

Ministry of health of the Republic of Belarus
Educational institution
«Gomel State Medical University»

Department of general and clinical pharmacology

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METHODOLOGICAL RECOMMENDATIONS

for a practical lesson on the discipline "Pharmacology"
for the third-year students of the Faculty of Foreign Students,
studying at the specialty 1-79 01 01 "General medicine"

**TOPIC 32: «THE FINAL (CONTROL) SESSION ON ANTIMICROBIAL,
ANTIVIRAL, ANTIPARASITIC DRUGS»**

Time: 3 hours

Approved at the meeting of the department of general and clinical pharmacology
the protocol № 18 of 30.06.2022

LEARNING AND EDUCATIONAL GOALS, OBJECTIVES, MOTIVATION FOR LEARNING THE TOPIC

The final session is the continuation and completion of the section on private pharmacology "Antimicrobial, antiviral, and antiparasitic agents. In connection with the huge number of diseases of infectious nature that doctors of almost all specialties have to deal with, knowledge of pharmacokinetic and pharmacodynamic characteristics, the ability to correctly select and prescribe chemotherapeutic agents with the spectrum of action, indications and contraindications is the duty of a doctor of any specialty.

Learning objective:

- formation of scientific knowledge on the anatomico-physiological structure of micro- and macroorganisms, the origin, physical and chemical properties and features of pharmacokinetics and pharmacodynamics of antimicrobial, antiviral and antiparasitic agents, which will allow to manage the effects of drugs based on pharmacokinetic and pharmacodynamic principles, build an individual strategy of pharmacotherapy and write prescriptions for drugs from different pharmacological groups and in different dosage forms for use in medical and preventive activities.

Educational purpose:

- to develop their value-personal, spiritual potential, to form the qualities of a patriot and citizen, ready for active participation in the economic, industrial, socio-cultural and public life of the country; to realize the social significance of their future professional activities, to learn to comply with academic and labor discipline, standards of medical ethics and deontology.

Tasks:

As a result of the training session, the student should

know:

– principles of quantitative patterns and mechanisms of action of antimicrobial, antiviral and antiparasitic agents at different levels of biological organization: molecular, cellular, organ and systemic;

– basics of pharmacokinetics of antimicrobial, antiviral and antiparasitic agents in the body - the processes of absorption, distribution, biotransformation, excretion, as well as the principles of rational dosing of drugs, including the choice of dosage form, routes of administration and dosing regime;

– mechanism of the main pharmacological effects, providing therapeutic and preventive action of antimicrobial, antiviral and antiparasitic agents, indications and contraindications for their use, issues of interaction of drugs, their combined use;

– nature and manifestations of the side and toxic effects of antimicrobial, antiviral and antiparasitic agents, as well as ways to minimize the negative effects of their use;

– rules of prescribing a physician and prescribing antimicrobial, antiviral, and antiparasitic agents in various dosage forms.

be able to:

– calculate an individual dosing regimen based on pharmacokinetic data on antimicrobial, antiviral, and antiparasitic agents and clinical features of the patient;

- write and write a physician's prescription when prescribing antimicrobial, antiviral, and antiparasitic agents in various dosage forms;
 - dose antimicrobial, antiviral and antiparasitic agents and make adjustments to the dosing regimen for diseases that change the clearance and distribution of drugs in the body;
- possess:**
- ability and willingness to analyze absorption, distribution, biotransformation, and excretion of antimicrobial, antiviral, and antiparasitic agents;
 - ability and willingness to rationally dose antimicrobial, antiviral and antiparasitic agents, including choice of dosage form, routes of administration and dosing regimen.

Motivation for learning the topic:

The specifics of training physicians in this specialty determine the need for students to purposefully study the anatomical and physiological structure of micro- and macroorganisms, the origin, physical and chemical properties and characteristics of pharmacokinetics and pharmacodynamics of antimicrobial, antiviral and antiparasitic agents, which will allow to manage the effects of drugs based on pharmacokinetic and pharmacodynamic principles, build an individual strategy of pharmacotherapy and prescribe medications

MATERIAL EQUIPMENT

Reference and informational literature, charts, tables, presentations, drug collections.

CONTROL QUESTIONS FROM RELATED DISCIPLINES

1. The subject of pharmacology. Terminology. Sources and stages of drug creation. Legislation in the field of medicines.
2. Fundamentals of pharmacokinetics. Principles of drug dosing.
3. Biotransformation and excretion of drugs. Correction of drug dosing regimen in case of changes in clearance and volume of distribution.
4. Pharmacodynamics of drugs.
5. State pharmacopoeia, its content and purpose. International pharmacopoeia. Pharmacy. Rules of storage and dispensing of medicines. Prescription, its structure.
6. Prescription rules for prescribing drugs in different dosage forms.
7. Peculiarities of prescribing narcotic, poisonous and potent drugs.

CONTROL QUESTIONS ON THE TOPIC OF THE CLASS

1. Chemotherapeutic agents, definition, classification. Principles of chemotherapy for bacterial diseases. Antibiotics, definition, classification. Characteristics of antibiotics of penicillin group.
2. Cephalosporins and other beta-lactam antibiotics, classification, mechanism and spectrum of action, side effects, use.
3. Macrolide and tetracycline antibiotics, classification, mechanism and spectrum of action, use. Side effects of antibiotics of tetracyclines group, contraindications for their prescription.
4. Antibiotics of different groups: amphenicols, lincosamides, glycopeptides, polymyxins, oxazolidinones, antibiotics of steroid structure. Features of pharmacokinetics, spectrum of action, use, side effects and their prevention.

5. Antibiotics of aminoglycosides group, classification, mechanism and spectrum of action, use. Side effects of aminoglycosides and their prevention, contraindications for prescription.

6. Classification of antimicrobial agents of synthetic origin. Sulfonamides, definition, classification, mechanism and spectrum of action, features of pharmacokinetics, use, side effects. Combined remedies.

7. Pharmacological characteristics of 8-oxyquinoline derivatives, quinolones and fluoroquinolones. Side effects of the above groups, use.

8. Pharmacological characteristics of nitrofurans and nitroimidazole derivatives.

9. Antimycobacterial (anti-tuberculosis) drugs, classification, mechanism of action, side effects. Principles of pharmacotherapy of tuberculosis.

10. Antispirochetic (antisyphilitic) agents, classification, mechanism of action, use with regard to the stage of the disease.

11. Antifungal (antifungal) agents, definition, classification, features of pharmacokinetics, spectrum of action, use, side effects.

12. Antiviral agents, definition, classification, mechanisms of action, use in various localizations of viral infection.

13. Pharmacotherapy of HIV-infected patients and AIDS patients.

14. Classification of antiprotozoal agents. Pharmacological characteristics of antimalarials. Individual and community chemoprophylaxis of malaria.

15. Drugs for the treatment of amebiasis, classification, mechanism of action, use, side effects.

16. Drugs used for giardiasis, trichomoniasis, toxoplasmosis and leishmaniasis, features of the course of the disease, localization of the pathogen and principles of pharmacotherapy.

17. Drugs used in pneumocystis, trypanosomiasis and balantidiasis, features of the course of the disease, localization of the causative agent and principles of pharmacotherapy.

18. Anthelmintic (anthelmintic) agents, classification. Drugs used in intestinal nematodeosis, mechanism and spectrum of action, the rules of prescription

19. Drugs used in cestodiasis, intestinal trematodiasis, and extraintestinal helminthiasis, the principle and spectrum of action, the terms of pharmacotherapy.

20. Antiseptic and disinfectants, definition, classification, principle of action, use.

PROCESS OF THE STUDY

Theoretical part Theoretical material on the topic of this lesson is presented in the methodological developments for lessons #25-31.

Practical part

1) Check the theoretical material outlined by the student during lectures and practical exercises;

2) Check the quality of assignments in the workbook on the topic of the class;

3) Check the mastery of problem solving and prescription methods on the topic of the class.

Theme learning control

Conducted in the form of independent written work (solving practical problems and writing prescriptions for individual assignments).

METHODOLOGICAL RECOMMENDATIONS FOR ORGANIZATION AND

EXECUTION OF STUDENTS' INDEPENDENT WORK (SIW)

The time given for independent work can be used by students for:

- preparing for the practical classes;
- completing the tasks on the topic of the class in the workbook;
- preparing thematic reports, essays and presentations;
- taking notes from academic literature.

The main methods of organizing independent work:

- completing tests and practical tasks of the electronic educational-methodical complex (EEMC) for self-monitoring and self-assessment.

The list of tasks of the SIW:

- solving practical problems in the EEMC;
- completing the test tasks of the EEMC.

Control of the SIW is carried out in the form of:

- assessment of an oral answer to a question, report, report, or solution of a task in a practical class;
- individual conversation.

METHODOLOGICAL RECOMMENDATIONS FOR ORGANIZATION AND EXECUTION OF CONTROLLED INDEPENDENT WORK OF STUDENTS (CIWS)

Recommended forms of CIWS organization:

- doing exercises on the topic of the class in the workbook;
- writing an essay on a given topic;
- preparing a report and a multimedia presentation on a given topic.

The list of tasks of the CIWS:

Topics of essays / multimedia presentations:

1. history of the discovery of antibiotics.
2. New antibiotics, search and results.
3. The problem of antibiotic resistance.
4. antiseptics of plant origin.
5. History of the discovery of antiseptics.
6. Safety precautions when working with antiseptics.
7. Modern drugs in the treatment of respiratory viral infections.
8. Antiviral drugs in the treatment of AIDS.
9. Modern medicines for the treatment of viral hepatitis.

Forms of control of CIWS realization:

- checking and grading an essay on a given topic;
- checking and grading a multimedia presentation on a given topic.

LIST OF REFERENCES

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4. Михайлова Е.И. Общая фармакология: студентов учреждений высшего образования, обучающихся по специальностям 79-01 01 «Лечебное дело», 79-01 04 «Медико-диагностическое дело» / Е. И. Михайлова (и др.). Гомель: ГомГМУ 2020. — 54 с.

5. Кратко о лекарственных средствах: учебно – методическое пособие для студентов 3 курса лечебного., мед.-диагност., фак. подг. спец. для зарубеж. стран, 6 курса лечебного факультета и фак. подг. спец. для зарубеж. стран, аспирантов, магистрантов, учреждений мед. образования: в 2 ч. / Е. И. Михайлова [и др.]. – Гомель: ГомГМУ, 2019. – Ч. 1. – 56 с.

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