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## Role of the Center for postgraduate education in training staff for the cancer service of the Republic of Kazakhstan

**Relevance:** Kazakh Institute of Oncology and Radiology (KazIOR) provides long- and short-term programs of postgraduate education which is one of the key directions of cancer care in the Republic of Kazakhstan in the light of reaching the main strategic targets of this sphere and implementation of the Comprehensive plan of combating cancer diseases.

**Purpose:** The article represents the main directions of postgraduate education that includes residency programs, as well as retraining and advanced training programs, international master classes and training of cancer service specialists abroad.

**Results:** KazIOR successfully implements the principle of the triunity of practice, education, and science. In 2016, the Institute and its programs were accredited in three specialties (Oncology, Radiology and Radiation therapy). The accreditation had a positive impact on the improvement of educational activities and the conditions provided for the staff and the students. In 2015-2018, the Institute has successfully performed the Republican Budget Programs. 91 students have completed the residency program; 103 resident students are studying now. 13 master classes with the involvement of foreign experts have attracted 325 listeners. 698 cancer service specialists from all regions of the country have received advanced training and retraining in the frames of the Republican Budgetary Program 005. Also, we attracted sponsors to conduct master classes in the most popular areas that have been attended by 3,653 listeners. 476 specialists have completed training at KazIOR on a paid basis. 2167 physicians, nurses, psychologists and social workers of primary health care organizations were trained in cancer awareness and early detection of cancer.

**Conclusion:** highly qualified personnel, the triunity of practice, education, and science, partner relations with leading scientific and clinical centers, the availability of appropriate infrastructure and modern technologies for providing highly specialized care are fundamental factors for the success of postgraduate education provided by KazIOR.

**Keywords:** postgraduate education; triunity of practice, education, and science; cancer care.

The Center for Postgraduate Education on the basis of the Kazakh Institute of Oncology and Radiology (KazIOR) offers educational activities and implements the following functions:

- Recruitment of residents, preparation of residency plan, individual plans, academic calendar, the formation of study groups, distribution by clinical sites, the appointment of curators and clinical mentors, supervision of current and boundary control, intermediate and final attestation;
- Planning and organization of the offsite practice of residents in regional cancer centers and primary health care institutions;
- Planning, organization, and implementation of advanced training and retraining of specialists of the Republican cancer service at the expense of the Republican budget and extra-budgetary funds;
- Planning, organization, and formation of teams of practitioners offering advanced training in the regions on cancer alertness and early detection of cancers;
- Planning, selection, and participation of employees in domestic and international conferences;
- Planning and organization of master classes with the participation of international experts, training of cancer service specialists at the leading clinical and educational centers of the world.

KazIOR leads the cancer service in the Republic of Kazakhstan. The Institute was established by the Order of the Ministry of Healthcare No. 1-15-33 dated July 5, 1960

(based on the resolution of the Council of Ministers of the Kazakh Soviet Socialist Republic No. 962 dated September 24, 1959). During its long history, the Institute has become the leading oncology and radiology scientific, treatment, and organizational and methodological center of the Republic.

The Institute is licensed for providing postgraduate education in 3 specialties: oncology, radiation diagnostics, and radiation therapy.

KazIOR is successfully implementing the principle of the triunity of practice, education, and science by efforts of 16 Doctors of Sciences, 35 Candidates of Sciences, as well as teachers with Ph.D. and Master Degrees.

In accordance with the Law of the Republic of Kazakhstan "On Education", the institute was accredited in three specialties of postgraduate education on the basis of the state educational order: Oncology, Radiology, and Radiotherapy.

On the basis of the Agreement No. 47-jur dated February 12, 2016 (No. 175-16-I updated on 01.04.2016) between the Republican State Enterprise on the Right of Economic Jurisdiction "Kazakh Institute of Oncology and Radiology" and the non-profit institution "Kazakhstan Independent Agency for Quality Assurance in Education (IQAA)", a workshop on the accreditation procedure training of heads of departments, faculty members and residents was conducted on February 19, 2016. The self-assessment stage was conducted in accordance with the Order of KazIOR dated February 23, 2016.

The provided health care covers all types of cancers and allows trainees to master practical and theoretical material on the basis of clinical and diagnostic centers. In addition to clinical centers for thoracic, abdominal, neuro-oncology and gynecology, the institute provides care to patients with various forms of malignant neoplasms in its departments which are exclusive in the country, such as the departments for head and neck tumors, bone and soft tissue tumors, oncology, and pediatric oncology. Each year, KazIOR performs more than 1,500 surgical interventions, many of which are organ-preserved and reconstructive-plastic; it is the only institute in the Republic that offers conformal radiation therapy. KazIOR widely utilizes modern principles of drug therapy for malignant tumors, including high-dose chemotherapy. Its clinic possesses the most advanced equipment for full and profound diagnostics and management of tumor processes. Modern laboratories of the institute offer all types of laboratory analysis, from general tests to molecular genetics. Telemedical network allows providing remote consultations and conducting clinical discussions with all regions of the Republic.

Accreditation had a positive impact on the organization of the educational process at KazIOR.

First, the educational and methodological complex was brought in line with international standards and the requirements of the Ministry of Education and Science.

Second, a team of experienced and highly professional teachers with practical experience has been formed.

Third, faculty members have an opportunity to receive advanced training at the leading scientific and educational centers in far abroad and neighboring countries to the best advantage of the educational process and the level of knowledge of the residents. Thus, since September 2015, the teachers have participated in educational programs and made oral and poster reports at conferences held in England, Austria, Russia, Thailand, Korea, USA, France, and Japan.

The training infrastructure has been significantly improved. The new computer center offers high-speed Internet access and training rooms with appropriate technological infrastructure; the training rooms and rooms for residents have been refurbished.

The possibility of establishing differentiated payrolls and bonuses for the staff involved in the organization and conduct of education is quite important.

The residents are involved in the work of the "Journal Club" whose activities are displayed on the Institute website and in social networks. They also take an active part in the specialized councils of the institute (surgical, radiological, therapeutic, and the board of young scientists).

The whole educational complex is presented at the official website of the institute.

Currently, 103 residents undergo training at KazIOR (Table 1).

**Table 1** – Distribution of residents by specialties, the academic year 2018-2019

Specialty	No.	1 <sup>st</sup> year of study	2 <sup>nd</sup> year of study
Oncology	56	24	32
Radiology	32	20	12
Radiation therapy	15	5	10
<b>Total</b>	<b>103</b>	<b>49</b>	<b>54</b>

In 2018, 74 residents of three specialties have successfully passed the Republican independent testing and final certification. They gained the diplomas and were employed by regional cancer centers and primary health care institutions of the Republic. KazIOR residents lead the rating of the Ministry of Healthcare in their results of Republican testing. The continued collaboration with regional health departments and regional oncology dispensaries is aimed at the formation of targeted areas for KazIOR residency.

The Strategic Plan and Comprehensive Plan of the Institute include ways to improve educational activities for the next 5 years in order to strengthen the human capacity of cancer service specialists.

Training of residents and advanced training of health-care providers on the basis of domestic and foreign educational institutions, as well as conducting of master classes with the involvement of foreign experts on the most pressing challenges of the sector continue in the framework of the Comprehensive Plan 2018–2022.

Faculty members and staff of the postgraduate education department will continue their advanced training on educational issues and the application of new principles in teaching (PBL, CBL, RBL, TBL-training based on scientific

studies) in order to improve their professional level. In this regard, 40 teachers and specialists of the Center for Postgraduate Education took the course "Teacher for institutions of health care, education, and science" in the specialty "Pedagogy" in the 2nd-3rd quarter of 2017.

Under the Republican Budget Program 005, 698 specialists have completed advanced training in 2015–2018 on the following priority issues of cancer service: Early diagnostics and treatment of gynecologic malignancies; Selected problems of radiation therapy of patients with malignancies; Psychosocial assistance to cancer patients; Surgical treatment of lung, esophagus and stomach tumors; oncogynecology, mammology and etc. (Table 2).

62 students have been trained abroad on the following topical issues of the cancer service: The use of high-tech radiation therapy in pediatric oncology; Cancer surgery; Minimally invasive surgical treatment of esophageal cancer and stomach cancer; Laparoscopic surgery of urinary tract organs; Bone marrow transplantation; High-dose chemotherapy and transplantation of hematopoietic stem cells; Modern methods of lymphomas treatment and diagnosis; Psychotherapy in complex rehabilitation of cancer patients; Resuscitation and intensive therapy in hematology, and etc.

**Table 2** – Retraining and advanced training cycles

Programs	Years				
	2015	2016	2017	2018	Total
Residency	15	76	54	49	194
Master classes under the Republican Budget Program 005	50	50	125	100	325
Advanced training and retraining under the Republican Budget Program 005	171	71	98	358	698
Training abroad under the Republican Budget Program 005	27	9	26	0	62
Training at KazIOR	143	113	130	90	476
Sponsored master classes	615	838	833	1367	3653
Training on cancer alertness of the specialists of the primary health care system (offsite cycles – 1 week)	833	401	451	482	2167
<b>Total</b>	<b>1839</b>	<b>1482</b>	<b>1663</b>	<b>2397</b>	<b>7381</b>

KazIOR will continue to develop training programs and guidelines on the topical issues of cancer service with the purpose to improve the professional level in oncology of physicians and nurses of the primary health care system. Such issues include: Principles of prevention, diagnostics and treatment of breast cancer; Principles of prevention, diagnostics, treatment and rehabilitation of colorectal cancer; Principles of prevention, diagnosis, treatment and rehabilitation of lung cancer; Principles of prevention, diagnosis, treatment and rehabilitation of gastric cancer; Epidemiology of malignant tumors; Palliative oncology; Ultrasound diagnostics in oncology (for oncologists and ultrasound diagnostics physicians); Computer imaging and MRI in oncology (for oncologists and radiation diagnostics physicians).

Conferences and seminars on the prevention and early detection of malignant neoplasm in the form of webinars and other forms of distant learning, master classes, practical training for employees of examination rooms and primary oncological offices, as well as rural health posts, are regularly held to improve cancer alertness of primary care physicians.

KazIOR continues training general practitioners in the field organizing trips, thematic master-classes, training workshops, international conferences to exchange experience and introduce modern technologies in oncology (the training schedule for 2019 is presented at KazIOR website and available at the regional cancer centers).

Training, retraining and advanced training of radiation therapists and medical physicists and engineers are provided in the framework of the radiological service' human resources development. Postgraduate training will be provided at the place of work in cancer centers.

The practitioners, faculty members and staff of the postgraduate education center are regularly updated on topical issues of cancer service, as well as methodologies and new principles of teaching applied at leading cancer and educational centers in CIS and abroad.

To bring the staffing of the cancer service in line with the standards, the healthcare departments of the regions and cities of Almaty and Astana shall promptly send specialists for retraining (including short-term) and take an active part in the distribution of university graduates and job fairs.

Faculty members and staff of KazIOR Department of Postgraduate Education will take part in international conferences with oral and poster reports in order to present the scientific and practical achievements in the educational process, raise their professional level and discuss future activities with specialists from leading centers of the world.

The residents will be further involved in scientific programs and present their oral and poster reports at the international and domestic conferences.

KazIOR is an active member of a number of international organizations. This enables teachers to keep abreast of current trends in prevention, early detection, and treatment and use this information in their educational activities which has a positive impact on the quality of teaching.

Tutors and clinical mentors from among KazIOR faculty members are the heads and doctors of clinical diagnostic centers. That is, they are directly involved in the treatment process, have direct access to medical and diagnostic procedures and are responsible for the final result.

In addition, the appropriate infrastructure, modern technologies for the provision of highly specialized assistance establish KazIOR as the leader of postgraduate education.

**Conclusion:** highly qualified personnel, the triunity of practice, education, and science, partner relations with leading scientific and clinical centers, the availability of appropriate infrastructure and modern technologies for providing highly specialized care are fundamental factors for the success of postgraduate education provided by KazIOR.