

Dedicated to the 30th Anniversary of Independence of the Republic of Kazakhstan

## Kazakhstan Healthcare System Within Independence: Main Stages and the Perspectives of the Development

Assiya Turgambayeva <sup>1</sup>, Serik Ibrayev <sup>2</sup>, Olzhas Yeaskendirov <sup>3</sup>

<sup>1</sup> Head of the Department of public health and management, Astana Medical University, Nur-Sultan, Kazakhstan.

E-mail: tak1973@mail.ru

<sup>2</sup> Professor of the Department of public health and management Astana Medical University, Nur-Sultan, Kazakhstan.

<sup>3</sup> Doctor-methodologist of the Medical Centre Hospital of President's Affairs Administration of the Republic of Kazakhstan, Nur-Sultan, Kazakhstan. E-mail: yeaskendirov.o@mail.ru

### Abstract

Significant changes have taken place in all spheres of activity, including in the field of healthcare over the 30 years of independence. Medical and demographic indicators, health indicators, their structure, personnel and other resources show the dynamics of past and current changes to determine future trends. This study was performed to analyze the development path of the republic's healthcare system over the years of independence. We conducted a review of program and conceptual documents, in particular "The Concept of further development of healthcare of the Republic of Kazakhstan", approved by the Decree of the Government of the Republic of Kazakhstan dated May 25, 2000 №790, as well as state programs for the development of healthcare.

The comprehensive measures taken have made it possible to improve medical and demographic indicators. Resource-saving, stationary substitution technology has been developed. The material and technical base of medical organizations is being improved, healthcare facilities fitted with modern equipment have been put into operation.

A competitive environment is being formed among medical service providers. A stable epidemiological situation has been ensured for most infectious diseases with a high 95% coverage of immunization against 11 vaccine-controlled infections.

The volume of the journal article does not allow analyzing all the achievements, shortcomings and problems of healthcare over the years of independence. However, the trend in the development of the healthcare system allows us to conclude that the domestic industry in the future will take its rightful place in the global healthcare system and the population of the country will be provided with medical care that meets the international standard of advanced countries.

**Keywords:** independence, stages of development of healthcare, government programs, health indicators.

Over 30 years of development of independent Kazakhstan, dramatic changes have taken place in all sectors, including healthcare. In accordance with the basic law – the Constitution of the country, citizens of the republic are provided with a guaranteed amount of free medical care, the volume and availability of which is growing every year [1].

The socio-economic situation at the initial stage of the country's independence could not but affect the health of the population and the health system. The health care reform, the need for which stemmed from the requirements of the transition to market relations, was carried out in the crisis conditions of the economy, with significant underfunding, which ultimately led to a reduction in the provision of the population with medical personnel and a bed fund, unjustified closure of a number of medical facilities. The result of this was a decrease in the availability of medical care, a deterioration in its quality. A step back was also the rejection of the progressive system of financing the industry - compulsory medical insurance (1999), which significantly complicated the economic situation in the domestic healthcare.

In these conditions, there is a need to determine a strategy for further development based on improving

the existing system, finding new approaches and models of industry management, moving from costly methods of work to the rational use of funds allocated by the state, increasing responsibility, as well as the level of remuneration of industry workers for the results of its activities. A certain role in the choice of the development strategy was played by program and conceptual documents, in particular the "Concept of further development of healthcare of the Republic of Kazakhstan", approved by the Decree of the Government of the Republic of Kazakhstan dated May 25, 2000 №790 [2], as well as subsequent state programs adopted every 5 years [4,5,8,10-12].

The healthcare industry, like the whole country, has gone through a difficult stage of formation and development over the years before choosing its own path, taking into account the specifics and resource capabilities. We tried to analyze the development path of the republic's healthcare system over the years of independence\* (Table 1).

Table 1 - The main stages of development of the healthcare system of Kazakhstan for 1991-2020

\* The allocated years are conditional, without clear boundaries of the stages of health development

Years	Stages	Results
1991-1994	Development of the Soviet model of healthcare	Reduction in the number of healthcare organizations, decreasing in the availability and level of medical care provided to the population. In 1992 the first concept of healthcare reform was adopted.
1995-1998	Introduction of the budget-insurance model of healthcare	Promotion of market relations, the emergence of buyer and seller relations; differentiated remuneration depending on the volume and quality of medical care; protection of patient rights in connection with the adoption of the first law on compulsory medical insurance (1996) [3].
1998-2004	The State program of the Republic of Kazakhstan "People's Health" [4]. Introduction of program financing on a budgetary basis	Improvement of the healthcare management system, transformation of the medical care system into a multi-layered and multilevel one, changing the system of financing and economic relations in healthcare, reforming the system of training medical personnel, strengthening the material and technical base of healthcare, creating a competitive environment in the provision of medical services. Focus on the final result depending on the allocated funds.
2005-2010	State program of healthcare reform and development of the Republic of Kazakhstan for 2005-2010 [5]. Formation of new financial mechanisms for healthcare management in connection with the creation of a single payer at the national level.	The Code of the Republic of Kazakhstan "On the Health of the People and the Healthcare System" was adopted [6]; the network of state medical organizations was typified and standardized, the state network standard was approved; protocols for the diagnosis and treatment of diseases were introduced; a system of sectoral and independent quality expertise was created; the development of telemedicine and mobile medicine in the health care of rural areas. Development and implementation of National Health Accounts (2006). Improving financing, transparency of cash flows. In 2010, the volume of healthcare financing for the first time amounted to 3.2% of Gross domestic product. Consolidation of the budget at the regional level, since 2010 - at the republican level for the provision of inpatient and inpatient replacement care.
2008-2011	Development of the material and technical base of healthcare. Investment project "Construction of 100 schools, 100 hospitals" [7]	Strengthening the material and technical base of healthcare. Introduction of public-private partnership in the field of construction of medical facilities, fitted with medical equipment.
2011-2015	The state program of healthcare development "Salamatty Kazakhstan" [8]. Implementation of the Unified National Health System (UNSS)	Improving the health of citizens of Kazakhstan to ensure sustainable socio-demographic development of the country. Improving and increasing the volume of healthcare financing. A healthcare system has been created based on the principles of the patient's free choice of a doctor and a medical organization, the formation of a competitive environment and transparency in the process of providing medical services. Rationalization of the use of health care resources and their direction to the development of inpatient and primary health care, rehabilitation and prevention of diseases. Transfer of the introduction of high technologies. Introduction of the Stimulating component of the comprehensive per capita standard and differentiated remuneration of health workers. Development of independence of the Ministry of Defense (management training, transfer to Right of economic management, Joint-Stock Company). Development of a unified health information system.
2015-2016	Preparatory stage for the introduction of Compulsory Social Medical Health Care [9]	Adoption of the law "On Compulsory social health insurance" [9]; improvement of the regulatory framework, health information systems; carrying out information and explanatory work among the population.
2016- 2019	The state program "Densaulyk" for 2016-2019 [10]. Development of digitalization and public health	Development of a new model of Guaranteed volume of free medical care. Preparatory work on the introduction of compulsory social health insurance. Approval of a new state network standard and a long-term plan for the development of healthcare infrastructure. Transition to paperless, digital management of medical records in healthcare organizations (from 2019). Gradual increase in salaries of medical workers. Development of public health, integration of all health services around the needs of the population on the basis of modernization and priority development of primary medical and social care
2020-2025	The State program of healthcare development for 2020-2025 [11], transformed in 2021. To the National project "Healthy Nation" [12]. Introduction of the compulsory social health insurance system.	Introduction and improvement of the compulsory health insurance system. Development of the concept of the "State Program for improving public health for 2020 - 2025" [11], and a new version of the draft Code "On the Health of the people and the healthcare system". Adoption of the new Code [6]. Large-scale fight against the pandemic of coronavirus infections. Further development and improvement of the country's healthcare system.

The healthcare system at the initial stage was characterized by structural and institutional features of the model of the state system with strict centralized budget planning with deteriorating financing.

The creation of a new statehood with changes in the political and economic system, the transfer of branches of the national economy to market rails could not but affect the state of health and public health of the country. In order to rationalize the use of available resources, a number of reforms have been carried out, which have found their implementation in state

programs aimed at optimizing the network and structure of healthcare, efficient spending of financial resources and improving the availability and quality of medical services.

In the early years of the country's sovereignty, good medical and demographic indicators were noted: a relatively high birth rate and low mortality led to an increase in natural growth rates [13,14]. At the same time, maternal and infant mortality rates remained high (Table 2).

Table 2 - Medical and demographic indicators of the Republic of Kazakhstan for 1991-2020

Indicators	1991	1995	2000	2005	2010	2015	2020
Life expectancy	67,6	63,5	65,5	65,91	68,41	71,95	73,2
Birth rate (per 1000 population)	21,5	17,5	14,9	18,42	22,73	22,69	22,8
Total mortality (per 1000 population)	8,2	10,7	10,1	10,37	9,00	7,47	8,7
Natural growth	13,3	6,8	4,8	8,05	13,7	15,22	14,1
Maternal mortality (per 100 thousand live births)	67,2	77,3	60,9	40,5	22,7	12,8	36,5
Infant mortality (per 1000 live births)	27,3	27,0	18,8	15,15	16,54	9,37	7,79

The comprehensive measures taken have made it possible to improve medical and demographic indicators. Thus, only during the period of implementation of the State program "Salamatty Kazakhstan" [8] there was a decrease in the total mortality of the population by 15.3%, maternal mortality - by 1.9 times, infant mortality – by 1.7 times. The decrease in maternal, infant and child mortality rates, as confirmed by the Interdepartmental Group of UN

Agencies, allowed Kazakhstan to achieve the 4th and 5th Millennium Development Goals [10].

Over these years, the number of excess hospital beds has decreased more than 2 times, respectively, the provision of beds for round-the-clock hospital organizations has decreased from 136.4 to 65.6 per 10,000 people (Figure 1).

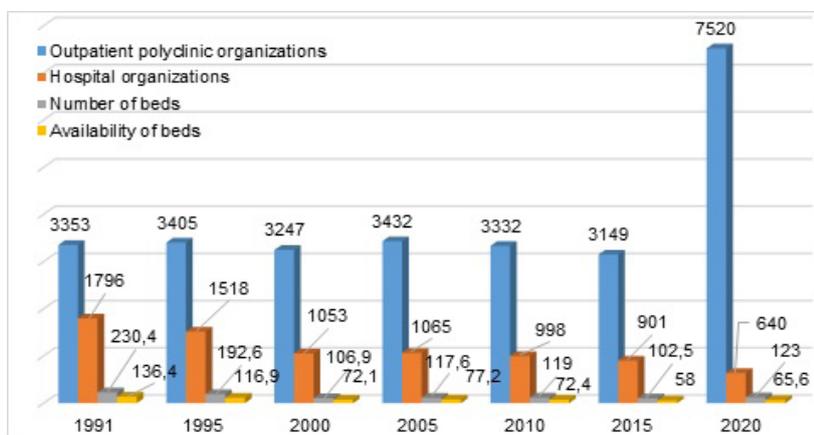


Figure 1 - Healthcare network and structure

At the same time, resource-saving, stationary substitution technology has been developed [13,14]. In general, more than 1/3 of inpatient patients were treated under DS conditions. This has led to significant budget savings.

The material and technical base of medical organizations is being improved, healthcare facilities equipped with modern equipment have been put into operation. In the first 25 years of independence alone, 1312 healthcare facilities were built and commissioned in Kazakhstan at the expense of the state budget, including 8 medical research centers, 32 specialized medical centers, 176 hospitals, 144 polyclinics, 907 outpatient clinics and 45 specialized facilities (blood centers, pathology bureaus, etc.). Of the total number

of medical facilities, 87% are organizations providing primary health care. Such large medical organizations as the National Scientific Center for Motherhood and Childhood, the Republican Children's Rehabilitation Center, the Republican Diagnostic Center, the National Center for Neurosurgery, the National Scientific Center for Oncology and Transplantation, the National Scientific Cardiac Surgery Center, etc. have been based, on the basis of which high-tech assistance is provided at the level of international standards.

The optimization of the healthcare network and structures continued. In 2018-2019 alone, 80 hospitals were combined into 26 with an increase in their average capacity to 415 beds. In general, over the years of independence, the number of hospital organizations

has decreased by almost 3 times, and outpatient organizations have increased by 2 times.

As part of the implementation of the Electronic health system, a competitive environment is being formed among medical service providers. As a result of ensuring equal conditions, the share of private medical organizations has increased to 48%. State medical organizations have expanded their independence by transferring to the status of organizations on the right of economic management with supervisory boards. New payment methods have been introduced, focused on the final result.

Standardization work continues in accordance with international requirements: diagnostic and treatment protocols, algorithms, standards of specialized services are being improved. Quality management components have been consistently introduced: the system of accreditation of medical organizations, internal audit, independent assessment of knowledge and skills. The introduction of an integrated model of the organization of medical care has begun. As a result of the measures taken to prevent the disease, there is an improvement in the main indicators of morbidity of the population, especially among infectious, non-communicable and socially significant diseases.

The efforts made have made it possible to ensure a stable epidemiological situation for most infectious diseases with a high 95% coverage of immunization against 11 vaccine-controlled infections. In 2012, World Health Organization recertified Kazakhstan as a polio- and malaria-free country. There is a decrease in mortality from diseases of the circulatory system, oncological diseases, injuries and tuberculosis, as well as from many other diseases.

However, the appearance of coronavirus infection in all countries of the world at the end of 2019 forced the adoption of urgent measures to combat the

pandemic. The conversion of beds of existing medical organizations, the construction of infectious diseases hospitals, training of specialists and vaccination among the population has begun. A Sanitary and Epidemiological Control Committee has been established [15], and the laboratory service is being modernized. At the beginning of 2021, a total of 19,089 beds were deployed in the republic, including 1,738 intensive care units, which were equipped with 5,222 artificial lung ventilation device.

There are more than 248 thousand medical workers working in the country, including 72,877 doctors, 175,705 average medical workers. The provision of doctors in Kazakhstan is 39.6, in the Organization for Economic Co-operation and Development (OECD) - 33, the provision of average medical personnel in Kazakhstan - 95.5, in the OECD - 91 per 10 thousand populations [16]. At the same time, there is an imbalance in staffing between the levels of medical care (a deficit at the level of primary health care and rural areas, a surplus at the hospital level). Staff training for the healthcare system is conducted in 13 universities and 83 medical colleges. The annual graduation of universities is more than 3 thousand specialists. Universities have introduced the practice of attracting teachers and managers from major foreign medical universities, together with which strategic partnership and academic mobility are being implemented. Measures are being taken to improve the status of medical workers and ensure professional protection of their activities.

According to the implementation of 100 concrete steps of the institutional reforms of the Head of State [17], the authorized body is taking measures to manage the quality of medical care and create a Joint Quality Commission (JQC) [18], introduce compulsory social health insurance (CSHI) [9], as well as the development of management and corporate governance in healthcare.

Table 3 - The main causes of loss of life (YLL) as a result of premature mortality in the age group of 20-64 years

The main causes	Place in 2019	Place in 2010	The position of the reason	Measurements for the period
Liver diseases	1	5	+4	9,0%
Other heart diseases	2	1	-1	-39,4%
Coronary heart disease	3	2	-1	-39,8%
Cerebrovascular diseases	4	3	-1	-31,6%
Transport accidents	6	7	+1	-16,7%
Intentional self-harm	7	6	-1	-31,7%
Malignant neoplasms of the digestive organs	9	8	-1	-11,6%
Chronic diseases of the lower respiratory tract	10	15	+5	78,8%
Other disorders of the nervous system	11	25	+14	327,2%
Flu and pneumonia	12	14	+2	25,1%
Malignant neoplasms of the respiratory and thoracic organs	13	13	0	-21,3%
Diabetes mellitus	14	26	+12	155,4%
Accidental poisoning and exposure to toxic substances	15	9	-6	-50,8%
Attack	17	12	-5	-45,6%
Tuberculosis	25	11	-14	-78,5%

\*\* - the following ICD-10 blocks are excluded: "all other external causes of death", "inaccurately designated and unknown causes of death"

The introduction of CSHI will be accompanied by bringing the financing of the healthcare system up to OECD standards based on the prioritization of the following areas [19,20]: the development of public health services, at the Primary Health care level - an increase in the number of general practitioners and the expansion of outpatient drug provision, an increase in salaries of medical workers, the expansion of rehabilitation services, palliative care and nursing care, the improvement of tariffs based on clinical cost groups, taking into account international practices of their calculation.

Independent experts of the International Bank for Reconstruction and Development generally gave a positive assessment of the results of the implementation of previous state programs. The ongoing reforms in the healthcare system and the improvement of the welfare of the population of Kazakhstan have reduced the burden of Non-communicable diseases over the past 10 years (from 2010 to 2019, Table 3).

The country pays constant attention to improving the provision of medical care. The volume of financing of the industry has grown 6.3 times in the last 10 years alone, and more than 1.5 times since the introduction of the CSHI system.

The life expectancy of the population in the republic tends to increase. According to the report of the Global Competitiveness Index for 2020, Kazakhstan took the 42nd place in the ranking among 140 countries, rising by 7 places in comparison with the results of the rating last year [21]. According to the human development index for 2020, the republic entered the group of countries with a high level of development, taking 51st place out of 189 countries, improving its position (0.825) and increasing the value of the republic by 19.6% since 1990. According to the rating of the effectiveness of healthcare systems compiled by Bloomberg, according to the results of 2020. Kazakhstan also took 44th place ahead of Russia, Azerbaijan and other Commonwealth of Independent States countries [22].

As part of the implementation of the instructions of the President of the Republic of Kazakhstan Tokayev K.K., given in the Address to the People of Kazakhstan "Kazakhstan in a new reality, time for action" dated September 1, 2020 [23], the Ministry carried out the transformation of the State Program for the Development of Healthcare of the Republic of Kazakhstan for 2020-2025 into national projects. At the same time, the national project: High-quality and affordable healthcare for every citizen "Healthy Nation" [12] will be a consistent receiver of the State Program [11], the key national indicator of which is: "Increasing the life expectancy of the population of the Republic of Kazakhstan to 75 years by 2025".

In order to implement the main directions of the National Project, the healthcare system should focus its

efforts on the following areas: the first direction is related to increasing the availability and quality of medical care. The implementation of the first direction of the national project will increase the satisfaction of the population with the quality of medical services up to 80%, the reference and satellite villages will be 100% provided with primary health care organizations; the volume of medical care at the outpatient level will be expanded within the framework of the Guaranteed volume of free medical care and the CSHI system.

The national project consists of 4 directions: the first direction is related to improving the availability and quality of medical care. The implementation of the first direction of the national project will increase the satisfaction of the population with the quality of medical services up to 80%, support and satellite villages will be 100% provided by primary health care organizations; the volume of medical care at the outpatient level will expand within the framework of the Guaranteed volume of free medical care and the CSHI system.

The second direction is designed to form a modern system of epidemiological forecasting and response. The Law of the Republic of Kazakhstan "On Biological Safety" [24] has been developed and will be adopted, as well as scientifically based systems for forecasting and responding to national and global risks will be introduced. In addition, the share of sanitary and epidemiological examination laboratories that meet international standards in the field of biosafety and conformity assessment will increase from 61 to 90% [25].

The third direction will contribute to the development of the domestic pharmaceutical industry, which will increase the share of medicines and medical products of domestic production in the local pharmacological market to 50% in value terms.

The fourth direction will increase the proportion of the population leading a healthy lifestyle and the development of mass sports, increase the provision of the population with sports infrastructure for 1.000 people from 46 to 53%.

The volume of the journal article does not allow analyzing all the achievements, shortcomings and problems of healthcare over the years of Independence. However, the trend in the development of the healthcare system allows us to conclude that the domestic industry in the future will take its rightful place in the global healthcare system and the population of the country will be provided with medical care that meets the international standard of advanced countries. Accordingly, the main principles of public health protection should be: orientation, equal access to medical services, as well as to information, the desire to provide safe and high-quality medical services, the priority of prevention, joint responsibility, sustainability and controllability of the healthcare system.

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