

MINISTRY OF HEALTH OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY

Medical Faculty #1

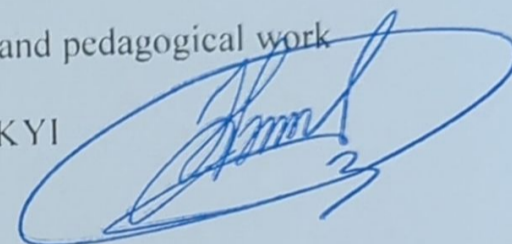
Department of internal medicine No.2

APPROVED

Vice-rector for scientific and pedagogical work

Eduard BURIACHKIVSKYI

01 of September, 2023



METHODOLOGICAL GUIDELINES
TO PRACTICAL LESSONS
OF THE ELECTIVE COMPONENT

Faculty of Medicine, **5th year**

Educational discipline **CLINICAL ASPECTS OF IMMUNOPROPHYLAXIS**

Approved:

Meeting of the Department of internal medicine No.2
Odessa National Medical University

Protocol No. 1 dated August 28, 2023.

Head of the Department
Vasil SHTANKO



Developers:

Professor Serhii HONCHARUK
Assistant Viktoriia OSINTSEVA

PRACTICAL LESSONS

Content section 1. Principles of functioning of the immune system

Practical lesson No. 1

TOPIC #1. Structure and principles of functioning of the immune system.

Purpose: To study the general structure and basic principles of functioning of the immune system

Basic concepts: organs of the immune system, factors of nonspecific immune response, factors of adaptive immune response, cellular and humoral immunity

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of present students, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The topicality of the topic is related to the need for doctors to know the structure and principles of functioning of the immune system

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicants to perform a practical lesson.

The applicant should know:

- Organs of the immune system
- Factors of non-specific immune protection
- Functional significance of cells of the immune system
- Humoral factors of the adaptive immune response

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. Definition and types of immunity.
2. Central and peripheral organs of the immune system.
3. Factors of innate immunity: cellular (monocyte-macrophage system, killer and granulocyte cells), humoral (complement system, cytokines, etc.).
4. Antigens and their characteristics.
5. Populations (T- and B-lymphocytes) and subpopulations (T-helper types 1 and 2, T-regulatory, T-CTL) of lymphocytes, stages of their maturation and differentiation, their function.
6. Immunoglobulins, structure, functions. Thymus-dependent and thymus-independent mechanisms of antibody synthesis.
7. Structure and properties of circulating immune complexes.
8. The main histocompatibility complex: structure, properties, function.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:

not provided

IV . Discussion of theoretical issues :

The discussion of theoretical issues takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII . List of recommended literature :

Main:

1. Roitt's Essential Immunology /Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt. – 12th ed. //Wiley-Blackwell, 2011. – 560 p.
2. Basic immunology : functions and disorders of the immune system / Abul K. Abbas, Andrew H. Lichtman, Shiv Pillai ; Illustrations by David L. Baker, Alexandra Baker. -- Fifth edition. 318 p. ; cm. Includes bibliographical references and index.
3. Immunology: Understanding the Immune System /Klaus D. Elgert. – 2nd ed. // Wiley-Blackwell, 2009. – 726 p.
4. Bazhora Y.I., Honcharuk S.F. Clinical immunology and allergology. Study guide: ed. 4th, // Odesa: Press - courier, 2018. - 264 p.

Additional

1. EAACI European Academy of Allergy and Clinical Immunology White Paper on Research, Innovation and Quality Care. Published by the European Academy of Allergy and Clinical Immunology 20 22
2. 5th Edition of Clinical Immunology: Principles and Practice / Robert R. Rich. Elsevier - 2019. C. - 1323.
3. Rich, Robert et al. Clinical Immunology E-Book. 5th ed. Elsevier Health Sciences, 2018. Web. 15 Oct. 2022.

Electronic information resources

<https://elifesciences.org/subjects/immunology-inflammation>
<https://www.eaaci.org/>
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<http://aalu.org.ua/>
<https://allergy.immunologyconferences.com/events-list/asthma>
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Practical lesson No. 2

TOPIC #2. Patterns and features of immune response formation.

Purpose: To study the regularities of the formation of a non-specific and specific immune response

Basic concepts: innate and adaptive immune response, regulation of immunity, age-specific features of the level of antibodies, primary and secondary immune response

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

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Plan:

I. Organizational measures (greetings, checking of those present, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The topicality of the topic is related to the need for doctors to know the peculiarities of the formation of the immune response, the difference between the primary and secondary adaptive immune response

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicants to perform a practical lesson.

The applicant should know:

- Mechanisms of formation of various types of immune response
- Mechanisms of immunity regulation
- Age characteristics of the level of antibodies and cytokines

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. Mechanisms of innate and adaptive immune response formation.
2. Specific immunity, its features, stages of formation and cooperation immunocompetent cells that participate in the formation of the immune response.
3. Regulation of immunity.
4. Age characteristics of bone marrow, thymus and peripheral lymphoid organs.
5. Age-related features of the functioning of immunocompetent cells.
6. Age-specific features of the development of inflammatory reactions.
7. Immunoregulatory processes in old age. Immunopathology in the elderly.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:

not provided

IV. Discussion of theoretical issues:

The discussion of theoretical questions takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions, solving situational problems

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII. List of recommended literature:

Main:

1. Roitt's Essential Immunology /Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt. – 12th ed. //Wiley-Blackwell, 2011. – 560 p.
2. Basic immunology : functions and disorders of the immune system / Abul K. Abbas, Andrew H. Lichtman, Shiv Pillai ; Illustrations by David L. Baker, Alexandra Baker. -- Fifth edition. 318 p. ; cm. Includes bibliographical references and index.
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Practical lesson No. 3

TOPIC #3. Immunological research methods. Basic rules for assessing immune status.

Purpose: To study immunological research methods

Basic concepts: immunological anamnesis, clinical and laboratory methods of assessing immune status, interpretation of immunogram results.

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of those present, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The topicality of the topic is related to the need for doctors to know clinical and laboratory methods of assessing immune status

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicants to perform a practical lesson.

The applicant should know:

- Humoral factors of the immune system
- Methods of assessing immune status
- Changes in the leukogram and immunogram during the inflammatory process

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. Features of the immunological history.
2. Clinical methods of evaluating the immune system.
3. Laboratory methods for evaluating the immune system.
4. A comprehensive approach to assessing a person's immune status.
5. Immunogram, interpretation of results. Possibilities and limitations of immunological methods in the clinic.
6. Immune response during an acute inflammatory process. Dynamics of indicators of leukogram and immunogram in acute, recurrent and chronic inflammation..

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:
not provided

IV . Discussion of theoretical issues :

The discussion of theoretical questions takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions, solving situational problems

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII. List of recommended literature:

Main:

1. Roitt's Essential Immunology /Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt. – 12th ed. //Wiley-Blackwell, 2011. – 560 p.
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Content section 2. Allergic diseases.

Practical lesson No. 4

TOPIC #4. Immunodeficiency diseases.

Purpose: To study the classification of immunodeficiencies, their clinical and laboratory signs.

Basic concepts: congenital and acquired immunodeficiency diseases, clinical signs of immunodeficiency diseases, laboratory indicators of immunodeficiency

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of those present, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The topicality of the topic is related to the need for doctors to know the clinical and laboratory signs of immunodeficiency diseases

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicants to perform a practical lesson.

The applicant should know:

- Clinical symptoms of immunodeficiency states
- Laboratory signs of immunodeficiency

- Causes of secondary immunodeficiencies

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. Congenital immunodeficiency diseases: definition, classification, mechanisms of development.

2. Clinical signs, immunodiagnostics, doctor's tactics, approaches to treatment: combined, T- and B- dependent immunodeficiencies caused by a violation of the phagocytic link of immunity and a deficiency of complement proteins.

3. Acquired immunodeficiency diseases: definition, causes, mechanisms of development, classification, diagnosis.

4. The role of acquired immunodeficiency diseases in the pathogenesis of various diseases. Early detection of secondary immunological deficiency in the body.

5. Basic approaches to the treatment and prevention of secondary immunological insufficiency, taking into account clinical manifestations and features of the course.

6. Formation mechanisms and features of the immune response in specific bacterial (tuberculosis) and viral (AIDS, herpes) fungal (actinomycosis) infections.

7. Mechanisms of pathogen avoidance from the action of immune protection factors.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:
not provided

IV. Discussion of theoretical issues:

The discussion of theoretical questions takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions, solving situational problems

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII. List of recommended literature :

1. Roitt's Essential Immunology /Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt. – 12th ed. //Wiley-Blackwell, 2011. – 560 p.
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3. Rich, Robert et al. Clinical Immunology E-Book. 5th ed. Elsevier Health Sciences, 2018. Web. 15 Oct. 2022.
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<https://allergy.immunologyconferences.com/events-list/asthma>
<https://www.immunopaedia.org.za/>
<https://www.worldallergy.org/meetings>

Content section 2. Principles of immunoprophylaxis Practical lesson No. 5

TOPIC #5. Classification of vaccines. Calendar of preventive vaccinations in Ukraine and worldwide

Purpose: To study the classification of vaccines, the classification of post-vaccination reactions and complications. To form among students the concept of the need for preventive vaccinations.

Basic concepts: classification of vaccines, types of immunity, post-vaccination reactions and complications, calendar of preventive vaccinations in Ukraine and the world.

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of those present, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The relevance of the topic is related to the need for doctors to know the main practical issues of preventive vaccinations (indications and contraindications for vaccination, diagnosis of post-vaccination reactions and complications, etc.).

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicants to perform a practical lesson.

The applicant should know:

- Classification of vaccines
- Contraindications for vaccination
- Principles of diagnosis and treatment of post-vaccination reactions and complications
- Calendar of preventive vaccinations in Ukraine

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. The main directions of creating vaccines. Classification of vaccines.
2. Causes of post-vaccination reactions and post-vaccination complications.
3. Diagnosis of post-vaccination reactions and post-vaccination complications.
4. Concept of post-vaccination reaction. Classification of post-vaccination reactions.
5. Concept of post-vaccination complications. Classification of post-vaccination complications.
6. Diagnosis of post-vaccination reactions and post-vaccination complications.
7. Provision of emergency care for post-vaccination reactions.
8. Contents of the calendar of preventive vaccinations in Ukraine.
9. Timing of preventive vaccinations and justification.

10. Basic orders of the Ministry of Health of Ukraine regarding preventive vaccinations.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:
not provided

IV. Discussion of theoretical issues:

The discussion of theoretical issues takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII. List of recommended literature:

Main:

1. Rubin LG, Levin MJ, Ljungman P, et al. 2013 IDSA Clinical practice guideline for vaccination of the immunocompromised host. *Clin Infect Dis.* 2014;58:e44–e100.
2. Basic immunology : functions and disorders of the immune system / Abul K. Abbas, Andrew H. Lichtman, Shiv Pillai ; Illustrations by David L. Baker, Alexandra Baker. -- Fifth edition. 318 p. ; cm. Includes bibliographical references and index.
3. Immunology: Understanding the Immune System /Klaus D. Elgert. – 2nd ed. // Wiley-Blackwell, 2009. – 726 p.
4. World Health Organization. “Addressing Vaccine Hesitancy.” *Immunization, Vaccines and Biologicals.* 2018.

Additional

1. Centers for Disease Control and Prevention. Recommended immunization schedules for persons aged 0 through 18 years—United States. Available online at: <http://www.cdc.gov/vaccines/schedules>; 2018.
2. Robinson CL, Romero JR, Kempe A, Pellegrini C, Szilagyi P. Advisory committee on immunization practices recommended immunization schedule for children and adolescents aged 18 years or younger United States, 2018. *MMWR Morb Mortal Wkly Rep.* 2018;67:156–157.
3. Centers for Disease Control and Prevention. List of vaccines used in United States. Available online at <http://www.cdc.gov/vaccines/vpd/vaccines-list.html>; 2018.
4. Marin M, Broder KR, Temte JL, et al. Centers for disease control and prevention. use of combination measles, mumps, rubella, and varicella vaccine: recommendations of the advisory committee on immunization practices. *MMWR RecommRep.* 2010;59:3.
5. Schillie S, Vellozzi C, Reingold A, et al. Prevention of hepatitis B virus infection in the United States: recommendations of the advisory committee on immunization practices. *MMWR Recomm Rep.* 2018;67(No. RR-1):1–31.
6. Centers for Disease Control and Prevention. “Contraindications and Precautions.” *Vaccine Recommendations and Guidelines of the ACIP.* Last updated 9/14/2018.

Electronic information resources

<https://wwwnc.cdc.gov/travel/yellowbook/2020/preparing-international-travelers/vaccination-and-immunoprophylaxis-general-recommendations>

<http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html>

<http://www.who.int/immunization/en>

<https://elifesciences.org/subjects/immunology-inflammation>

<https://www.eaaci.org/>

<https://www.facebook.com/EAACI>

<http://aalu.org.ua/>

<https://allergy.immunologyconferences.com/events-list/asthma>

<https://www.immunopaedia.org.za/>

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