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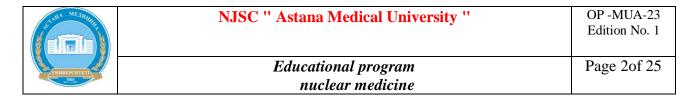
Approved by the Academic Council NJSC "Astana Medical University",

Protocol No.7

"30"/ 06/ 2023

Educational program

7R01148 - "Nuclear Medicine"



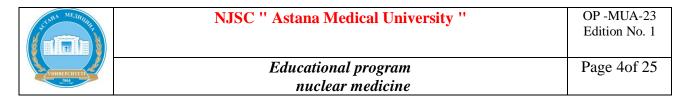
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1. PASSPORT OF THE EDUCATIONAL PROGRAM

Field of education	7P.01 Health care (medicine)
Areas of training	7R01 Health care (medicine) 7R011 Healthcare
<u> </u>	7R01148 Nuclear medicine
±	7K01146 Nuclear medicine
programs Educational program	7D01149 Nuclear medicine
Educational program	7R01148 Nuclear medicine
Purpose of the educational program	Training of qualified, competitive specialists in nuclear medicine who meet modern requirements for the quality of doctors, who are able to
program	work independently in nuclear medicine departments and carry out the
	necessary manipulations related to the diagnosis and treatment of
	various pathological conditions, apply and develop advanced
	innovative technologies in practice and science.
Type of educational	New OP
program	
Qualification level	7, nuclear medicine doctor
according to the national	
qualifications framework	
Qualification level by	VII
sectoral qualifications	
framework	
Distinctive features of	First developed at the Department of Radiology and Nuclear Medicine
educational programs	, it helps to form skills and abilities for providing qualified medical
	care in nuclear medicine, forms skills in mastering the latest
	technologies and methods in the field of radionuclide diagnostics, PET
	, as well as in radionuclide therapy of various tumors.
Awarded Academic	Residency
Degree	
Terms of study	2 years
Higher education profile	Higher medical education
Mission of the educational	Training of a qualified nuclear medicine doctor with a system of
program	universal knowledge and professional competencies, capable and ready
	for independent professional activity in the diagnosis and treatment of
	diseases. It was discussed at a joint meeting of the Department of Radiology and Nuclear Medicine and the Department of Radiology
	named after Academician Zh.Kh. Khamzabaev Protocol No. 7 dated
	24.02.2023.
Accreditation and	= 1.02.2023.
certification of	
educational programs	
Requirements for the	Basic medical education, higher medical education in the specialty
previous level of	"General Medicine", "General Medicine", "Pediatrics", internship
education of persons	, , , , , , , , , , , , , , , , , , ,
wishing to master the	
educational program	
	Qualification characteristics of a graduate
List of specialist positions	Nuclear medicine doctor
Area of professional	healthcare
activity	



Functions of professional	Carrying out diagnostic studies and treatment using nuclear medicine
activity	methods
Types of professional	Nuclear medicine (radionuclide diagnostics, radionuclide therapy)
activity	
Accounting for the needs	will be created, taking into account the diversity of special educational
of different groups of	needs and individual opportunities.
students, including those	
with special educational	
needs	

GRADUATE COMPETENCES AND LEARNING OUTCOMES 1.1. General competencies and professional competencies 2.

		General competencies	
No.	Competencies	Outcomes of the training program Graduates will be able to:	No. K
1	nuclear medicine	applies therapeutic and diagnostic procedures through the use of radiopharmaceuticals, which are diagnostic tools and therapeutic agents	1.1
2	Communication and collaboration:	effectively interacts with the patient, his environment, healthcare professionals in order to achieve the best results for the patient	1.2
3	Safety and quality:	assesses risks and uses the most effective methods to ensure a high level of safety and quality of medical care	1.3
4	Public health:	acts within the framework of the legal and organizational field of the Ministry of Health of the Republic of Kazakhstan in the specialty, works as part of interprofessional teams to implement the policy of strengthening the nation	1.4
5	Research:	formulates research questions, effectively uses international databases in his daily activities, participates in the work of the research team	1.5
6	Education and development	learns independently and trains other members of the professional team, actively participates in discussions, conferences, symposiums	1.6
	Pro	ofessional competencies	
1	Questions of medical physics, radiation pharmacology and radiochemistry. Radionuclide diagnostics	effectively applies the laws of radiation physics and hygiene to conduct radionuclide diagnostics and radionuclide therapy in order to achieve the best results for the patient	1
		uses effective radiopharmaceuticals, taking into account the risk assessment of their use, pharmacokinetics, pharmacodynamics to ensure patient safety	2

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		interprets the result of the radiological and nuclear medicine method after its independent implementation in a specific clinical case	3
2	Methods of radionuclide therapy	conducts effective safe radionuclide treatment, prescribing and planning it, at the same time evaluating the effectiveness, potential risks of therapy	4
		provides qualified assistance in intensive care in nuclear medicine	5

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2.1.1. Competence matrix

No.	cycle / Compo Module/ discipline name 5				General competencies					Professional competencies					
	nes			KZ / ECTS	1.1	1.2	1.3	1.4	1.5	1.6	1	2	3	4	w
	PD		Profile disciplines	13 8											
1)	PD	OK	Required Component/	13 4											
1			medical physics	6	+						+				
2			Radiation pharmacology and radiochemistry	4	+			+				+			
3			Radionuclide diagnostics	48	+	+	+		+		+	+	+		
4			Radiology	1 2	+		+	+					+		
5			Radionuclide therapy	60	+	+	+	+	+	+	+	+		+	
6			Critical Care in Nuclear Medicine	4				+							+
2)		SC	Selectable Component	4											
1			Nuclear medicine methods in diagnosing cardiac diseases	4			+					+	+		
2			PET-CT in the diagnosis and evaluation of the effectiveness of the treatment of malignant neoplasms	4			+					+	+		
3			PET-MRI in the diagnosis and evaluation of the effectiveness of the treatment of malignant neoplasms	4			+					+	+		
4			Scintigraphic research methods in the diagnosis of internal diseases	4			+					+	+		
3)	FE		final examination	2											
			TOTAL	14 0											

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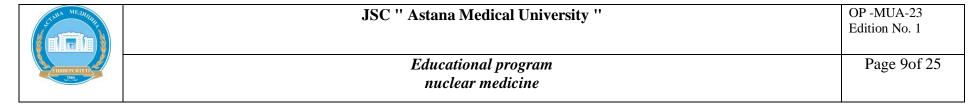
2.2. Learning Outcomes

No.	Code	Learning Outcomes
1	LO-1	Radionuclide therapy and radionuclide therapy are carried out on nuclear medicine devices in accordance with the application and using large-scale information systems, quality control of radioisotope diagnostics and therapy for all cases of medical care is increased.
2	LO-2	Interpret, analyze and evaluate the results of research, effectively interact with the patient, his environment, in order to achieve the best results for the patient, develop a plan for monitoring research in various oncological diseases
3	LO-3	Comply with radiation safety requirements when working with radiation sources, radionuclides, preparation, storage, transportation and disposal of radioisotope preparations, assess risks and use the most effective methods to ensure a high level of safety and quality of medical care
4	LO-4	They operate within the framework of the legal and organizational field of the health care system of the Republic of Kazakhstan in the specialty "Nuclear Medicine". Provide basic emergency care, work as part of interprofessional teams to implement policies to promote the health of the nation
5	LO-5	Formulate adequate research questions, critically evaluate professional literature, effectively use international databases in their daily activities, participate in the work of the research team
6	LO-6	Learn independently and train other members of the professional team, actively participate in discussions, conferences and other forms of continuous professional development

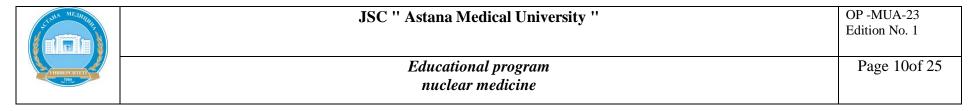
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2.2.1. Information about disciplines

No ·	Module/disciplin e name	Brief description of the discipline	Cycle	Componen t	loans	Formed learning outcomes				ing	
						RO 1	RO 2	RO 3	RO 4	RO 5	RO 6
		PD	PD	13 8							
		RC	RC	13 4							
1	medical physics	Forms knowledge and skills of the regulatory framework in nuclear medicine, conducting diagnostic methods for nuclear medicine and radionuclide therapy using knowledge and skills in applying the laws of medical physics and radiation hygiene standards, assessing the risks of nuclear medicine and radionuclide therapy methods to use the most effective of them with positions of nuclear physics	6	RC	6	+	+	+	+		
2	Radiation pharmacology and radiochemistry	Forms knowledge and skills of the regulatory framework and application of the principles of radiation pharmacology and radiochemistry, pharmacokinetics and pharmacodynamics of radiopharmaceuticals, determination of indications and contraindications for the use of radiopharmaceuticals, risk assessment of methods for diagnosing and treating nuclear medicine in order to use the most effective of them, taking into account the radiochemical reactions of medical isotopes	4	RC	4	+	+	+	+		
3	Radionuclide diagnostics	Forms knowledge and skills of the regulatory framework in nuclear medicine, conducting and interpreting nuclear medicine diagnostic methods, conducting differential radionuclide diagnostics, formulating a conclusion on the principles of evidence-based medicine and studying scientific databases, skills in assessing the risks of using nuclear medicine methods, effective interaction with the patient, his environment, healthcare professionals	48	RC	48	+	+	+	+	+	+



				,							
4	Radiology	Forms knowledge and skills of diagnostics using knowledge of the		RC	12		+	+	+		in .
		regulatory framework in radiology, interpretation of examination									i
		results using radiation diagnostics in normal and pathological									ļ
		conditions, differential and complex radiation diagnostics using	1.0								ļ
		nuclear medicine methods, formulating a conclusion based on	1 2								
		scientific databases, risk assessment of radiation diagnostic									ļ
		methods using the best of them, interpersonal communication skills,									ļ
		interaction with the patient, self-study									ì
5	Radionuclide	Forms knowledge and skills in conducting radionuclide therapy,		RC	60	+	+	+	+	+	+
	therapy	prescribing, planning it and assessing potential risks, effectiveness									ì
	1 2	of treatment, skills in using the regulatory framework for									
		conducting radionuclide therapy, interacting with the patient,	60								
		working as part of interprofessional teams, participating in forms of									ļ
		continuous professional development, skills mentor and teacher for									ļ
		colleagues, scientific analysis in practice									
6	Critical Care in	Forms knowledge and skills in providing qualified assistance during		RC	4		+	+	+		
	Nuclear Medicine	intensive care in nuclear medicine, including in emergencies, skills									
		in working in interprofessional teams, analyzing scientific databases	4								
		with the formulation of research questions, skills in effective	4								
		compassionate interaction with the patient and his environment,									ļ
		skills learn on your own									
		Selectable Component	RC	SC	4	+	+	+	+	+	+
7	Nuclear medicine	Forms the knowledge and skills of conducting a comprehensive		SC	4	+	+	+	+	+	+
	methods in	radiological examination using nuclear medicine methods with the									i
	diagnosing	interpretation of the result to identify heart pathology, conduct	4								i
	cardiac diseases	differential radiation diagnostics and formulate a conclusion,	4								i
		according to international standards, to assess the risks of radiation									
		diagnostic methods for this pathology									
8	PET-CT in the	Forms knowledge and skills of performing PET-CT with		SC	4		+	+	+		
	diagnosis and	interpretation of the result to identify and evaluate the effectiveness	4								in
	evaluation of the	of treatment of oncological pathology, conduct differential radiation	+								i
	effectiveness of	diagnostics and formulate a conclusion, according to international									



	the treatment of malignant neoplasms	standards, to assess the risks of PET-CT							
9	PET-MRI in the diagnosis and evaluation of the effectiveness of the treatment of malignant neoplasms	Forms knowledge and skills of performing PET- MRI with interpretation of the result to identify and evaluate the effectiveness of treatment of oncological pathology, conduct differential X-ray diagnostics and formulate a conclusion, according to international standards, to assess the risks of PET- MRI	4	SC	4	+	+	+	
10	Scintigraphic research methods in the diagnosis of internal diseases	Forms knowledge and skills of scintigraphy with interpretation of the result to identify and evaluate the effectiveness of treatment of oncological pathology of internal organs (liver, thyroid gland, etc.), conducts differential diagnostics and formulates conclusions, according to international standards, assesses the risk and scintigraphy methods	4	SC	4	+	+	+	
ele ven	final examination		2		2				
			14 0						

3. CURRICULUM AND ASSESSMENT OF LEARNING ACHIEVEMENTS OF STUDENTS A) Curriculum

No ·	Cycle discipli	Code disciplines	Name of the module / discipline	KZ / ECTS		Quantity hours			Number of credits by course			
	nes				Total hours	classroom	Extracurricu lar	I	II	III	IV	
	PD		Profile disciplines	13 8	4 140	828	3312					
1)	RC		Required Component	13 4	4020	804	3216					
1		MF	medical physics	6	180	36	144	6				
2		RPhR C h	Radiation pharmacology and radiochemistry	4	120	24	96	4				



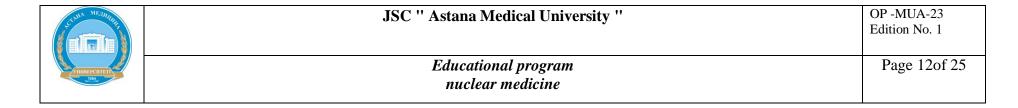
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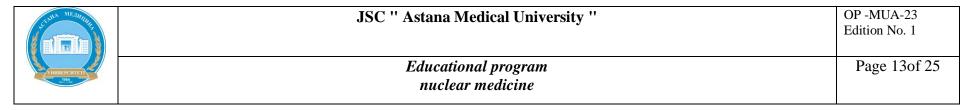
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No ·	Cycle discipli	Code disciplines	Name of the module / discipline	KZ / ECTS		Quantity he	ours	Num	ber of cou	credit	ts by
	nes				Total hours	classroom	Extracurricu lar	I	II	III	IV
3		R&D	Radionuclide diagnostics	48	1440	288	1152	48			
4		R	Radiology	1 2	360	72	288	12			
5		RT	Radionuclide therapy	60	1200	240	960		60		
6		KKNM	Critical Care in Nuclear Medicine	4	120	24	96		4		
2)	SC		Selectable Component	4	120	24	96		4		
1		NMMCD	Nuclear medicine methods in diagnosing cardiac diseases	4	120	24	96		4		
2		PET-CT DEETMN	PET-CT in the diagnosis and evaluation of the effectiveness of the treatment of malignant neoplasms	4	120	24	96		4		
3		PET-MRI DEETMN	PET-MRI in the diagnosis and evaluation of the effectiveness of the treatment of malignant neoplasms	4	120	24	96		4		
4		BSMSS Scintigraphic research methods in the diagnosis of internal diseases		4	120	24	96		4		
3)	FE		final examination	2	60	60	1		2		
			Total	14 0	4 200	840	3360	7 0	7 0		



B) Curriculum and assessment of educational achievements by years of study:

N o.	The cycle of discipli ne	Discipli ne code	Name of the discipline	department	form of contro l	Numbe r of credits	ECTS	Total hours	Total classroom hours	Total non- curricular hours	SKRRN	SRR	Year of study				** Type of assessment of the final control (OIC)
					Exam				Tota	Curr			1	2			
	MD		Cycle of major disciplines	Profile chairs	+/+	13 8		4 140	828	3312	2691	621					
1)	RC		1.Required component		+/+	13 4		4020	804	3216	2613	603					
1		MF	medical physics		+/+	6	6	180	36	144	1 17	27	6				
2		DDLD C	Radiation		+/+	4	4	120	24	96	78	18	4				
		RPhR C h	pharmacology and radiochemistry														
3		R&D	Radionuclide diagnostics		+/+	48	48	1440	288	1152	936	216	4 8		OIK1; DEC2		
4		R	Radiology		+/+	1 2	1 2	360	72	288	2 34	126	1 2				
5		RT	Radionuclide therapy		+/+	60	40	1200	240	960	7 93	1 67		60			
6		KKNM	Critical Care in Nuclear Medicine		+/+	4	4	120	24	96	78	18		4			
2	SC	2308	Selectable		+/+	4	4	120	24	96	78	18		4			
)			Component														
			Nuclear medicine		+/+	4	4	120	24	96	78	18		4			
		NMMC	methods in														
		D	diagnosing cardiac diseases														
		PET-	PET-CT in the		+/+	4	4	120	24	96	78	18		4			
		CT	diagnosis and		171	7	-	120	27	70	70	10		7			



		DEET MN	evaluation of the effectiveness of the treatment of											
			malignant neoplasms											
		PET- MRI DEET MN	PET-MRI in the diagnosis and evaluation of the effectiveness of the treatment of malignant neoplasms	+/+	4	4	120	24	96	78	18		4	
		BSMSS	Bone scintigraphy in the diagnosis of metastases in the skeletal system	+/+	4	4	120	24	96	78	18		4	
3	FE		final examination		2	2	60	60	-		0		2	1. Written exam 2. Assessment of practical skills
TO	OTAL:			140	140	4200	14 0	3312	2691	840	3360	70		

**Note: The final control is carried out upon completion of the module in the form of an exam in two stages:

- examination in the form of a written answer on tickets-OIK1
- assessment of practical skills according to visualization OIC2

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4. EDUCATIONAL RESOURCES

4.1 Logistics

A) Information about the useful training area, the availability of material and technical base and technical means of training NJSC "MUA"

Type of building (standard design, fixture, other), actual address of buildings used for the educational process	, ,	Usable area (m ²)	Educational premises, sq.m.	Type of premises (rooms, lecture halls, for practical classes, laboratories, assembly and sports halls, etc.), social and other purposes, their number
Clinical-Academic Department of Radiology and Nuclear Medicine, KF "University Medical Center" Nazarbayev University, Department of	300.0	2 6 0.0	6 0.0	Lecture rooms - 1; study rooms - 1; professor's office, associate professor - 1; assistants' office - 1
Nuclear Medicine				assistants office - 1
RSE on REM "Hospital of the Medical Center of the UDP RK" Center for Nuclear Medicine	250.0	150,0	50.0	Lecture rooms - 1; study rooms - 1; professor's office, associate professor - 1; assistants' office - 1
Total	550.0	410.0	110.0	

B) Information about the availability of a food facility that meets sanitary rules and regulations

At each clinical base (medical organizations) there are catering facilities (canteen, buffet, cafe) that comply with sanitary rules and regulations.

Type of building (standard design, fixture, other), actual address of buildings used for the educational process	Total area (m²)	Type of premises (rooms, lecture halls, for practical classes, laboratories, assembly and sports halls, etc.), social and other purposes, their number
Clinical-Academic Department of Radiology and Nuclear Medicine, KF "University Medical Center" Nazarbayev University, Department of Nuclear Medicine	300.0	Buffet
RSE on REM "Hospital of the Medical Center of the UDP RK" Center for Nuclear Medicine	250.0	Buffet

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C) Information about the availability of medical care, including the availability of a medical center and a license for medical activities of NJSC "MUA"

The actual address of the building occupied by the	The area of the medical center (m ²)	Information about the license for medical activities
educational process		(number)
LLP "Medical Center MUA", Saryarka Ave., 33	772.3	License number 10584 DZ No. 0159763 dated
		04.10.2011

4.2 Investment in education program

Name of investment	Sum	Year of purchase	Used for a contingent of students
Medical equipment	277 139 303	2016-2020	For residents of all years of study
Computers and duplicators	230 806 485	2016-2020	
Furniture	34 937 608	2016-2020	
Other	401 112 455	2016-2020	
Library fund	474 614 958	2016-2020	
Intangible assets	71 382 086	2016-2020	
Total	1 489 992 895		

4.3 Practical/clinical training resources

A) Characteristics of the bases

No)./n	Name of clinical sites	Legal address	No. and date of the contract	Name of EP disciplines	Department/course
		Clinical-Academic Department of	Syganak street, 46	№ 23.124-18-164	All disciplines	Profile departments / residents
		Radiology and Nuclear Medicine, KF	Nura district, Astana,	04/29/2019		of all
	1	"University Medical Center" Nazarbayev	Z05K7A4			years of study
		University, Department of Nuclear				
		Medicine				
		RSE on REM "Hospital of the Medical	st. E-495, No. 3,	No. 5.2.2 - D152 of	nuclear medicine	Profile departments/residents
2	2	Center of the UDP RK"	Yesil district,	04/05/2022		of all
		Center for Nuclear Medicine	010000 Astana			years of study

4.4 Information technology

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A) Library

	Name of the library	The total area of the library premises, sq. m.	Book storage area sq.m.	Number of seats in the reading rooms	Number of pickup points
Library	y	2269.3 sq.m.	1452.3 sq.m.	187	7

B) Book fund

The library has an educational, scientific, foreign, rare, art subscription, 5 reading rooms (reading room for educational subscription 1, 2 courses - 25 seats, a rare fund room - 12 seats, a reading room for a foreign loan - 31 seats, a room for unpublished materials - 2, teaching staff room - 36 seats, coworking room - 53 seats, multimedia room - 28 seats

C) Book Fund (According to Appendix 2 to the qualification requirements)

	Including:				Of the total																	
=				textbooks		scientific literature		Fiction		Periodicals			Electronic editions									
Total	in Kazakh	into Russian	into	Total	in Kazakh language	<u></u>	in	Total	in Kazakh	into	in :	Total	in Kazakh	into Russian	Total	in Kazakh	into Russian	in English	Total	in Kazakh language	into Russian	in English
5994	8	370	1200		0	2	61		0	250	300		0	500		0	10	100		3	120	200

D) Information resources of the library

Number of computers in the library	Of which with access to electronic databases
60	36

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E) Electronic resources (list of electronic databases)

University residents have access to full-text articles and literature sources of world databases from Elsevier - Sciencedirect, Springerlinc , as well as corporate access to online resources ClinicalKey, Oxford universitypress , Pubmed (abstract of articles). The textbooks "Epigraph", "Newbook " "Publishing houses Epigraph - Catalog of publications Portal of multimedia textbooks" (https://mbook.kz) are provided in free access .

From December 2020 subscribed to a comprehensive integrated electronic resource platform Jaypee brothers medical publisher, which includes 3267 copies. full-text books, including over 800 basic textbooks and over 2,200 professional and reference books in English. The platform hosts more than 9,000 surgical and diagnostic videos, more than 50 journals covering 60 or more medical specialties, including related areas of health such as dentistry, nursing, physical therapy, pharmacology.

E) Information resources

Number of computers	Percentage of computers delivered 5 years or more	Number of computers connected to the Internet
63	-	36

5. RESEARCH AND SCIENTIFIC ACHIEVEMENTS

A) The main directions of scientific research of the medical organization of education (within the framework of the educational program)

Name of the topic of scientific	Customer	FULL	Deadlines	Co-executing	Number of	Number of	Number of	Number
projects/programs	and	NAME.		organizations,	local	publications	copyright	of
	funding	leader		including foreign ones	(country)	in near and	certificates,	impleme
	source				publications	far abroad	pre-patents,	nted
							patents,	scientific
							other	and
							security	technical
							documents	develop



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								ments
" Implementation of new types of radioisotope studies using RFLP: 18 F - FDG, 18 F - NaF, 11 C - methionine, 18 F - DOPA"	Initiative	Rakhimzhan ova R.I. Saduakasova A.B.	2023	Department of Radiology named after Zh.Kh. Khamzabaev, Department of Nuclear Medicine and NAO "MUA" Center for Nuclear Medicine	9	5	-	-
Development of a technology for labeling leukocytes with the 18- FDG radiopharmaceutical for differential diagnosis of malignant and inflammatory diseases in PET/CT studies	Initiative	Project Manager Dautov T.B., performers Saduakasova A.B., Ryskulova G.O.		Department of Radiology named after Zh.Kh. Khamzabaev, Department of Nuclear Medicine and NAO "MUA" Center for Nuclear Medicine	6	4	-	-
Production and application of labeled positron-emitting ultrashort-lived radionuclides for radioisotope diagnostics using the method of positron emission tomography / Budget program 055 "Scientific and/or scientific and technical activities", subprogram 101 "Grant financing of scientific research for 2012-2014"	budget program	Project Manager Dautov T.B., performers Saduakasova A.B., Ryskulova G.O.		Department of Radiology named after Zh.Kh. Khamzabaev, Department of Nuclear Medicine and NAO "MUA" Center for Nuclear Medicine	6	4	-	-

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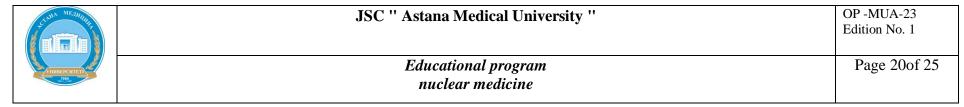
Investigation of the	budget	Project	Department of	6	4	-	-
feasibility of the PET/CT method using ¹⁸ F- FET in nuclear medicine / According to the budget program: 217 "Development of science", subprogram 102 " Grant financing of scientific research" for 2015-2017	program	Manager Dautov T.B., performers Saduakasova A.B., Ryskulova G.O.	Radiology named after Zh.Kh. Khamzabaev, Department of Nuclear Medicine and NAO "MUA" Center for Nuclear Medicine				

B) Information on the participation of residents in scientific research

Name of scientific projects/research	Participation of residents (number)	<u>.</u>	Participation in local, international conferences (number)
	-	-	-

6. ACADEMIC STAFF
A) The teaching staff implementing the educational process

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FULL NAME.	Job title	scientific	Academic	Qualifica	Work	Course	g .	_	Achievements
		degree	title	tion of a	experience	taught/Mod	ngu e of	ull me	teacher
				specialist		ule	La		



				(specify category)	General, years	In NJSC "MUA", years				
Rakhimzhanova R.I.	Head of the Department of Radiology named after Academician Zh.Kh. Khamzabaev	MD _	Professor	higher	33	29	Radiation diagnostics, radiation therapy	Rus, Kaz	to the fullest	has protected 11 - c.m.s.; 1 - Doctor of Medical Sciences, 4 Doctors of PhD, 4 Masters of Medicine, master's and doctoral studies, 2 provisional patents for an invention, 3 textbooks, more than 450 publications, 20 of them with an impact factor, a member of the Academic Council and the Supervisor of the School Medicine NAO MUA
Dautov T.B.	Director of the Clinical and Academic Department of Radiology and Nuclear Medicine of the KF "UMC", Chief Freelance Specialist in Radiation Diagnostics and Interventional Radiology of the Ministry of Health of the Republic of Kazakhstan, Professor of the Department of	MD _	associate professor	higher	33	eleve n	Radiation diagnostics, radiation therapy	Rus/ kaz	to the fullest	He has 3 defended PhDs , 5 defended Masters in Medicine, 2 undergraduates and 7 PhD - doctoral students are studying, has more than 250 publications, including 30 full-fledged articles, 8 articles with an impact factor, 2 monographs, 10 inventions and a number of teaching aids



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	Radiology named after academician Zh.Kh. Khamzabaev of NAO MUA									
Abdrakhmanova Zh.S.	Head of the Department of Radiology and Nuclear Medicine	MD _	Associate Professor	higher	25	23	Radiation diagnostics, radiation therapy	Eng/ Kaz/ rus	to the fullest	Has 1 textbook, more than 200 publications, 8 of them with impact factor, member of the Academic Council and the Council of the School of Medicine NAO MUA
Saduakasova A.B.	Assistant -mentor of the Department of Radiology named after academician Zh.Kh. Khamzabaev NAO MUA	MD _	-	higher	14	1	Radiation diagnostics, radiation therapy	rus	combine body	Has 1 textbook, about 50 publications, 3 of them with impact factor
Ryskulova G.O.	Assistant -mentor of the Department of Radiology named after academician Zh.Kh. Khamzabaev NAO MUA	-	master	higher	29	14	Radiation diagnostics, radiation therapy	rus	combine body	Has about 45 publications, 2 of them with impact factor Title - Master of Economics and Business

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B) The scientific potential of the teaching staff necessary for the implementation of the educational program

No./ n	FULL NAME.	The number of articles in journals included in the list of KKSMON MES RK over the past 5 years	Number of journal articles indexed in international databases with a non-zero impact factor over the last 5 years	Number of titles of protection (patents, certificates of intellectual property, etc.)	Number of published books, monographs, manuals	Index-Hirsch (citation index with database indication: Scopus and WebofScience)
1.	Rakhimzhanova R.I.	10	5	10	5	Scopus h -index: more than 2.1
2.	Dautov T.B.	9	5	2	2	Scopus <i>h</i> -index: 2.0 -3.0
3.	Abdrakhmanova Zh.S.	6	3	3	1	Scopus h -index: 2.0
4.	Saduakasova A.B.					Scopus h -index: 2.0
5.	Ryskulova G.O.					Scopus h -index: 0.8

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7. FINAL CERTIFICATION OF GRADUATES

The final state certification (hereinafter referred to as the FGA) is a form of state control of the clinical achievements of a resident, aimed at determining the compliance of the knowledge, abilities, skills and competencies acquired by him with the requirements of the state standard of education in the specialty.

The IGA is conducted in the form of a comprehensive exam. A comprehensive exam consists of two parts, theoretical and practical, and determines the level of knowledge of residents in the specialties. The theoretical part of the exam is conducted in the form of testing. The practical part of the exam is conducted at clinical sites in nuclear medicine centers.

The IGA of residents at the University is carried out within the time limits stipulated by the academic calendar and working curricula of specialties in the form of passing a comprehensive exam and passing practical skills.

Residents who have completed the educational process in accordance with the requirements of the working curriculum and working training programs are allowed to the final certification. The results of the comprehensive examination are documented in the form of an examination sheet provided by the Registrar's office department. Retaking a comprehensive exam from a positive grade in order to increase it to a higher one is not allowed.

Every year, external examiners from practical healthcare are introduced into the examination commissions to participate in the work of the IGA, whose recommendations are taken into account in the future to make changes to educational programs in accordance with the needs of practical healthcare.

An independent examination of graduates of the specialty "Nuclear Medicine" will be held within the framework of the requirements of the Ministry of Health of the Republic of Kazakhstan, and the Residency School.

8. CONTINUOUS IMPROVEMENT

A) Development of an educational program with the participation of associations and employers

The educational program was developed with the participation of representatives of practical healthcare from medical organizations. A review of the educational program was received from the head of the Center "Nuclear Medicine" in Astana

Discussed at a joint meeting of the staff of the Department of Radiology named after Academician Zh.Kh. Khamzabaev and the Department of Radiology and Nuclear Medicine of NAO MUA.

Minutes No. 7 dated February 28, 2023

Parcel

Chairman: Head

of the Department of Radiology named after academician Zh.Kh.Khamzabaev

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Rakhimzhanova R.I.

9. REVISION, AMENDMENTS

Date of implementation of the EP	OP revision date

10. <u>EMPLOYER REVIEWS</u>

Name of company	FULL NAME. the head of	Date of signing the
	the organization	review
CF " UMC "	PhD Skakova G.A.	04.04.2023
Department of Nuclear Medicine		
Hospital MC UDP	MD Shanazarov N.A.	04.04.2023
Deputy Director for Strategic Development,		
Science and Education		

11. <u>DEVELOPERS OF THE EDUCATIONAL PROGRAM</u>

11. DEVELOTERS OF	THE EDUCATIONAL FR	<u>IUGKAM</u>	
Full name	K chair	Job title	SIGNATURE _
Rakhimzhanova R.I.	Department of	Head of department	
	Radiology named after		ρ
	Zh.Kh.Khamzabaev		Parcel
			/ >
Abdrakhmanova Zh.S.	Department of	Head department	
	Radiology and Nuclear		1
	Medicine NJSC "MUA"		
			h
Dautov T.B.	CF " UMC "	Professor	1 0
			Dr.

12. EDUCATIONAL PROGRAM APPROVAL SHEET

12. EDUCATIONAL FROGRAM AFFROVAL SHEET	
Department/course name	Signatures of the heads of
	the department
Head of the Department of Radiology named after Zh.Kh. Khamzabaev Rakhimzhanova R.I.	Taxue
Head of the Department of Radiology and Nuclear Medicine Abdrakhmanova Zh.S.	

Craw Manney		JSC '' Astana Med	ical University "				
HIBEPCHTETI)	Educational program nuclear medicine						
Dean of the Sc	hool of Residency			7			
M.K. Elubaeva							

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Dean of the School of Residency M.K. Elubaeva

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