environmental factors, periods of their influence on the state of immune system.
31. Transplant immunology. Immunological indications and contraindications for the organ and tissue transplantations. Selection of donor-recipient pairs. Preexisting antilymphocyte toxicantibodies, their prognostic value.
32. Peculiarities of pre- and post-transplant immunological monitoring. Types of crisis rejection, their clinical and immunological characteristics and prognosis.
33. Immune status of pregnant. Lactation immunology. Immune fertilization.
34. Immune-dependent forms of infertility in married couples. Causes and mechanisms of antibody formation to the sex cells in men and women. Immune pathogenesis of infertility, its diagnostics. Immunological approaches to the infertility treatment.
35. Anti-tumour factors, factors of tumour immune-resistance, problast factors suppressing the immunity and problast factors stimulating tumour growth. Definition of tumour-associated antigens.
36. Immune changes in cancer patients. Immunodiagnostics in oncology. Modern approaches to the immunotherapy of patients with oncologic diseases.
37. Causes of the formation of allergic pathology. Stages of allergic reaction formation.
38. Allergy and atopy. Classification of allergens. Causes and mechanisms of the development of allergic conditions.
39. Methods of allergy diagnostics: laboratory methods, skin tests and provocative tests.
40. Principles of anti-allergic therapy and immunotropic treatment methods in allergology. Specific immunotherapy, mechanism of action, indications and contraindications, prognosis of effectiveness.
41. Hay fever, allergic rhinitis, allergic conjunctivitis: etiology, immune pathogenesis, clinics, allergo-diagnostics main principles of immunotherapy.
42. Medication allergy. Immune pathogenesis, clinics, allergo-diagnostics, treatment, allergo-prevention.

43. Terms – allergy and pseudo-allergy, differential diagnostics. Histamine-liberation developmental mechanisms of pseudo-allergic reactions. Treatment principles.
44. Development of pseudo-allergic reactions in disorders of complement system activation and arachidonic acid metabolism. Treatment principles.
45. Definition of the term of autoimmunity, autoimmune disease, syndrome. Mechanisms of tolerance disruption, genetic basis of the development of auto-immune diseases.
46. Classification, main immune-laboratory diagnostics principles of autoimmune diseases. Modern approaches to the usage of immunotropic drugs.
47. Laboratory immunodiagnostic criteria of autoimmune diseases.
48. Classification of immunotropic medications, mechanism of action and side-effects.
49. Principles of clinical usage of immunotropic drugs, indications and contraindications for the administration, dose selection, control of therapeutic efficacy.
50. Main types of immune rehabilitation, its strategy, tactics and main principles.
51. Quantitive and functional immunologic tests. Immunogram, main indexes.
52. Determination methods of quantitive and functional characteristics of T-cells: rosette tests, tests with the usage of monoclonal antibodies, blast transformation reaction of T-cells (BTRT) with mitogens, level of circulating immune complexes (CIC).
53. Determination methods of quantitive and functional characteristics of B-cells: rosette tests, tests with the usage of monoclonal antibodies, blast transformation reaction of T-cells (BTRT) with mitogens, level of circulating immune complexes (CIC).
54. Methods of identification of phagocytic activity of lymphocytes.
55. Methods of determination of main classes of serum immunoglobulins concentration.

8. APPROXIMATE LIST OF PRACTICAL SKILLS AND TASKS FOR THE FINAL CONTROL

1. To interview and perform physical examinations of patients with immunodeficiency diseases (to collect immunological anamnesis, to determine the inherited susceptibility to the development of immunodeficiencies, to assess the data of physical methods of examination, etc.).
2. To be able to fill the patient's immunological history and to determine the "risk group" according to the pathology on its basis.
3. To acquire the skills of determining the required range of immunological tests for the examination of patients with immune-dependent pathology.
4. To determine the presence of main clinical symptoms and symptoms of immune disorders.
5. To carry out differentiated diagnosis, to ground and formulate the diagnosis in main immunodeficiency syndromes on the basis the data of laboratory and instrumental examination.
6. To perform clinical and immunological differentiation diagnostics of congenital and acquired immune deficiencies.
7. To acquire the skills of data interpretation and main principles of interpreting the data of leukogram and immunogram considering the clinics, period of disease, immunological anamnesis, etc.
8. To acquire the skills of influence estimation of the action of negative factors of the external environment and immunological indexes.
9. To detect clinical signs of local immunity decompensation.
10. To detect the signs of immune system irritation by the data of leukogram.
11. To administrate immunotropic treatment, determine pathogenesis, carry out primary and secondary immune prevention in the immune-dependent diseases.
12. To know main principles of immunotropic treatment administration in the complex treatment of immune dependent diseases.
13. To be able to carry out preventive measures during vaccination. To know the principles of immune-prophylaxis.
14. To acquire the skills of determining the necessity of clinical and allergological examination.

15. To interview and perform physical examination of the patients with allelopathology (to be able to fill allergological anamnesis, to determine the presence of genetic susceptibility to the development of allergological pathology).
16. To make a plan of the examination of patients with allergological diseases.
17. To gain the skills of performing skin allergological tests (prick-tests).
18. To gain the skills of estimating the data of laboratory allergological tests.
19. To acquire the skills of determining allergens with similar antigen determinants for making recommendations for the allergological prevention.
20. To gain the skills of performing pickfluometry and estimate its results.
21. To carry out differential diagnosis, ground and formulate diagnosis of main allergic diseases on the basis of laboratory and instrumental data analysis.
22. To administer treatment, state prognosis, carry out primary and secondary prevention in allergic diseases.
23. To administer first aid in acute allergic and pseudo-allergic pathology.
24. To apply in practice the standards of diagnostics and treatment of allergic diseases.
25. To gain the skills of administering anti-allergic drugs, to know formulations of main anti-allergic drugs.
26. To acquire the skills of laboratory results estimation, determining immunological criteria of immune pathology.
27. To apply in practice the standards of immune diagnostics and administration of immunosuppressive therapy with the estimation of its effectiveness in autoimmune diseases.
28. To acquire the skills of determining the necessity of performing clinical and immunological examination of a married couple in case of the immune-dependent infertility suspicion.
29. To know the principles of immune diagnostics and immune therapy of infertility caused by the immunodeficiency in woman.
30. To know the principles of immune diagnostics and immune therapy of infertility caused by anti-ovarian immune conflict.
31. To know the principles of immune diagnostics and immune therapy in infertility caused by increased couple histocompatibility.
32. To interpret the data of analyses in the selection of the donor and recipient for the performance of transplantation.
33. To gain the skills in diagnostics of super-acute, acute and chronic crisis of the transplant organs and tissues rejection.
34. To carry out differential diagnostics of the crisis of rejection and infectious complications in patient following transplantation.
35. To administer immunosuppressive therapy and estimate its effectiveness after the transplantation of organs and tissues.
36. To interpret the data of immunograms in cancer patient combined with antitumor protection factors.
37. To assess the results of tumour-associated antigens occurrence in the early diagnostics of tumours and early detection of recurrent processes.
38. To know the immunotherapy principles and tumour immune prophylaxis.
39. To administer the urgent aid in acute allergic or pseudo-allergic pathology.
40. To administer the immunotropic therapy in complex treatment of infectious diseases.
41. To assess the effectiveness of administered immunotherapy in dynamics.
42. To know the principles of immune-prophylaxis and apply them in clinics.
43. To perform substitution therapy by the immunoglobulin drugs.
44. To perform antiviral immunotherapy by the administration of the drugs for interferon and interferon products.
45. To administer and assess the effectiveness of specific immunotherapy in the treatment of hay fever and allergic rhinitis.

9. ASSESSMENT OF ACADEMIC ACTIVITY

Assessment is one of the final stages of the academic activity and determination of academic performance. The mark for the discipline is determined as average of the marks for modules structured by the academic discipline.

The mark for the thematic parts is determined as the sum of marks of formative academic activity (in points) and the mark of final modular control (in points) put at the assessment of theoretic knowledge and practical skills according to the lists determined by the curriculum

The maximum number of points received by the student during the module is 200 points.

Self-guided work of students planned in the theme together with classroom studies is estimated during formative control of the theme at the respective class. The knowledge of themes planned only for the self-guided work is controlled during the final modular control as “passed”.

Final control is performed after studying all themed of the module during the last control class of the module.

The students, who attended all classes planned in the curriculum of the subject and received more than minimum number of points for the module are admitted to the final modular control. The student who missed the classes on serious reasons can have corrections in his/her individual plan and is permitted to make up academic debts in the determined term.