№ ЛД-16 (ИН)

Federal State Budgetary Educational Institution of Higher Education "North Ossetian State Medical Academy" of the Ministry of Health of the Russian Federation

department Pharmacology with Clinical Pharmacology

APPROVED
minutes of the meeting of the Central Coordinating Educational and Methodological Council dated of February 5, 2021 . №3

**VALUATION FUND**

discipline "Clinical pharmacology» the main professional educational program of higher education - a program of a specialist in a specialty 31.05.01 Medical business
approved on February 26, 2021

for students 6 courses

by specialty 31.05.01 Medical business

Reviewed and approved at the meeting
of the department February 5, 2021 . №9

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**List of questions for the test**

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QUESTIONS

1. The subject and objectives of pharmacotherapy. The relationship of pharmacotherapy with theoretical and clinical disciplines. Clinical pharmacology: subject, structure, tasks, role in medicine.

2. Types of pharmacotherapy.

3. The relationship of pharmacodynamics and pharmacokinetics. Determination of the magnitude of the pharmacological effect. Therapeutic effect, therapeutic range and therapeutic breadth of the drug. Maintenance dose.

4. Terminology in clinical pharmacology and pharmacotherapy. Concepts: biologically active substance, pharmacological agent, medicinal product, medicinal product, dosage form, active substance.

5. Terminology in clinical pharmacology and pharmacotherapy. Concepts: clinical pharmacology, pharmacotherapy, substance elimination, elimination quota, elimination constant.

6. Terminology in clinical pharmacology and pharmacotherapy. Concepts: half-life, volume of distribution, clearance, equilibrium concentration, minimum therapeutic level, therapeutic range, therapeutic latitude.

7. Pharmacokinetics. Definition. Role in the development of pharmacotherapy, tasks, opportunities.

8. Ways of administration of medicines.

9. Absorption of medicines. Mechanisms of drug transport through biomembranes.

10. Distribution of medicines in organs and tissues.

11. Binding of drugs to proteins.

12. Drug metabolism.

13. Elimination of medicines.

14. Modeling of pharmacokinetic processes. Two-chamber pharmacokinetic model. Determination of clearance.

15. Bioavailability. Relative bioavailability and the actual value of these indicators.

16. The concept of bioequivalence of medicinal substances. Peak concentration of medicinal substances in the blood. Time to reach maximum concentration. The area under the curve of the drug concentration change in the blood.

17. Pharmacodynamics. Definition. The role and significance in the development of pharmacotherapy. Types of action of medicinal substances.

18. Mechanisms of action of medicines.

19. Dosage of medicines.

20. Repeated use of medicines.

21. Interaction of medicines. Kinds. Pharmaceutical interaction.

22. Pharmacokinetic interaction of drugs.

23. Pharmacodynamic interaction of drugs.

24. The influence of a person's age on the effect of medicines. Features of pharmacotherapy in newborns.

25. Features of pharmacotherapy during pregnancy.

26. Features of pharmacotherapy in lactating women.

27. Features of pharmacotherapy in the elderly.

28. Interchangeability of medicines. Drugs of choice.

29. The influence of environmental factors on the effect of medicines.

30. The role of hereditary factors in pharmacotherapy, pharmacogenetics.

31. Side effect of medicines. Specific side effects associated with the pharmacological properties of drugs. Toxic effect of drugs. Stealing syndrome. Paramedic side effects.

32. Side effect of medicines. Allergic reactions to medications. Drug addiction. Withdrawal syndrome.

33. Pharmacoeconomics. Definition, tasks, basic research methods and concepts.

34. Pharmacoepidemiolotia. Definition, tasks, basic research methods and concepts.

35. Drug toxicology. The main clinical syndromes of acute drug poisoning. Specific antidotes.

36. Nitrates: classification, mechanism of action, main pharmacodynamic effects, pharmacokinetic features, side effects, contraindications to the appointment. Use in various forms of coronary heart disease.

37. Beta-blockers: classification, mechanism of action, main pharmacodynamic effects, pharmacokinetic features, side effects, contraindications to the appointment. Beta-blocker withdrawal syndrome. Use in various forms of coronary heart disease.

38. Calcium antagonists: classification, main pharmacodynamic effects, side effects, contraindications to the appointment. Use in various forms of coronary heart disease.

39. Thiazide diuretics: classification, main pharmacodynamic effects, side effects, contraindications to the appointment. The place of diuretics in the treatment of hypertension.

40. AIF inhibitors and AT1 receptor blockers: classification, mechanism of action, main pharmacodynamic effects, pharmacokinetic features, side effects, contraindications to administration. The place of ACE inhibitors and AT1 receptor blockers in the treatment of hypertension.

41. Blockers of alpha1-adrenergic receptors and drugs of central action (central alpha2-sympathomimetics, agonists of I1-imidazoline receptors): classification, main pharmacodynamic effects, side effects, indications and contraindications for use in hypertension.

42. Class Ia antiarrhythmic drugs: classification, mechanism of action, main pharmacodynamic effects, indications for use, side effects. Possible ECG changes on the background of taking class Ia drugs.

43. Class Ib antiarrhythmic drugs: classification, mechanism of action, main pharmacodynamic effects, indications for use, side effects. Possible ECG changes while taking class Ib medications.

44. Ic class antiarrhythmic drugs: classification, mechanism of action, main pharmacodynamic effects, indications for use, side effects. Possible ECG changes' against the background of taking Ic class drugs.

45. Class II antiarrhythmic drugs: classification, mechanism of action, main pharmacodynamic effects, indications for use, side effects. Possible ECG changes on the background of taking class II drugs.

46. Class III antiarrhythmic drugs: classification, mechanism of action, main pharmacodynamic effects, indications for use, side effects. Possible ECG changes while taking class III medications.

47. Class IV antiarrhythmic drugs: classification, mechanism of action, main pharmacodynamic effects, indications for use, side effects. Possible ECG changes while taking class IV medications.

48. Loop, thiazide, potassium-sparing diuretics and carbonic anhydrase inhibitors (classification, pharmacodynamic features). Tactics of appointment with CHF. Spironolactone as a neurohumoral modulator.

49. ACE inhibitors and AT1-receptor blockers: classification, mechanism of action, main pharmacodynamic effects, pharmacokinetic features, side effects, contraindications to administration. The place of ACP and blockers

AT1-receptors in the treatment of CHF.

50. Beta-blockers: classification, mechanism of action, main pharmacodynamic effects, pharmacokinetic features, side effects, contraindications to the appointment. The place of beta-blockers in the treatment of CHF.

51. Platelet hemostasis. Drugs that prevent the formation of a platelet thrombus: classification, mechanism of action, indications and contraindications to the appointment.

52. Coagulation hemostasis. Unfractionated and low molecular weight heparins: classification, mechanism of action, pharmacokinetic features, side effects, indications and contraindications to the

appointment. Control of heparin therapy.

53. Coagulation hemostasis. Anticoagulants of indirect action: classification, mechanism of action, side effects, indications and contraindications to the appointment. Control of therapy.

54. The fibrinolysis system. Fibrinolytics: classification, mechanism of action, side effects, indications and contraindications to the appointment.

55. NSAIDs: classification by anti-inflammatory activity, mechanism of action, main pharmacodynamic effects. Indications for the appointment.

56. NSAIDs: classification according to the degree of selectivity to various types of COX. The main side effects, risk factors for complications, safety control of long-term NSAID therapy.

57. Systemic glucocorticosteroids (SCS): mechanism of action, classification, main pharmacodynamic effects, contraindications to administration.

58. SCS: side effects. Secondary adrenal insufficiency: risk factors, preventive measures. Types of pharmacotherapy of SCS. Chronotherapy, alternating therapy, pulse therapy.

59. Antacid drugs: classification, mechanism of action, main side effects, indications for use.

60. H2-histamine blockers: classification, mechanism of action, main side effects, indications for use.

61. Proton pump blockers: classification, mechanism of action, main side effects, indications for use.

62. Treatment of helicobacter-associated diseases: general principles and schemes of eradication therapy.

63. Classification, clinical and pharmacological characteristics of penicillins. Indications for use.

64. Classification of cephalosporins. Clinical and pharmacological characteristics of cephalosporins. Indications for use.

65. Classification, clinical and pharmacological characteristics of aminoglycosides. Indications for use.

66. Classification, clinical and pharmacological characteristics of fluoroquinolones. Indications for use.

67. Classification, clinical and pharmacological characteristics of macrolides. Indications for use.

68. Classification of methylxanthines. Features of pharmacokinetics of drugs. Indications for the appointment. Side and toxic effects. The main undesirable drug interactions.

69. The basic principles of rational antibiotic therapy: goals, drug selection, efficacy assessment, duration of antibiotic therapy. The concept of "stepwise" aptibiotic therapy. Approaches to the treatment of community-acquired pneumonia.

70. Step therapy of bronchial asthma. Clinical and pharmacological characteristics of IGC, indications for use, duration of appointment, evaluation of effectiveness.

71. Step therapy of bronchial asthma. Membrane stabilizing agents in the treatment of bronchial asthma: clinical and pharmacological characteristics of the main groups of drugs, indications for use.

72. Step therapy of bronchial asthma. Antileukotriene drugs in the treatment of bronchial asthma: clinical and pharmacological characteristics of the main groups of drugs, indications for use.

73. Beta 2-short-acting adrenomimetics and anticholinergic agents in the treatment of bronchial asthma. Indications and contraindications to the appointment, drugs of choice, principles of appointment, side effects.

74. Step therapy of bronchial asthma. Beta 2-long-acting adrenomimetics in the treatment of bronchial asthma. Indications and contraindications to the appointment, drugs of choice, principles of appointment, side effects.

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**Benchmarks of test tasks**

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**Benchmarks of test tasks**

Choose the right answer:

1. Prescribe a drug for the relief of ventricular bigeminia to a patient with severe cardiosclerosis and bradycardia (heart rate 58 beats / min.):

a) Talinolol b) Lidocaine c) Amiodarone d) Verapamil

e) Propafenone

2. The mechanism of action of cardiac glycosides is due to:

A. Increased activity of Na+-K+-ATPASE of cell membranes B. Increased content of K+ ions inside cells

B. Inhibition of Na+-Ca2+-ATPASE of cell membranes G. Inhibition of Na+-K+ -ATPASE of cell membranes D. Inhibition of H+-K+ -ATP-bases of cell membranes

3. Specify the beta-adrenoblocker, which is characterized by ultra-high selectivity, preservation of the effect of 24-36 hours, vasodilating properties:

a) Metoprolol (egilok) b) Atenolol (tenormin) c) Bisoprolol (concor) d) Nebivolol (nebilet) e) Betaxolol (locren)

4. Choose a drug for a patient with CRF II B art. for the treatment of CHF II B stage: A. Digitoxin

B. Digoxin

V. Lantoside (celanide) G. Strofantin

D. Korglikon

Choose the right answers:

5. The following statements are true with regard to sotalol: a) Atypical non-selective beta-blocker

b) Shortening the QT interval

c) Dilation of coronary and peripheral arteries d) Has an antianginal effect

e) Lengthens the PQ and RR intervals

6. Increase the toxicity of SG, increasing their free fraction in plasma: A. Almagel, vikalin

B. Holenzim, cycvalone

V. Butadione, sulfadimethoxine G. Magnesium sulfate, cholestyramine D. Quinidine, verapamil

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**Tasks**

1. A patient, 35 years old, was admitted to the clinic with complaints of pain in the lumbar region on the left, an increase in body temperature to 39oC, chills. I got sick for the first time. The right physique. Pulse is 100 beats per 1 minute, rhythmic, satisfactory filling. There is vesicular breathing in the lungs, the abdomen is soft. Pasternatsky's symptom is positive on the left. The kidneys are not palpable. Palpation of the left kidney (its area) is sharply painful. There is no dysuria. Macrohematuria, leukocyturia. Pregnancy is 18 weeks, without pathology. Formulate a preliminary diagnosis. Prescribe treatment and justify it.

2. The patient, 40 years old, was admitted to the clinic with complaints of dull pain in the lumbar region on the right, at times an increase in temperature to 37.9 oC, the release of cloudy urine, an increase in blood pressure to 180/105 mm Hg. She was repeatedly examined and treated in urological hospitals for chronic pyelonephritis. Pulse is 88 beats per minute, rhythmic, tense. BP 180/105 mmHg. Heart tones are muted. The belly is soft. The kidneys are not palpable. Pasternatsky's symptom is weakly positive on the right. There is no dysuria. Leukocyturia. After physical exertion, blood pressure is 195/120 mm Hg. On the overview image of the urinary system in the projection of the urinary tract, the shadows of concretions were not noted. The contours of the kidneys are not clearly defined. Attention is drawn to the reduction in the size of the right kidney. On excretory urograms, pathological changes in the cup-pelvic system and the ureter of the left kidney were not detected. On the right, a kidney measuring 10x8 cm bean-shaped with an uneven surface. The cups are deformed, sometimes flask-shaped. According to kidney ultrasound, there was a decrease in the size of the right kidney, parenchyma of heterogeneous density 6-7 mm thick. Formulate a preliminary diagnosis. Prescribe treatment and justify it.
3. 3. Patient D., 32 years old, complained of general malaise, a feeling of weakness, decreased performance, swelling of the eyelids, face, dull, aching, prolonged pain of low intensity in the lumbar region, a change in the color of urine (the color of "meat slops"). The patient suffered a sore throat and two weeks after it began to notice a decrease in performance, a change in the color of urine, swelling of the eyelids. Ill for 2 days. Transferred diseases: childhood infections, sore throat, acute respiratory viral infections, pneumonia. Sick works as a controller, does not note professional harms. He denies bad habits. Family history: the mother has hypertension, the father has gastric ulcer, the daughter is healthy. Allergic anamnesis is not burdened. On examination: condition of moderate severity. The body temperature is 36.8 ° C. The face is pale, puffy, the eyelids are swollen, the eyes are narrowed. The skin and mucous membranes are pale, clean, moist. BH - 20 per minute. With auscultation of the lungs: breathing is hard. The heart tones are muted, there are no noises, the rhythm is correct, 78 per minute. AD - 130/80 mmHg. The abdomen is soft, painless. The lower edge of the liver is palpated at the edge of the costal arch, painless. The kidney area is not changed, the kidneys are not palpated, the symptom of pounding is weakly positive on both sides. General blood test:hemoglobin - 120 g/l, erythrocytes - 4,1x109 /l. Color the indicator is 0.9, leukocytes - 6.8x109 / l, segmented - 76%, rod-1%, eosinophils - 2%, monocytes - 2%, lymphocytes - 15%. ESR - 25 mm/h. General urinalysis: relative density -1018, protein - 1,066 g / l, erythrocytes - 10-12 in the field of vision, leukocytes - 2-4 in the field of vision. Urine analysis according to Nechiporenko: erythrocytes - 6000 in 1 ml, leukocytes - 3000 in 1 ml, no cylinders were found. Daily proteinuria - 1.8 g . Biochemical blood test: total protein - 70 g/l, albumin - 33 g/l, urea -7.9 mmol/l, creatinine - 102 mmol/l, potassium - 4 mmol/l. Bacteriological examination of a pharyngeal smear: Strept. Pyogenes, sensitive to cefotaxime, ceftriaxone, levofloxacin, resistant to amoxicillin.
   Formulate a preliminary diagnosis. Prescribe treatment and justify it.