

## THE RESULTS OF THE SCREENING PROGRAM AS THE BASIS FOR TAKING MANAGEMENT DECISIONS IN HEALTHCARE

Kargabaev E.Zh.

*Unitary Enterprise based on the Right of Economic Management 'Almaty Regional Oncological Dispensary' of Health Department of Almaty Region, the Republic of Kazakhstan, e-mail: estore.k@mail.ru*

---

The data on the incidence of malignant tumors in the Republic of Kazakhstan and the Almaty region are presented. The analysis of the National Screening Program implementation in the Republic and the Almaty region has been carried out. The proposed activities for the timely detection of oncopathology and reducing the incidence of malignant tumors. Worldwide, there is an increase in the incidence of oncological diseases, each year oncopathology is diagnosed in more than 14 million people, which is associated with an increase in life expectancy and an improvement in the diagnosticating quality. Mortality from oncological diseases in Kazakhstan rates second in the structure of the population mortality after cardiovascular pathology. the detection of cancer through mass screening of the population – screening is the main element in the issue of cancer early diagnosticating. The purpose of screening is the early active detection of asymptomatic cancer and its treatment. For early detection of diseases among Kazakhstanis, the National Screening Program is being implemented, which includes 7 types of preventive medical examinations of target population groups. A tumor diagnosed at an early stage can be cured completely. At the later stages, when there are already symptoms of the disease and the tumor expansion is possible, then the treatment of the disease becomes more complicated. In Kazakhstan, an increase in detectability is noted in the course of screening studies carried out to detect oncological diseases at the early stages. A positive dynamics indicates an improvement in the situation in general and indicates sufficient effectiveness of the screening programs.

---

**Keywords:** public health, morbidity, screening, oncopathology, prevention, early diagnosis of cancer

### **Materials and research methods**

Indicators of the oncological service of the Republic of Kazakhstan and the Almaty region, data on the incidence of malignant tumors, the results of the screening program, data analysis, statistical processing of indicators.

### **Research results and discussion**

A set of measures to protect health and prevent the occurrence of diseases is implemented within the framework of the implementation of the State Healthcare Development Program 'Densaulyk' for 2016-2019 by the Ministry of Health of the Republic of Kazakhstan. For early detection of the diseases among Kazakhstanis, the National Screening Program is being implemented, which includes 7 types of preventive medical examinations of the target population groups. These are examinations of the children's population, which are held annually at the age under 18; identification of behavioral risk factors (tobacco smoking, alcohol use, low physical activity, unhealthy diet) – carried out once in 2 years among the population aged 30-70 years; cervical cancer screening is conducted once in 4 years, women aged 30-70 are subject to it; breast cancer screening, which is carried out once in 4 years, is for women aged 40 – 70; screening of arterial hypertension, coronary heart disease and diabetes mellitus is carried out once in 2 years, men and women aged 40 – 70 are subject to it. Coverage of about 25 percent of the cohort subject to is provided. The Government has approved the

Comprehensive Cancer Control Plan, which envisages a phased coverage of the population by screening up to 70 percent within the next 5 years [1].

The annual coverage of screening studies for early detection of cancer is more than 2 million men and women of the target groups aged 30 to 70 years. Further, to prevent infectious diseases in the country, target groups of the population are immunized against 21 infectious diseases. By the end of 2017, the target group coverage was 97%, with the WHO recommendation of 95%.

The growth of knowledge in cancer diseases, the experience gained over the past decades, made it possible to single out four leading lines in the world anti-cancer strategy: prevention, early diagnosticating, treatment and pain management. There is an increase in the oncological diseases' incidence worldwide, each year oncopathology is diagnosed in more than 14 million people, which is associated with an increase in life expectancy and an improvement in diagnosticating quality. [2].

Cancer is one of the leading causes of death worldwide. According to WHO, in European countries cancer mortality ranks second after deaths from circulatory system diseases. Worldwide, 9.6 million people die from cancer annually. By 2030, experts predict an increase in cancer mortality to 13 million [3].

According to the World Health Organization (hereinafter, the WHO), cardiovascular and oncological diseases together caused 71 % of deaths in the European countries.

The increase in incidence will occur mainly due to lung and colorectal cancer in men and breast and cervical cancer in women.

The global oncological community is pinning its hopes on cancer prevention. The second most important and promising issue is the early diagnosticating of cancer. In the issue of cancer early diagnosis, the main element is the detection of cancer through mass preventive examination of the population – screening. Screening implies the use of various research methods, allowing to diagnosticate a tumor at an early stage, when there are no symptoms of the disease. The purpose of screening is the early active detection of asymptomatic cancer and its treatment. A tumor diagnosed at an early stage can be completely cured. At the later stages, when there are already symptoms of the disease and the tumor expansion is possible, then the treatment of the disease becomes more complicated.

The success of screening programs aimed at early detection of tumor and premalignancies depends on many factors, such as the biological and clinical features of the tumor process, screening methods, their sensitivity and specificity, selection of screening efficiency criteria, reduction in mortality, increase in life expectancy, reduction in the number of advanced cancer cases and, finally, the relationship between screening cost and efficiency.

There is a consensus around the world that screening research is one of the fundamental principles of early detection of diseases. Circulatory system diseases are an important global public health problem, ranking first in many economically developed countries with economies in transition, including Kazakhstan, in terms of their contribution to morbidity and mortality. Despite the continuous improvement of methods of diagnosis and treatment of cardiac patients, cardiovascular diseases are the main cause of early disability of the population.

In 2008, screening for early detection of diseases of the circulatory system (DCS: arterial hypertension, coronary heart disease) represents about 52% of the mortality structure of the population of Kazakhstan, precancerous and tumor diseases of the breast, cervix (breast cancer (breast cancer) and cervical cancer (RSM) in the structure of malignant neoplasms among the female population occupy 2 and 3 rank places), diabetes mellitus of the second type.

The National Screening Program for early detection of diseases was introduced in 2011. Mortality from malignant neoplasms ranks second in Kazakhstan (12.1%), from which about

17 thousand people die annually. According to the analysis of the current situation of the State Health Development Program "Health" in 2016-2019 for the period of implementation of the program "Healthy Kazakhstan" marked by a low effectiveness of the National Screening Program (detection rate is 3.4% among the adult population, to 16.4% among children), the effectiveness of screening is not monitored, based on the recommendations on the effectiveness of early detection of cancer and their successful treatment.

In Kazakhstan, screening examinations are carried out within the framework of the guaranteed volume of free medical care by health care entities licensed for this type of activity. Most of the oncological diseases occurring in Kazakhstan can be diagnosed in the early stages (tumors of the breast, skin, cervix, esophagus, stomach, liver, colon and rectum, prostate) through screening programs. Accordingly, the reduction of mortality from tumors of this localization can be a reserve for reducing the overall mortality from cancer.

Most of the oncological diseases that occur in Kazakhstan can be diagnosticated at the early stages (breast tumors, skin tumors, cervix tumors, esophagus, stomach, liver, colon and rectum, prostate gland tumors) by conducting screening programs. Consequently, the reduction of mortality from tumors of this localization can be a reserve for reducing the overall mortality from oncological diseases.

Early diagnosticating of oncology is one of the main goals of preventive medical examination, and it begins with its first stage – filling out a questionnaire, the answers to which can be used to suspect the presence of some malignant tumor. All this allows us to identify oncology at the early stages and to immediately begin treatment.

Annually during the preventive clinical examination, cancer and precancerous diseases are detected in people who are completely free from their manifestations. Detection of oncological diseases at early stages allows to early initiate treatment, which, in turn, will bring good results and increase the chances of recovery [6].

According to the analysis of indicators of oncological service in the republic, it was detected that the incidence rate of malignant tumors was 199.1 per 100 thousand population compared to 207.7 in 2015. The highest incidence rates of malignant tumors are observed in North Kazakhstan (337.8), Pavlodar (302.3), Kostanay (299.8), East Kazakhstan (297.5), Karaganda (289.8) regions, which is explained

by an increase in detectability in the course of screening studies aimed at detection of oncological diseases at the early stages [4].

The mortality rate from malignant tumors according to the Committee on Statistics in 2016 in the republic was 88.79 against 92.0 per 100 thousand people for the same period of 2015 [4].

Currently, the ‘Comprehensive Plan for fighting cancer diseases in the Republic of Kazakhstan for 2018–2022,’ is implemented in the country, and it is approved by the Decree of the Government of the Republic of Kazakhstan No. 396 dated 29.06.2018. [5]. Road maps and indicators of the of medical assistance quality have been developed as part of the implementation of an integrated model of medical assistance for oncological diseases, and the Coordination Council has been approved.

Based on 2016 results, additional oncological (423), mammology rooms (304), women’s (1,725) and men’s (756) patient examination rooms in primary healthcare institutions were opened, the actualization of screening programs was suggested considering the opinion of regions and international experts, the number of identified malignant tumor cases increased up to 7.9% due to screening procedures.

The level of equipping with diagnostic devices has increased at the level of primary healthcare institutions in terms of screenings by 7%, with medical and diagnostic equipment at the level of oncological dispensaries – by 5%.

The cohort of oncological patients registered in the dispensary and the number of newly diagnosticated cases of malignant tumors tend to increase. Currently, 163,080 cancer patients are registered with oncological institutions (in 2015, -156,280).

Mortality from oncological diseases in Kazakhstan rates second in the structure of the population mortality after cardiovascular pathology. In 2016, 15,763 people died, of whom 48.3% are persons of working age.

Since 2011, timely diagnostinating has grown from 49.5% to 58.5% in 2016. As a result, a decrease in the share of neglected cases is observed – late diagnostinating fell from 14.4% to 11.1% in 2016. The proportion of newly detected patients with stage I diagnosed increased in 2016 to 21.8% from 19.9% in 2015. Positive dynamics indicates the improvement of the situation as a whole and shows sufficient effectiveness of the screening programs.

The positive dynamics in the context of examination rooms and oncology consulting rooms made it possible to increase the time-

ly diagnostinating of cancer. In 2016, 36,998 patients with primary malignant tumors were identified, while the number of cancers detected passively by self-referral decreased to 80.1% and active screening detection increased due to screening to 7.9%, according to the results of routine examination – increased to 12.0%.

The annual coverage by screening studies aimed at the early cancer detection is more than 2 million men and women of the target groups in age from 30 to 70. The proportion of malignant tumors at the early stages is increasing, the relative share of detected breast cancer at stage I-II was 94.6% in 2016 (2015 – 92.9%), the relative share of stage I-II colorectal cancer increased to 82.9% in 2016 (2015 – 81.6%).

In 2016, 2,204 cases of cancer were detected as a result of cancer screenings: breast cancer 895 (stage I – 39.1%), cervical cancer 189 (stage I – 54%), colorectal cancer 475 (I stage – 21.1%), prostate cancer 412 (I stage – 38.8%), esophagus and stomach cancer 221 (I stage – 22.6%), hepatocellular liver cancer – 12.

For raising public awareness on the issues of oncological alertness and early diagnostinating of diseases, the ten-day campaigns are held aimed at the prevention of cancer by raising the population’s awareness. Oncological specialists in primary healthcare institutions hold ‘open doors’ days as part of these ten-day campaigns.

3,687 core health schools, 101 anti-tobacco centers, 87 youth health centers are functioning in primary care organizations of the Republic to raise public awareness, the main purpose of which is to teach healthy citizens to preserve health resources and to educate patients in self-control and self-management of their diseases, skills in prevention and early detection of oncological diseases.

The analysis of oncological diseases indicates an increase in cases due to improved diagnosis, and primary detectability. Out of newly diagnosticated patients, 5,704 (16%) were diagnosticated during preventive examinations of the population, where the share of 80.6-96% of cases contained patients with detected disease stage I and II. Among all localizations during the occupational health examinations, 39.5% of cases accounted for malignant tumors of the cervix, 30.8% – for malignant tumors of prostate gland, 29.8% – for breast cancer.

Breast cancer accounts for 10% of the world’s cancer incidence, and there is no population in which the risk of developing breast cancer is really minimal. The risk of developing

breast cancer in women increases with age. About 77% of cases of breast cancer in women are detected after 50 years. In women younger than 30 years, this form of cancer occurs in 0.3 % of cases [6].

Thus, in the Almaty region in 2018, the total number of examined was 233,475, of which 47,605 cases were detected as pathological, where 95 cases were malignant tumors. Due to the early detection and improvement in the quality of treatment in accordance with the standards, a decrease in mortality from cancer pathology is observed. The 5-year survival rate in 2018, increased by 1.1 % compared with the previous period, due to implementation of the state program on cancer early detection [7].

The incidence rate in Almaty region from 2014 to 2018, decreased from 145.6 to 123.1 cases per 100 thousand people. Mortality from a malignant tumor since 2014 has decreased by 10.9 % (in 2014, 58.5 cases per 100 thousand people, and in 2018 – 49.7). The share of early diagnosticating from 2014 increased from 52.7 to 58.9 cases in 2018. The share of late diagnosticating from 2014 decreased from 14.1 to 11.7 cases in 2018. One-year mortality from 2014 reduced from 29.1 % to 20.8 % in 2018. Of all patients treated from 2014 to 2018, 6-10% are patients with benign and pre-cancerous diseases.

Analysis of the screening work for 2018 in Almaty region indicated that 52,535 women underwent mammography, of which breast cancer was histologically verified in 58 cases. 68911 women underwent cytological screening, in 15 of them cervical cancer was histologically verified. 59,081 hemoccult tests were performed for colorectal screening, and colorectal cancer was histologically verified in 23 cases.

Preventive work among the adult population is well managed. In total, in 2018, 287,005 people aged 65 and older, applied for assistance to polyclinic, of which 238,254 passed through patient examination rooms. Patient examination rooms efficiency accounted for 2,920 cases of identified pathologies. [8].

### Conclusion

To improve the accessibility of oncological assistance to healthcare institutions pro-

viding oncological assistance to the population of the Republic of Kazakhstan, the efficiency of functioning examination rooms shall be enhanced, the number of which should correspond to the number of existing Primary Health Care Institutions. In the first turn, this is the work with primary medical and sanitary staff, when already at the level of the district physician the first signs of cancer are determined, after which the patient is referred for a more detailed examination to a specialist physician. Training of specialists is also one of the tasks, the solution of which will speed up the stages of the patients' examination and reduce the burden on working oncologists. Various educational events are organized for Primary Health Care specialists on a regular basis, for example, 'Pink Ribbon', during which women at various medical institutions undergo an unscheduled examination of specialists such as a mammologist, oncologist, gynecologist, and self-diagnosis of breast pathologies.

In general, the inculcation of healthy lifestyle to the population, raising non-smoking, no-alcohol abuse attitude in the population is one of the main ways to combat cancer.

### References

1. 'Densauylk' State Health Development Program for 2016-2019 of the Ministry of Health of the Republic of Kazakhstan.
2. Axel E.M. The state of cancer assistance to the population of Russia and the CIS countries in 2006 / E.M. Axel // Bulletin of Russian Cancer Research Center after N.N. Blokhin RAMS. – 2008. – V. 18. No.2 (app. 1). – P. 8–51.
3. Holland W.W., Stewart S., Masseria C. Basics of Screening policy in Europe. World Health Organization, 2008, on behalf of the European Observatory on healthcare systems and policies, 76 p.
4. Indicators of the oncological service of the Republic of Kazakhstan for 2016. Statistical materials. – Almaty, 2017.
5. Decree of the Government of the Republic of Kazakhstan No. 395 of 29.06.2018. 'Comprehensive plan for fighting cancer in the Republic of Kazakhstan for 2018-2022'.
6. Musina D.S., Samarova U.S., Rakhimzhanova F.S., Karabaev K.S., Ibraev S.E. Assessment of the status of the screening program for the early detection of breast cancer in Pavlodar region / f. Medicine. No. 7 (181). 2017. P. 14–17.
7. Early diagnosticating of cervical cancer at the level of primary health care. Cytological screening: Methodological recommendations / Eds. D.M.S. Nurgaziyev K.Sh. – Almaty, 2012.
8. Shegirbaeva K.B., Kargabaev E.Zh., Zhunussova M.M. The impact of screening studies on the reduction of cancer incidence in the Almaty region // Kyrgyzstan healthcare. – 2018. – No. 2. – P.74–80.