« Approved»
Rector of SKMA
Kysbekov M.M.
07. 2022y.

Educational program of the residency
7R01142 "Clinical Pharmacology"

Shymkent 2022

The educational program of the residency was developed on the basis of the order of the Minister of Health of the Republic of Kazakhstan dated 4.07.2022. No. KR DSM-63 "On the approval of state mandatory standards of all levels of education in the field of healthcare" and the proposal of all interested parties:

Representative of practical healthcare:
GKP on PCV "Regional center
of phthisiopulmonology"
Department of Public Health
Turkestan region
Deputy Head of
Strategic Development — Nurzhanov G.H.

The educational program has been developed:

Candidate of Medical Sciences,
Associate Professor of the Department of Pharmacology,
Pharmacotherapy and Clinical Pharmacology — Tashimova S.A.

Discussed at the meeting of the Department of Pharmacology,
Pharmacotherapy and Clinical Pharmacology
Head of the department K.pharm.N.,
ass. professor — Toksanbayeva Zh.S.
Protocol № 1 of 03 2022

Discussed at the meeting
of the Residency Educational Programs Committee
Chairman — Kauyzbai Zh.A.
Protocol № 5 from 04.08 2022y.

Discussed at the meeting of the Clinical Council
Chairman — Kauyzbai Zh.A.
Protocol № 5 of 05.08 2022

Approved by the Academic Council
Protocol № 12
"03" 08 2022y.

Passport of the educational program

1. The mission of the educational program

Training of competitive personnel in the field of clinical pharmacology with a high level of professionalism to meet the needs of the national and regional healthcare system, demonstrating continuity in continuous professional development and social responsibility for contributing to the development of medicine.

2. The purpose of the educational program

Training of clinical pharmacologists for the healthcare system in order to ensure the effective, safe and economically justified use of medicines in medical organizations.

3. Justification of the OP

Clinical pharmacology is a science that studies all aspects of the relationship between drugs and humans. The main goal of clinical pharmacologists is to directly or indirectly improve the quality of treatment of patients by improving the use of medicines and stimulating their safer and more effective administration. The need for clinical pharmacologists in the Republic of Kazakhstan at all levels of medical care is very high. A clinical pharmacologist is an expert in the critical evaluation of new and old treatment methods, which means that in order to achieve a high level of efficacy and safety of pharmacotherapy, the evaluation process must be systematic and continuous.

At the national level, the issues of rational use of medicines, effective drug provision in the healthcare system are reflected in the main regulatory documents: "On approval of the rules for assessing the rational use of medicines" Order of the Minister of Health of the Republic of Kazakhstan dated November 3, 2020 No. KR DSM-179/2020, On approval of the rules for the formation of the Kazakhstan National Drug Form, and also, the rules for the development of drug formularies of healthcare organizations" Order I.O. The Minister of Health of the Republic of Kazakhstan dated December 24, 2020 No. KR DSM-326/2020, On approval of the rules for the implementation of the formulary system", Order of the Minister of Health of the Republic of Kazakhstan dated April 6, 2021 No. KR DSM -28, etc.

The need of medical organizations for clinical pharmacologists is the justification for the discovery and the need to train pharmacologists, primarily at the regional level, taking into account the main strategies and programs for the development of the healthcare system at the international, national and regional levels in order to increase the level of rational use of medicines.

4. The professional standard on the basis of which the educational program is developed

□ Professional standard "Clinical Pharmacology" (project)

□ Standard of organization of medical care in clinical pharmacology in the Republic of Kazakhstan. Order of the Acting Minister of Health of the Republic of Kazakhstan dated November 3, 2017 No. 808.

5. Field of professional activity. Healthcare

6. Objects of professional activity. Medical organizations providing inpatient and outpatient care, healthcare systems of the Republic of Kazakhstan

General information

№	Characteristics of the EP	Data
1	Registration number	7R01100277
2	Code and classification of the field of education	7R01 Health care (medicine)
3	Code and classification of training areas	7R011 Healthcare
4	Group of educational programs	R042 Clinical pharmacology
5	Code and classification of the field of education	7R01142 Clinical pharmacology
6	Type of EP	New educational program
7	ISCED level	7
8	The level of the NRK	7
9	ORC Level	7.1
10	Distinctive features of the EP	no
	Partner University	no
	Partner University	no
11	List of competencies	K 1 Patient supervision: analysis of the patient's appointment. K 2 Communication and collaboration: identification and analysis of undesirable drug reactions. K 3 Safety and quality: analytical study of medicines. K 4 Public health: using epidemiological methods to study the effectiveness and safety of medicines. KK5 Research: when prescribing medicines, use the principles of evidence-based medicine. K 6 Training and development: working with databases and information sources.
12	Learning outcomes	LO1 is able to provide advisory assistance to doctors and patients on the rational choice and use of medicines; to identify, register and prevent adverse reactions of medicines. LO 2 is able to effectively interact with the patient and his relatives, healthcare professionals in matters of rational pharmacotherapy in order to achieve the best results for the patient. LO3 is able to monitor the effectiveness and safety of the use of medicines; to conduct pharmacotherapy based on the choice of medicines, taking into account the pathological and physiological profile of the patient using international guidelines and clinical protocols. LO4 is able to act according to the principles of organizational and methodological work of a clinical pharmacologist in healthcare organizations on the rational use of medicines and drug provision, work as part of interprofessional teams to implement the policy of strengthening the health of the nation. LO5 Research: he is able to formulate adequate research

		questions, critically evaluate the professional literature on clinical pharmacology, conduct pharmacoepidemiological and pharmacoeconomical research in healthcare organizations. LO6 is able to train independently and train other members of a professional team, actively participate in discussions, conferences and other forms of continuous professional development in the field of clinical pharmacology
13	Form of training	full
14	Language of instruction	Russian, Kazakh
15	Volume of loans	140
16	Duration of training	2 years
17	Qualification awarded	Doctor-clinical pharmacologist
17	Existence of the annex to the license for the direction of personnel training	KZ 22BFA00167288
19	Availability of EP accreditation	Yes (primary)
	Name of the accreditation body	
	The validity period of the accreditation	
20	Information about disciplines	Appendix 1.2

Appendix 1.1

Matrix of correlation of learning outcomes according to the educational program as a whole with the competencies being formed

	LO1	LO2	LO3	LO4	LO5	LO6
K1	+	+	+			
K2		+		+		
K3			+		+	
K4				+		
K5					+	
K6						+

Appendix 1.2

Matrix of achievability of competencies/learning outcomes

№	The name of the discipline	A brief description of the discipline (30-50 words)	Cycle	Component	The number of credits.	Generated Learning Outcomes
1	Clinical pharmacology (general issues of clinical pharmacology and clinical and	Principles of organization and functioning of clinical and pharmacological services in healthcare organizations of the Republic of Kazakhstan. Regulatory legal acts of the clinical	SD	RC	38	LO1 LO3

	pharmacological characteristics of individual groups and drugs)	and pharmacological service. Clinical pharmacology as a clinical specialty. International name of medicines. Original and reproduced medicines. Registration and regulation of medicines in the Republic of Kazakhstan. Innovative dosage forms and drug delivery systems.				
2	Clinical pharmacology and principles of rational pharmacotherapy in pediatric practice and in special groups of patients	Features of pharmacodynamics and pharmacokinetics in children and newborns. Features of dosage, dosage forms and means of delivery in children. Rational therapy of diseases in children based on the principles of evidence-based medicine. Clinical and pharmacological approaches, taking into account individual characteristics of pharmacokinetics and pharmacodynamics, to the choice and rational use in neonatology.	SD	RC	15	LO1 LO3
3	Clinical pharmacology and principles of rational pharmacotherapy for certain diseases	Clinical pharmacology and principles of rational pharmacotherapy for oncological diseases; immunodeficiency diseases, orphan diseases, autoimmune diseases. Clinical pharmacology and principles of rational pharmacotherapy in diseases requiring surgical intervention. Principles of rational pharmacotherapy in the elderly.	SD	RC	42	LO1 LO2 LO3
4	Evaluation of the use of medicines and clinical and pharmacological examination. Undesirable drug reactions.	Rules for evaluating the rational use of medicines. Rules for the examination of medicines. Evaluation of medicines from the standpoint of evidence-based medicine. Pharmacokinetics and pharmacodynamics of drugs. Indicators for evaluating the use of medicines. Pharmacovigilance. Diagnosis, registration, prevention and correction of undesirable drug reactions. Pharmacogenetic studies.	SD	RC	12	LO3 LO6
5	Search, evaluation and adaptation of international recommendations, guidelines and	The place of clinical protocols, recommendations and guidelines in clinical practice developed on the basis of evidence-based medicine. Work with the MedElement	SD	RC	8	LO4 LO6

	clinical protocols in the Republic of Kazakhstan	reference system, electronic resources of the Republican Center for Health Development, electronic resource Medi.ru . Methods of implementation and evaluation of the effectiveness of the implementation of clinical protocols in practical healthcare. Experience of application and adaptation of international recommendations in the healthcare system of the Republic of Kazakhstan.				
6	Rational antimicrobial therapy and antibiotic prophylaxis. Antimicrobial resistance problems	Pharmacodynamics, pharmacokinetics, spectrum of antimicrobial activity. Principles of choice (empirical and etiotropic), determination of the dosage regimen depending on the localization of infection and severity of the condition, kidney function. Methods for evaluating the effectiveness and safety of antimicrobial drugs based on the principles of evidence-based medicine. A combination of antimicrobial drugs and interactions when co-administered with drugs of other groups. Pharmacological incompatibility in the appointment of antimicrobial agents.	SD	RC	9	LO1 LO2
7	Stages of conducting various types of clinical trials of medicines. Personalized pharmacotherapy (therapeutic drug monitoring, pharmacogenetics)	The purpose of clinical research and its stages. Methodology of organization, conduct and audit of clinical trials. Development of a protocol for research and testing of medicines. International and national standards GLP, GMP and GCP. Rules for providing medicines to medical organizations. Development of a hospital drug form. Analysis of the need and preparation of an application for medicines.	SD	RC	10	LO4 LO5 LO6
8	Clinical pharmacology in obstetrics and gynecology	Clinical pharmacology of medicines for treatment in obstetrics and gynecology. Rational use of medicines for anomalies of labor activity, placental insufficiency, uterine bleeding. Rational pharmacotherapy of diseases in pregnant women and	SD	CC	4	LO1 LO3 LO6

		maternity women; toxicosis and gestosis; menopause and menopause. Modern methods of hormonal contraception.				
9	Clinical pharmacology in anesthesiology and intensive care	Rational therapy of pain syndrome and postoperative pain. Rational therapy of emergency conditions. Rational use of medicines in the complex treatment of collapse, fainting and shock states. Rational use of medicines used in the anesthesiological provision of surgical intervention. Medicines used in pediatric anesthesiology.	SD	CC	4	LO1 LO3
10	Regulation of medicines. Counterfeit medicines. Advertising of medicines.	Principles of operation of the control and licensing system for the registration of new domestic and foreign medicines. Regulation of medicines. Falsification of medicines: definition; factors contributing to falsification; background of the issue and the need to combat falsified medicines. Advertising of medicines. Rules for issuing permits for advertising medicines. Critical analysis and evaluation of advertising information.	SD	CC	4	LO4 LO6
	Total:				138	
	Final certification:				2	
	Total:				140	

The matrix of achievement of LO by various teaching methods

LO	Teaching and learning methods	
PO1 is able to provide advisory assistance to doctors and patients on the rational choice and use of medicines; to identify, register and prevent adverse reactions of medicines.	Analysis of the material, feedback from the resident	Simulation of situations. Maintaining medical records
PO2 is able to effectively interact with the patient and his relatives, healthcare professionals in matters of rational pharmacotherapy in order to achieve the best results for the patient.	A reflective diary	Maintaining medical records
RO3 is able to monitor the effectiveness and safety of the use of medicines; to conduct pharmacotherapy based on the choice of medicines, taking into account the	Supervision of clinical work	

pathological and physiological profile of the patient using international guidelines and clinical protocols.		
RO4 is able to act according to the principles of organizational and methodological work of a clinical pharmacologist in healthcare organizations on the rational use of medicines and drug provision, work as part of interprofessional teams to implement the policy of strengthening the health of the nation.	Supervision of clinical work Development of a draft drug form	Maintaining medical records
RO5 Research: he is able to formulate adequate research questions, critically evaluate the professional literature on clinical pharmacology, conduct pharmacoepidemiological and pharmacoeconomical research in healthcare organizations.	"Magazine Club"	Writing theses, articles Public appearances
RO6 is able to train independently and train other members of a professional team, actively participate in discussions, conferences and other forms of continuous professional development in the field of clinical pharmacology.	Observation	

The matrix of compliance with LO assessment methods

LO	Assessment methods	
PO1 is able to provide advisory assistance to doctors and patients on the rational choice and use of medicines; to identify, register and prevent adverse reactions of medicines.	Testing Oral interview	Essay (short and long) The short answer
PO2 is able to effectively interact with the patient and his relatives, healthcare professionals in matters of rational pharmacotherapy in order to achieve the best results for the patient.	OSCE (with skill check stations). A mini-clinical exam.	A long-lasting case Keeping diaries
RO3 is able to monitor the effectiveness and safety of the use of medicines; to conduct pharmacotherapy based on the choice of medicines, taking into account the pathological and physiological profile of the patient using international guidelines and clinical protocols.	Analysis of records in the medical history Analysis of the records of the doctor's activities	Analysis of prescriptions
RO4 is able to act according to the principles of organizational and methodological work of a clinical	Standardized patients	Patient reviews Feedback from other students

pharmacologist in healthcare organizations on the rational use of medicines and drug provision, work as part of interprofessional teams to implement the policy of strengthening the health of the nation.		Rating 3600
RO5 Research: he is able to formulate adequate research questions, critically evaluate the professional literature on clinical pharmacology, conduct pharmacoepidemiological and pharmacoeconomical research in healthcare organizations.	Summary/presentation	Publications
RO6 is able to train independently and train other members of a professional team, actively participate in discussions, conferences and other forms of continuous professional development in the field of clinical pharmacology.	Observation	

Work plan for the entire training period

Cycle of disciplines/		Discipline code	Name of disciplines/modules	Number of credits	Number of credits	Classroom	RSRR		1 year of study	2 year of study	Form of control	FC
							srrn	srr				
ILUPD		CYCLE OF PROFILE DISCIPLINES		138	4140							
		Required component		134	4020							
SD	RC	R-KFPRFZ	Clinical pharmacology and principles of rational pharmacotherapy for certain diseases	42	1260	252	82	126		42	exam	
		R-OILSKFENZhRF	Evaluation of the use of edicines and clinical and harmacological examination. ndesirable drug reactions. harmacovigilance.	12	360	72	52	36		12	exam	

		R-KF	Clinical pharmacology (general sues of clinical pharmacology and inical and pharmacological haracteristics of individual groups nd drugs). The formulary system.	38	1140	228	98	114	38		exam	
				9	270	54	89	27	9		exam	
		R-EPKILSPF	Stages of conducting various pes of clinical trials of medicines lrugs). Personalized harmacotherapy (therapeutic drug onitoring, pharmacogenetics)	10	300	60	10	30		10	exam	
		R-POAMRRKPL RPDM	Search, evaluation and adaptation of international recommendations, guidelines and clinical treatment protocols in the Republic of Kazakhstan from the standpoint of evidence-based medicine	8	240	48	68	24	8		exam	
		R-KFPRFPPOP	Clinical pharmacology and principles of rational pharmacotherapy in pediatric practice and in special groups of patients	15	450	90	15	45	15		exam	
	Component of choice			**4**	**120**	**24**	**84**	**12**		**4**		

	CC	R-KFAG R- R-KFAR R-RLSFLSRLS	Клиническая фармакология в акушерстве и гинекологии Клиническая фармакология в анестезиологии и реанимации Регламентирование лекарственных средств. Фальсифицированные лекарственные средства. Реклама лекарственных средств							exam	
		in total		**138**	**4140**	**828**	**898**	**414***				**50**
AA/ПА IC		**INTERIM CERTIFICATION**										
KA/ПА FC		**FINAL CERTIFICATION**		**2**	**60**					**2**		
total				**140**	**4200**	**828**	**898**	**414**	**70**	**70**		**50**