Appendix to the working program

Federal State Budgetary Educational Institution of Higher Education
"Privolzhsky Research Medical University"
Ministry of Health of the Russian Federation

BANK OF ASSESSMENT TOOLS FOR DISCIPLINE

Name of the academic discipline: **CHRONOPHARMACOLOGY**

Specialty: **31.05.03 DENTISTRY**

Qualification: **DENTIST**

Department: **GENERAL AND CLINICAL PHARMACOLOGY**

Mode of study: **FULL-TIME**

Nizhniy Novgorod
2021

1. Bank of assessment tools for the current monitoring of academic performance, mid-term assessment of students in the discipline

This Bank of Assessment Tools (BAT) for the discipline " CHRONOPHARMACOLOGY " is an integral appendix to the working program of the discipline " CHRONOPHARMACOLOGY". All the details of the approval submitted in the WPD for this discipline apply to this BAT.

(Banks of assessment tools allow us to evaluate the achievement of the planned results stated in the educational program.

Assessment tools are a bank of control tasks, as well as a description of forms and procedures designed to determine the quality of mastering study material by students.)

2. List of assessment tools

The following assessment tools are used to determine the quality of mastering the academic material by students in the discipline/ practice:

No.	Assessment tool	Brief description of the assessment tool	Presentation of the assessment tool in the BAT
1	Test	A system of standardized tasks that allows you to automate the procedure of measuring the level of knowledge and skills of a student	Bank of test tasks
2	Situational tasks	A method of control that allows you to assess the criticality of thinking and the degree of the material comprehension, the ability to apply theoretical knowledge in practice.	List of tasks
3	Project	The final product obtained as a result of planning and execution of a complex of educational and research tasks. It allows students to evaluate the ability to independently construct their knowledge in the process of solving practical tasks and problems, navigate the information space and the level of formation of analytical, research skills, practical and creative thinking skills. It can be performed individually or by a group of students	Topics of group and/or individual projects

3. A list of competencies indicating the stages of their formation in the process of mastering the educational program and the types of evaluation tools

Code and formulation of competence*	Stage of competence formation	Controlled sections of the discipline	Assessment tools
UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)	Entry, Current, Mid-term	Introduction. Subject and scientific and practical tasks of chronopharmacology.	*Tests, situational tasks, projects*

UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)	Entry, Current, Mid-term	Biorhythm factors affecting the pharmacokinetics of drugs	*Tests, situational tasks, projects*
UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)	Entry, Current, Mid-term	Biorhythm factors affecting the pharmacodynamics of drugs	*Tests, situational tasks, projects*
UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)	Entry, Current, Mid-term	Chronopharmacology of psychotropic drugs	*Tests, situational tasks, projects*
UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)	Entry, Current, Mid-term	Chronopharmacology basesof differentiated use of drugs that affect the functions of the digestive system, regulate metabolic processes, inhibit inflammation and affect immune processes	*Tests, situational tasks, projects*
UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)	Entry, Current, Mid-term	Chronopharmacology bases of differentiated use of antimicrobial and antiparasitic drugs	*Tests, situational tasks, projects*

4. The content of the assessment tools of entry, current control

the bank of assessment tools for conducting current control and mid-term assessment of students in this discipline is presented on the Educational Portal of the PRMU, specify a link to this electronic resource.

https://sdo.pimunn.net/course/view.php?id=4690

Entry /current control is carried out by the discipline teacher when conducting classes in the form of: tests, situational tasks and projects

4.1. situational Tasks for the assessment of competence*:* UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)

1. Answer why do early “birds” wake up earlier than ‘owls”?
2. Explain the reason why the blood pressure values vary in dippers, non – dippers, night - peakers?
3. List time-dependent and dose-dependent antibacterial agents. What are the differences?

4.2. Test tasks Tasks for the assessment of competence*:* UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)*:*

Question	Competence code (according to the WPD)
1. A new direction of pharmacology that studies the interaction of drugs with body systems depending on biorhythms, their physiological and pathological activity: 1) Chronopharmacology; 2) Chronogenetics; 3) Pharmacology. **2. Miniphase:**	UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1

1) The period of greatest activity;
2) The period of least activity;
3) Short phase;
4) Long phase.

3. Acrophase:

1) The period of greatest activity;
2) The period of least activity;
3) Short phase;
4) Long phase.

4. As a rule, during the acrophase:

1) The greatest sensitivity and reactivity to stimulant drugs;
2) Least sensitivity and reactivity to stimulants;
3) Greatest sensitivity and reactivity to oppressive agents.

5. As a rule, during the miniphase:

1) Least sensitivity and reactivity to stimulants;
2) The greatest sensitivity and reactivity to oppressive means;
3) The greatest sensitivity and reactivity to stimulant drugs.

6. The sensitivity of the body system depending on the time of day, year, etc. is:

1) Chronoergy;
2) Chronosthesia;
3) Biology;
4) Circadian rhythm.

7. Reactivity of the system depending on the time of day, year, etc. is:

1) Chronoergy;
2) Chronosthesia;
3) Biology;
4) Circadian rhythm.

8. The interaction of chronokinetic chronometabolic processes, on the one hand, with chronopharmacodynamic processes, on the other hand, gives the final effect of changing the function of organs, which is called:

1) Chronologically positive effect;
2) Chrono-negative effect;
3) Dynamic effect;
4) Pharmacological effect.

9. Studying the dependence of the pharmacotherapeutic effect of a medicinal substance on daily and other rhythms, in particular, on sensitivity to the substance at different times of the day:

1) Kinetics;
2) Chronopharmacodynamics;
3) Biology;
4) Metabolomics.

10. Desynchronoses are:

1) Disorders of biorhythms;
2) They come when working at night, moving from one time zone to another.

11. Methods of chronotherapy:

1) Etiotropic, pathogenetic;
2) Preventive, imitation and "imposition" of the rhythm;
3) Internal, external.

12. Based on the study of chronobiological patterns of the development of

the disease. With this approach, the maximum effectiveness of drugs and the minimum of their negative impact coincide with the acrophase of the function under study:
1) Preventive schemes;
2) Simulation method;
3) The method of imposing rhythms;
4) The method of imperceptible impact.

13. Aboutis based on the already established patterns of changes in the concentration of certain substances in the blood and tissues in accordance with the biorhythm characteristic of a healthy person:
1) Preventive schemes;
2) Simulation method;
3) The method of imposing rhythms;
4) The method of imperceptible impact.

14. The use of various drugs or non-drugs to impose certain rhythms on the patient's body, as close as possible to normal rhythms:
1) Preventive schemes;
2) Simulation method;
3) The method of imposing rhythms;
4) The method of imperceptible impact.

15. The introduction of the drug during the bathyphase (mini-phase) contributes to the fact that the drug and the organ have the least effect on each other:
1) Preventive schemes;
2) Simulation method;
3) The method of imposing rhythms;
4) The method of imperceptible impact.

16. The classification of biorhythms according to Yu. Ashoff (1984) is subdivided:
1) According to their own characteristics, such as period;
2) According to their biological system, for example, population;
3) By the nature of the process that generates the rhythm;
4) According to the function that the rhythm performs.

17. The founder of chronobiology - the science of biorhythms, is considered to be:
1) Einstein;
2) German doctor Christopher William Hufeland;
3) Avicenna;
4) Paracelsus.

18. Self-oscillatory process in a biological system, characterized by a successive alternation of phases of tension and relaxation, when one or another parameter successively reaches a maximum or minimum value is:
1) Biorhythm;
2) Sleep;
3) Cycle.

19. The classification of biorhythms based on the frequency of oscillations, developed by F. Halberg, is widely used. It distinguishes 3 groups of rhythms:
1) Ultradian, circadian, infradian;
2) Large, small;
3) Day, night.

20. High-frequency rhythms are repeated with a frequency of more than 1 time per day. Among them, the one and a half hour rhythm of brain activity is the most studied:

1) Circadian;
2) Ultradian;
3) Infradians.

21. Mid-frequency rhythms are characterized by a period close to 24 hours, which is associated with the rotation of the Earth around its axis:

1) Circadian;
2) Ultradian;
3) Infradian.

22. Low-frequency biorhythms are repeated with a frequency of less than 1 time per day, therefore, their period is more than 1 day:

1) Circadian;
2) Ultradian;
3) Infradian.

23. In relation to synchronizers, 2 types of biorhythms are distinguished:

1) Large and small;
2) Endogenous and exogenous;
3) Night and day;
4) Women's and men's.

24. Human chronotypes:

1) Owls, larks, pigeons;
2) Lions, tigers, cats;
3) Night, day;
4) Children, adults.

25. Chronopharmacological approach allows to reduce daily and course doses,
increase the effectiveness of treatment and significantly reduce adverse reactions:

1) True;
2) False.

26. Antihistamines are best taken in the evening, and diuretics (in particular,
furosemide) - in the morning:

1) True;
2) False.

27. Methods for the treatment of desynchronosis:

1) Melatonin;
2) Tricyclic antidepressants;
3) Vitamin B12;
4) All answers are correct.

28. An example of "imposing a rhythm":

1) Alternating therapy with glucocorticoids;
2) Inulin injections;
3) Vitamin prophylaxis.

29. Pain reliever Morphine is more active:

1) 10 am;
2) In the middle of the day or early afternoon;
3) 21 hours;
4) Midnight.

30. Nitroglycerin is more effective in angina pectoris:

1) In the morning;
2) In the middle of the day or early afternoon;
3) 21 hours;
4) Midnight.

31. The most pronounced diuretic effect of Furosemide is observed:

1) 10 am;
2) In the middle of the day or early afternoon;
3) 21 hours;
4) Midnight.

32. Antihistamines are best taken:
1) 10 am;
2) 12 days;
3) 15 hours;
4) In the evening.

33. The maximum effect of local anesthetics:
1) 10 am;
2) 12 days;
3) 15 hours;
4) In the evening.

34. Acetylsalicylic acid is most effective and safe when taken:
1) In the afternoon;
2) 12 days;
3) 15 pm;
4) At midnight.

35. For the majority of antihypertensive drugs, a single prescription is most rational:
1) In the afternoon;
2) 12 days;
3) 15 – 17 pm+
4) At midnight.

36. It is advisable to prescribe short-acting antihypertensive drugs 1.5-2 hours before, prolonged - 4-8 hours before:
1) Peaks of rise in blood pressure (aktrophase);
2) Eating;
3) Sleep;
4) There is no correct answer.

37. Bioavailability of short-acting nifedipine when administered in the evening:
1) Above;
2) Below;
3) Does not change.

38. The discrepancy between the daily stereotypes of the body and real time that occurs during transmeridional flights:
1) JET LAG syndrome;
2) Insomnia;
3) Adaptation;
4) There is no correct answer.

Answers key

question number	answer	question number	answer	question number	answer	question number	answer	question number	answer
1	1	**2**	2	**3**	1	**4**	1	**5**	1.2
6	2	**7**	1	**8**	1,2,3,4	**9**	2	**10**	1.2
11	2	**12**	1	**13**	2	**14**	3	**15**	3
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21	1	**22**	3	**23**	2	**24**	1	**25**	1
26	1	**27**	4	**28**	1	**29**	2	**30**	1
31	1	**32**	4	**33**	3	**34**	1	**35**	3

36	1	**37**	1	**38**	1	**39**		**40**	

4.3. list of topics for individual project*:* UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)

1. Introduction. Subject and scientific and practical tasks of chronopharmacology.
2. Biorhythm factors affecting the pharmacokinetics of drugs
3. Biorhythm factors affecting the pharmacodynamics of drugs
4. Chronopharmacology of psychotropic drugs
5. Chronopharmacology basesof differentiated use of drugs that affect the functions of the digestive system, regulate metabolic processes, inhibit inflammation and affect immune processes
6. Chronopharmacology bases of differentiated use of antimicrobial and antiparasitic drugs
7. The history of the formation of chronopharmacology as a science"
8. "The importance of chronopharmacology testing for rational dosage of medicines".
9. "Biorhythm polymorphism of target organ cells".
10. "Chronopharmacology in psychopharmacology.
11. Chronopharmacology bases of differentiated use of psychotropic drugs".
12. Chronopharmacology bases of differentiated use of steroid and nonsteroidal anti-inflammatory drugs".

4.4. Tasks (assessment tools) for the credit

The full package of examination tasks/tasks is given*:* UC-1 (IUC-1.2, IUC-1.3), PC-7 (IPC-7.1)

5. The content of the assessment tools of mid-term assessment

Mid-term assessment is carried out in the form of a credit

The content of the assessment tool (test questions.)

5.1 The list of control tasks and other materials necessary for the assessment of knowledge, skills and work experience

Question	Competence code (according to the WPD)
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38. The discrepancy between the daily stereotypes of the body and real time that occurs during transmeridional flights:
1) JET LAG syndrome;
2) Insomnia;
3) Adaptation;
4) There is no correct answer
39. Agent which can cause cancer is called
1. Carcinogenicity
2. Carcinogen
3. Mutagen
4. Genotoxicity
40. Agent which is having ability to affect gene as toxic is considered as
1. Mutagen
2. Carcinogens
3. Teratogens
4. Genotoxic Agents
41. If any woman is pregnant and she has taken a drug which caused a fatal death it is called
1. Teratogen
2. Teratogenicity
3. Mutagenicity
4. Algeriogenicity
42. Circadian rhythm is associated with (Most specific
1. 12 hours' time frame
2. 24 Hours' Time frame
3. Both A and B
4. None of the above

43. Which of the following category is considered as safe during pregnancy
1. Category A
2. Category C
3. Category X
4. Category Z
44. Folic acid is an example of __
1. Category A
2. Category B

3. Category C 4. Category X 45. Level of cortisol is at highest at 1. Afternoon 2. Evening 3. Morning 4. Night 46. Study of effect of time on ADME is called 1. Chronopharmacodynamic 2. Chronopharmacokinetic 3. Chronobiology 4. All of the above 47. Mutation may reflected in 1. Transcription 2. Translation 3. Replication 4. All of the above 48. If the base is changed but the result is the same then it is an example of 1. Silent mutation 2. Missense mutation 3. Nonsense mutation 4. None of the above 49. Methanol poisoning can be treated by 1. Ethanol 2. Methanol itself 3. Butanol 4. Any of the alcohol	

Answers key

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31	1	**32**	4	**33**	3	**34**	1	**35**	3
36	1	**37**	1	**38**	1	**39**	2	**40**	4
41	1	**42**	2	**43**	1	**44**	1	**45**	3
46	4	**47**	4	**48**	1	**49**	1	**50**	

6. Criteria for evaluating learning outcomes

For the credit

Learning outcomes	**Evaluation criteria**	
	Not passed	**Passed**
Completeness of knowledge	The level of knowledge is below the minimum requirements. There were bad mistakes.	The level of knowledge in the volume corresponding to the training program. Minor mistakes may be made

Availability of skills	Basic skills are not demonstrated when solving standard tasks. There were bad mistakes.	Basic skills are demonstrated. Typical tasks have been solved, all tasks have been completed. Minor mistakes may be made.
Availability of skills (possession of experience)	Basic skills are not demonstrated when solving standard tasks. There were bad mistakes.	Basic skills in solving standard tasks are demonstrated. Minor mistakes may be made.
Motivation (personal attitude)	Educational activity and motivation are poorly expressed, there is no willingness to solve the tasks qualitatively	Educational activity and motivation are manifested, readiness to perform assigned tasks is demonstrated.
Characteristics of competence formation*	The competence is not fully formed. The available knowledge and skills are not enough to solve practical (professional) tasks. Repeated training is required	The competence developed meets the requirements. The available knowledge, skills and motivation are generally sufficient to solve practical (professional) tasks.
The level of competence formation	Low	Medium/High

For testing:

Mark "5" (Excellent) - points (100-90%)
Mark"4" (Good) - points (89-80%)
Mark "3" (Satisfactory) - points (79-70%)

Less than 70% – Unsatisfactory – Mark "2"

Developer(s):
Lovtsova L. V., Doctor of Medical Sciences, academic title-Associate Professor, Head of the Department of General and Clinical Pharmacology.
Sorokina Yu. A., Candidate of Biological Sciences, academic title-Associate Professor, Associate Professor of the Department of General and Clinical Pharmacology.