

UDC: 615-036.8

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Progress made by the coordinating council on the implementation of the integrated model of rendering medical care for oncological diseases in 2016

The Coordination Council on Oncology (CC) was established in 2016 as a collegial advisory body under the Ministry of Health of the Republic of Kazakhstan (RoK) in order to implement the Integrated Model of Rendering Medical Care for Oncological Diseases in the RoK. Main functions of CC: improvement of the state policy, legislative and other normative legal acts in the oncology service in the RoK; implementation of measures envisaged by the State Program of Healthcare Development in the RoK "Densaulyk" for 2016-2019 to increase the efficiency of cancer care; coordination of work of healthcare departments of the regions, the cities of Astana and Almaty, the republican and regional medical organizations; interaction with state, public, international organizations. The article provides the results of assessment of the role of the CC in improving the quality of cancer care compared to previous years. The work of the CC was reviewed by the main outcomes and performance indicators of oncology service in the RoK in 2016. Full-scale implementation of the Integrated Model of Rendering Medical Care for Oncological Diseases till 2019 under the control of the CC will significantly improve the quality of medical services provided, will prepare and fully adapt the oncology service of the RoK to the modern economic conditions of compulsory health insurance system.

Key words: cancer care, integrated model of medical care for oncological diseases, the Coordination council of oncology, outcomes and performance indicators of oncology service.

Introduction. The observed annual global increase of incidence of non-infectious chronic diseases is associated with the improvement of socioeconomic well-being of countries, the increase in life expectancy, and the successful preventive measures aimed at cancer detection [2]. Malignant neoplasms are one of the most acute problems of modern medicine due to their high proportion in the structure of mortality, early deaths, long and expensive treatment, and remain one of the main causes of disability.

In 2025, the World Health Organization set the goal to reduce early deaths from cancer and other non-communicable diseases by 25%. According to WHO recommendations, cancer care should be provided by a network of healthcare organizations covering the whole country and possessing the necessary resources distributed with regard to epidemiological and economic indicators.

Further development of the Republic of Kazakhstan and inclusion into the list of the 30 most developed countries of the world by 2050 will require overcoming the gap in development between the countries of the Organization for Economic Cooperation and Development (OECD) and Kazakhstan in all spheres of economic and social development. To achieve this goal, cancer patients in Kazakhstan shall receive care at the highest level in accordance with all the international standards. Cancer should cease to be the main cause of early deaths and have a negative impact on the demographic situation in the country. The optimal form of care will be the hierarchically arranged specialized cancer centers which are already available in the Republic of Kazakhstan and are involved in the implementation of the assigned tasks.

In 2016, a collegial advisory unit, the Coordinating Council of Oncology (CCO), was established under the Ministry of Health of the Republic of Kazakhstan to im-

plement an integrated model of cancer care (IMCC) in Kazakhstan. IMCC is patient-oriented and presumes the integration of all health services around the demands of cancer patients. Main CCO functions include: the improvement of the state policy, legislative and other normative legal acts on cancer care in Kazakhstan; the implementation of measures stipulated by the State Health Development Program of the Republic of Kazakhstan «Densaulyk» for 2016 - 2019 in order to improve the efficiency of provided cancer care; the coordination of activities of the health departments in the regions, the cities of Astana and Almaty, the republican and regional medical organizations; interaction with the state, public, and international organizations.

The implementation of IMCC and the establishment of CCO are designed to solve the above problems since Kazakhstani oncologists believe that they have sufficient knowledge for prevention, early detection and treatment of cancer diseases in order to manage the treatment and improvement of quality of life of patients set by the United Nations and manifested in the World Cancer Declaration of 2013.

Purpose of this article is to assess the main indicators of cancer care in the Republic of Kazakhstan with regard to the introduction of IMCC in 2016.

Materials and methods. The main medical accounting and reporting forms (F. № 7, № 35, No. 090 / U) and the database of the Electronic Registry of Cancer Patients (ERCP) for malignant neoplasms (MN), as well as the information on the population and its composition by age were used [3]. The intensive and standardized indicators, both general and age-specific, were calculated using the generally accepted methodology of sanitary statistics.

In the Republic of Kazakhstan, cancer care is provided by the Kazakh Institute of Oncology and Radiology» (Ka-

zIOR) which is the head organization, the National Scientific Center of Oncology and Transplantology JSC, 17 oncologic dispensaries (ROD), 2 oncology departments and 371 cancer detection rooms.

The number of registered cancer patients is growing. 163 080 cancer patients were registered in oncological organizations by the end of 2016 (vs. 143 516 people in 2012, and 158 280 people in 2015). There are 3,950 specialized beds amounting to 2.3 beds per 10 thousand. The Order of the MoH RK No. 540 of 12.08.2011 requires 2.5 beds per 10000.

Statistical data. Morbidity. The MN incidence has increased from 183.1 in 2011 to 206.8 per 100 000 in 2016 (vs. 207.7‰ in 2015). In 2016, there was a sharp decrease in incidence compared to 2015 in 4 regions: in Almaty region – 182.5 to 137.5‰ (-24.7%); in Atyrau region – 48.3 to 138.6‰ (-6.6%); in West Kazakhstan region – 231.9 to 226.7‰ (-2.3%); and in Aktoobe region – from 177.0 to 171.7‰ (-3%). The primary morbidity in both sexes in 2016 was as follows (not taking into account the skin cancer): breast cancer #1 (12.6%), lung cancer #2 (9.9%), gastric cancer #3 (7.4%), cervical cancer #4 (4.7%), colon cancer #5 (4.6%) (Picture 1). Women most often suffered from breast cancer (22.6%), cervical cancer (9.1%), uterine cancer (5.7%), ovarian cancer (5.0%), and colon cancer (4.6%). Men most often suffered from lung cancer (18.2%), gastric cancer (11.1%), prostate cancer (9.5%), colon cancer (4.7%), and esophageal cancer (4.7%) [4, 5].

Figure 1 shows the interrelation between the newly diagnosed malignancies of different localizations vs. the total number of patients newly registered with MN in 2016.

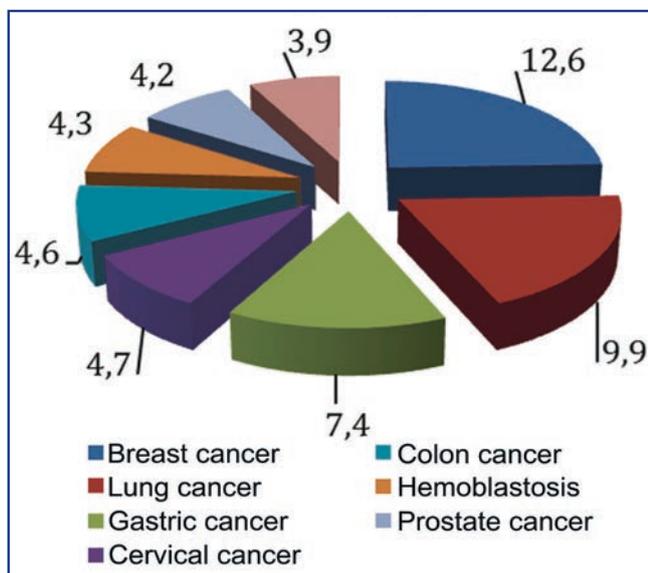


Figure 1 – Primary morbidity in both sexes in 2016, in %

Mortality. In 2016, 15 117 people died from MN, of them, 48.3% – people of working age. In 2011-2016, the mortality from MN has decreased from 102.4 to 84.9 per 100 000 (vs. 89.8‰ in 2015). The reduction in mortality was mainly due to the improvement of diagnostics of MN at early stages and the efficiency of treatment. At the same time, the mortality from MN has increased in Aktoobe region – 71.8‰ to 73.9‰, Karaganda region – 97.8 to 99.0‰, Pavlodar regions – 141.6 to 142.0‰, the city of Astana – 86.6 to

88.3‰, and the city of Almaty – 82.5 to 83.0‰. A significant decrease in mortality from MN was registered in Kyzylorda region – 88.8 to 74.5‰ (a decrease of 16.1%), Almaty region – 73.3 to 58.9‰ (a decrease of 19.6%), and South Kazakhstan region – 57.8 to 48.9 (a decrease of 15.5%).

The structure of mortality by nosology was as follows: lung cancer #1 (16.8%), gastric cancer #2 (12.2%), breast cancer #3 (8.8%), esophageal cancer #4 (5.8%), and rectal cancer #5 (5.0%) (Figure 2) [3-5].

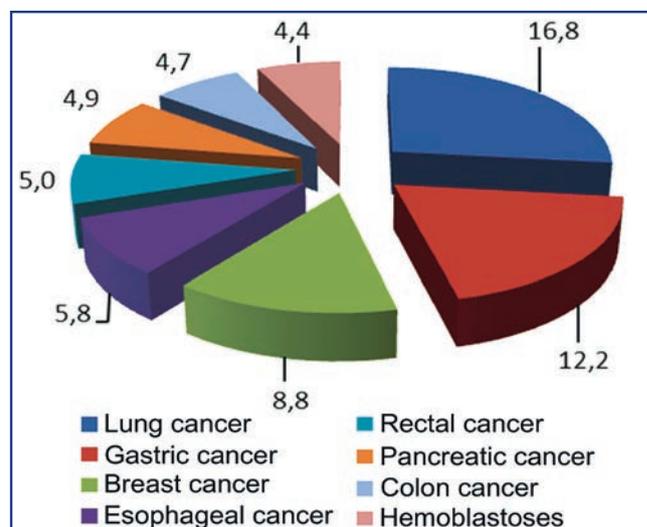


Figure 2 – Structure of mortality from MN in 2016, in %.

Figure 2 shows the mortality from each nosology vs. the total number of cancer patients in 2016.

Early detection. The detection of MN at stages I-II is one of the important indicators of cancer service. Thus, in the study period the timely diagnostics has increased from 49.5% in 2011 to 58.9% in 2016 (vs. 57.3% in 2015) resulting in a decrease in the share of advanced cases (late diagnostics) from 14.4% in 2011 to 11.5% in 2016 (vs. 12.0 in 2015).

The share of patients with stage I among newly diagnosed patients has increased from 19.9% in 2015 to 21.8% in 2016. Positive dynamics indicates an improvement in the situation as a whole and shows the sufficient effectiveness of screening programs. However, there was a decrease in early diagnostics in the following regions: the city of Almaty – up to 30.3% (vs. 30.9% in 2015), Ak-mola region – up to 17.3% (vs. 17.4% in 2015), and Aktoobe region – up to 16.3% (vs. 31.2% in 2015). The growth in the number of advanced MNs of visually accessible localizations was registered in 2016 vs. 2015 in Qostanay region (16.3% to 18.5%) and in the city of Astana (15.7% to 17.0%).

Advanced stage of visually accessible localizations (stages III-IV) was registered in Ak-mola region (22.7%), Almaty region (18.9%), Qostanay region (18.5%), the city of Astana (17.0%), and Aktoobe region (16.8%). The share of advanced cancers of visually accessible localizations has increased in Qostanay region (16.3% to 18.5%) and in the city of Astana (15.7% to 17.0%).

Figures 3 and 4 show the number of primary patients with stage I and stages III-IV cancers of visually accessible locations vs. the total number of cancer patients newly registered in ERCP in 2016, by RK regions.

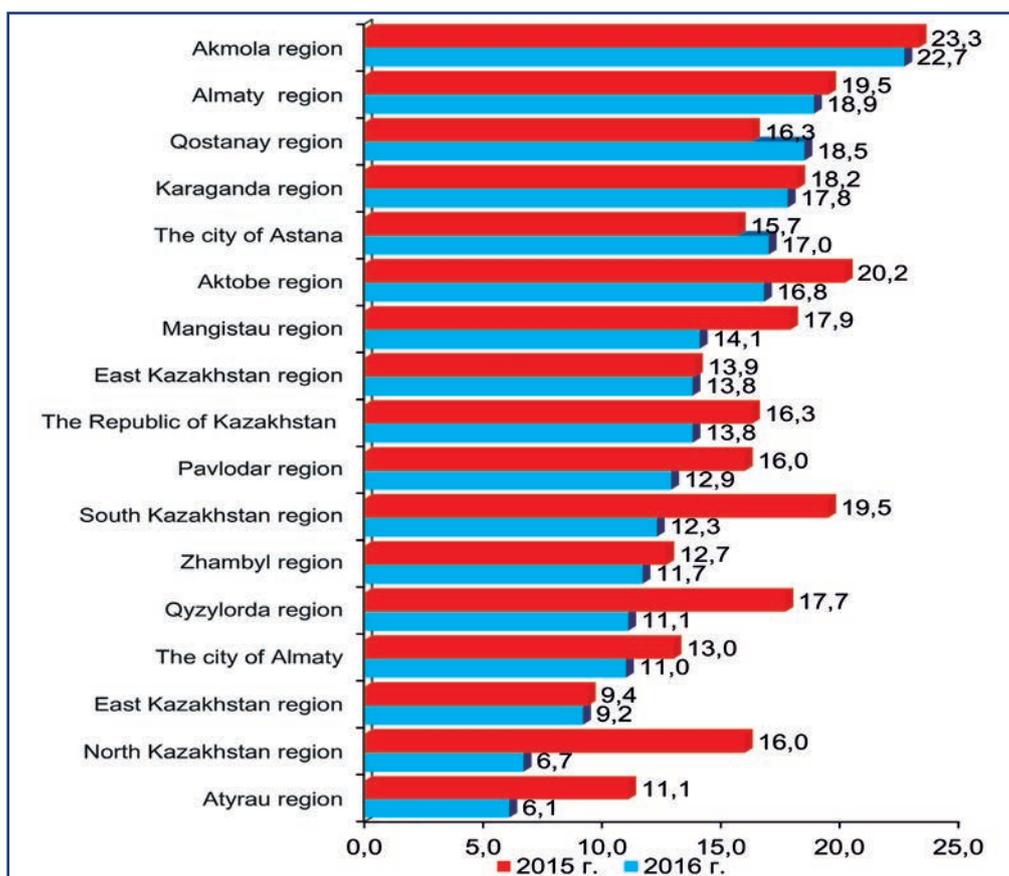


Figure 3 – Ranking of RK regions by early diagnostics of stage I cancers in 2015-2016, in %.

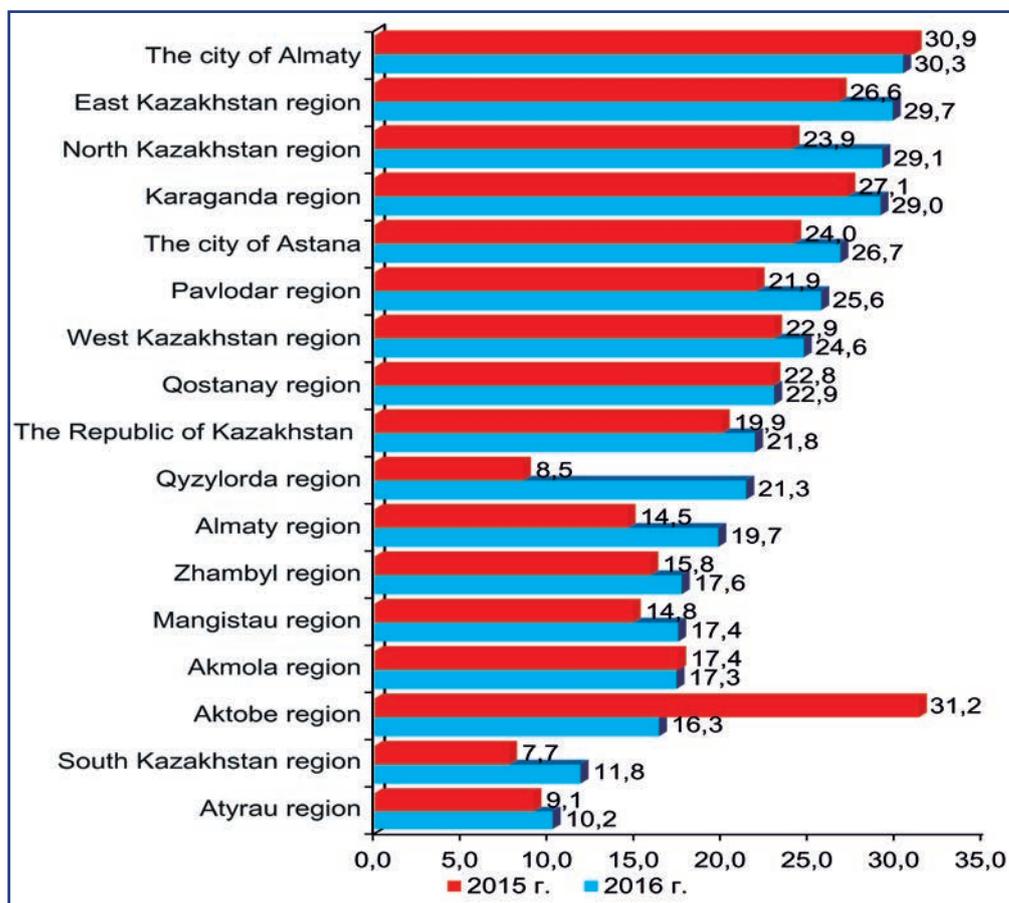


Figure 4 – Ranking of RK regions by advanced nature of stages III-IV cancers of visually accessible localizations in 2015-2016, in%.

The share of patients with MN with five year and more survival rate has decreased from 50.8% in 2015 to 47.9% in 2016. The indicator was dependent on several reasons: timely registration of patients with MN, the time of follow-up care, one-year mortality, and the coverage by specialized treatment. The indicators has decreased since the introduction of automatic de-registration of cancer patients in ERCP by reason of death due to the integration of ERCP with the Register of Associated Population (RAP). As far as the patients with skin malignancies (basal cell carcinoma) were de-registered after 5 years (expiration of the observation period), that indicator was also distorted so the patients with skin cancer (C44) were to be excluded from the calculation of the five year and more survival rate. In 2016, the five year and more survival rate (excluding skin malignancies, C44) was 48.7% (vs. 51% in 2015). The relatively low five year survival was due to the fact that 46% of patients with all types of cancers were diagnosed and started treatment at advanced stages (stages III-IV). The minimum five year survival was with liver, pancreas and lung cancers. Early diagnostics of these cancers remains an acute problem of modern oncology [6].

However, the cancer screening allowed increasing in 10 years the five year survival rate for localizations covered by screening tests: breast cancer, cervical cancer, and colorectal cancer.

Figure 5 shows the five year and more survival rate of patients with MN (breast, cervix and colorectal cancer) vs. the total number of patients registered in ERCP with these localizations.

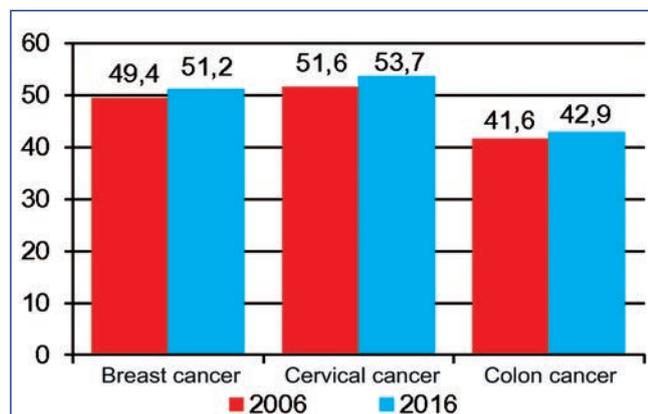


Figure 5 – Five year and more survival rate of patients with breast cancer, cervical cancer and colon cancer, in %.

Integrated Model of Cancer Care (IMCC) and the Coordination Council

In February 2016 the Ministry of Health of the Republic of Kazakhstan has adopted the Roadmap for the implementation of the Integrated Model of Cancer Care in the Republic of Kazakhstan for 2016 – 2019 which provided for the establishment of CCOs under the MoH of the RK and in each region, the approval of the regional roadmaps, the development of new indicators, the reform of cancer care by levels. Oncological assistance to the population of the RK was arranged on three levels taking into account the stage-by-stage provision of medical care and routing of patients. Necessary amendments were made to the Order of the MoH of the RK dated 02.08.2013 No. 452 «On approval of the Standard for the organization of provision of cancer care to the population of the Republic of Kazakhstan.» Methodical recommendations were developed for PHC physicians and district oncologists regarding the split of functional responsibilities by the levels of providing of cancer care; changes were introduced to the patient's route and the algorithm of screening.

In 2016, **the first level** of cancer care was supplemented by increase of the number of women's examination rooms – from 889 to 927, men's examination rooms – from 224 to 353; oncology cabinets – from 349 to 371, and mammology room – from 276 to 287.

In 2016, only 36 998 patients with primary MNs were detected. At the same time, the number of cancers detected passively, through personal encounter, has decreased to 80.1% (vs. 83.5% in 2015); active detection during screening has increased to 7.9% (5.6% in 2015) and during preventive examinations – to 12%. In 2016, 2 204 cases of cancer (of which, 895 cases of breast cancer (stage I – 39.1%), cervical cancer – 189 (stage I – 54%), colorectal cancer – 475 (stage I – 21.1%), prostate cancer – 412 (stage I – 38.8%), liver cancer and gastric cancer – 221 (stage I – 22.6%), hepatocellular cancer – 12 cases) were detected during cancer screenings.

By the end of 2016, the number of patients treated on the second level of cancer care amounted to 111 569 what was 1.3% more than in 2015. The coverage by specialized treatment was 86.9% (vs. 87.4% in 2015). The growth of ambulance technologies was more than 3.0%. 65.6% of patients were treated in 24-hour hospitals, and the rest 34.4% – in day hospitals. The Mangistau ROD has increased the volume of aid by 18.5%, and the Semey and South-Kazakhstan ROD – by 9.4%. West Kazakhstan ROD and the city of Almaty had the most notable decrease in 24-hour hospital care and increase in day hospital care. 54.8% of all the patients were treated in day hospitals in West Kazakhstan region, and 53.9% – in Almaty Cancer Center. The patients got 12.6% more of free cancer drugs vs. the same period in 2015. 15 483 505.9 Tenge were spent from the republican budget for the treatment of cancer patients, of them, 69.6% – for the purchase of chemotherapeutic agents, and 30.4% – for targeted drugs.

On the third level of cancer care, high-tech centres of radiological oncology (HTRO) in the cities of Astana, Almaty, Aktobe and Semey provided radiotherapy to cancer patients using the new modern TrueBeam STx linear accelerators. In 2016, 609 patients were treated in Almaty at KazIOR, 280 patients – at the Cancer Center of Astana (vs. 64 in 2015), 315 patients – at the ROD of Semey (vs. 7 in 2015), 251 patients – in Aktobe at the Medical Center of M. Ospanov West Kazakhstan State Medical University (vs. 29 in 2015), 272 patients – in the Karaganda ROD using the linear accelerator «Clinac-600» (vs. 265 in 2015). In 2016, the reference centres for immunohistochemistry (at KazIOR, Semey ROD and Karaganda ROD) have consulted more than 3 000 patients, introduced new methods for personalized cancer therapy (lung cancer, lymphoma, etc.), developed procedural protocols and medico-economic tariffs for high-tech methods, and approved a plan for highly specialized treatment in 2017. 9 technologies of high-tech medical services (HTMS) were excluded from the list of HTMS. 5 radiotherapy services were combined into one, as well as 3 methods for chemoembolization were combined into one service. A total of 25 HTMS technologies were approved for «Oncology and Therapy» profile. The proposals on effective and drugs were elaborated.

The staff is systematically trained to raise the level of professional training of cancer specialists. The deficit of personnel at all levels was reduced by 12%. The level of equipping with diagnostic equipment at the PHC level (in the context of screening – by 7%) and therapeutic and diagnostic equipment at the RD level was increased by 5%. In 2016, 186 specialists were trained in the priority areas of cancer care. In 2016, 20 outreach seminars were conducted in 9 regions, 833 specialists of primary health care were trained. On the

basis of the KazIOR, courses are underway to upgrade the skills of specialists in oncology, radiation therapy and radiation diagnostics, including with the involvement of foreign specialists. In 2016, 77 students started a 2-year residency program in those specialties; more than 60% of them represent the regions and plan to return to their places of residence after training.

Informatization of oncological service is going on – the integration of ERCP with all Kazakhstani health care information systems (the Register of dispensary patients, the Register of pregnant women and women of childbearing age, the Electronic register of inpatients, and etc.).

In 2016, CCO has conducted 19 meetings in the regions; local authorities have paid 28 visits.

The CCO achievements in 2016:

1. The share of combined positions in oncologists' offices was 36%: full timers – 230, part-timers – 129. There was a shortage of basic workers. The ratio of these workers to part-time doctors was: in Akmola region – 11 to 8, at the south of Almaty region – 9 to 7, in West Kazakhstan – 12 to 11, in Qostanay region – 13 to 8, in the city of Almaty – 18 to 14. The share of combined positions in mammologists' offices was 46.4%: full timers – 162, part-timers – 143. All regions had individuals who combined the positions of an oncologist and a mammologist. 161.5 positions of oncologists and mammologists were vacant in urban and district outpatient clinics all over the republic, with the largest deficit in the city of Almaty (19.75), the Almaty region (19.25), the Akmola region (18.75), East Kazakhstan (13.25), and Karaganda region (17.25). 36 persons were missing in Almaty region, 32 – in Akmola region, 29 – in East Kazakhstan, and 25 – in Karaganda region.

2. Many positions of inpatient doctors engaged directly in the treatment of patients in oncologic dispensaries (oncologists, radiologists, surgeons, chemotherapists) remain vacant – 51.75, of them, 10.5 – in Almaty ROD, 5.5 – in the Medical Center of M. Ospanov West Kazakhstan State Medical University in Aktobe, 5.0 – in Zhambyl ROD, and 5.0 – in Qostanay ROD. There are 19.25 vacancies for outpatient specialists, of them, 6.0 – in Karaganda ROD, 3.25 – in Qostanay ROD, 2.5 – in Mangistau ROD, and 2.0 – in Pavlodar ROD. It is necessary to consider providing social benefits for the residency graduates in order to attract young specialists into these regions.

3. The inspection visits of local authorities have revealed certain problems in the interaction of the cancer services and the regional PHCs: breaches of patient's routing at all levels; the lack of continuity in the transmission of information between levels; insufficient knowledge of regulatory acts, duplication of functions of examination and medical rooms (the similarity of functions of urological offices and men's examination rooms); low level of practical skills of the staff of pre-medical rooms in the context of oncological examination of visual localizations; the work of mobile medical complexes has not been fully organized. It is necessary to strengthen the connection between the cancer service and the PHC specialists in the regions, to reorganize the oncologists' and mammologists' offices, and to continue training the staff of the examination rooms.

4. The MoH has received proposals for updating the National Screening Program for 2011-2015 according to the recommendations of WHO experts and the analysis of the program outcome. The program of cancer screening shall be updated.

5. The construction of specialized buildings and premises for oncological organizations remains an issue. Oncologic dispensaries of Mangistau region, Almaty region, and

Kyzylorda region need separate buildings. This question is under study in the relevant Akimats.

6. The sources of ionizing radiation need reloading, the fleet of beam devices shall be updated and the issue of service maintenance of equipment shall be resolved in KazIOR and the RODs.

7. The pathologic laboratories in Aktau, Zhambyl, Atyrau and Aktobe regions have no telepathology equipment. Histological studies in Zhambyl region, Atyrau region, North Kazakhstan region, Akmola region are not standardized. These issues shall be resolved during 2017-2018.

8. All RODs have problems in ordering drugs – they have stock of expensive drugs for more than 3 months. By the end of 2016, the accounts payable for the RK amounted to 1 485 534.9 Tenge what was 25.1% less than in 2015. The accounts payable referred to Almaty and Mangistau RODs and Astana city oncologic dispensary. This work shall be continued: control over the rational administration of targeted drugs shall be strengthened, the responsibility shall be assigned to the regional (RODs) and interregional levels (HTMS), the cases shall be considered at the regular meetings of the executive staff or commission head by KazIOR; complex clinical cases of diagnosis and treatment shall be discussed at the republican level using telemedicine, telepathology, selector communication; the need for drugs shall be checked twice a year after every six months taking into account the consumption and the stock.

Conclusion. The introduction of the Integrated Model of Cancer Care in Kazakhstan and the functioning of the Coordinating Council in 2016 allowed fulfilling the two main indicators of cancer care under the State Program for Healthcare Development in the Republic of Kazakhstan «Densaulyk» for 2016 – 2019: to decrease mortality from MN to 84.9 per 100 thousand of population (vs. 89.8% in 2015) and to raise the share of early diagnostics of stages I-II to 58.9% (vs. 57.3% in 2015). At the same time, the existing shortcomings and problems in the cancer service were revealed and the ways for solving them were outlined for the next years.

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