



Critical Preparedness and Response for Covid-19 in Kazakhstan

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Abstract In the article, the authors provide data on how to deal with the consequences of the COVID-19 pandemic and what strategy to choose in the fight against it in the Republic of Kazakhstan. In Kazakhstan, 4 large events were held at the very initial stage of the emergence of COVID-19 in China and in the world to prevent the infection and spread of this infection in the republic. These were different preventive measures of an epidemiological nature, starting from January 1, 2020 and March 13, 2021, when the first cases of COVID-19 infection were registered in the republic. Further, the authors provide data on the epidemiological situation of COVID-19 in the world and the republic in a comparative aspect. Detailed epidemiological data on the detection of morbidity according to PCR data, the number of deaths and the number of recovered from COVID-19 in Kazakhstan in the context of 17 regions are provided, which is of great scientific interest. Further, the authors dwelled on various aspects of the information and political atmosphere of safety, as well as specific issues of overcoming and improving the health of the population by improving the effectiveness of treatment and reducing the number of deaths. In conclusion, the authors come to the actual idea that the modern development of human civilization is accompanied by an unintentional increase in the risks of new infectious diseases, and challenges epidemiological research and public health in general. In this regard, the need to ensure infectious safety is higher than at any other time in human history.

Keywords Critical Preparedness, Covid-19, Kazakhstan

Introduction

COVID-19 is a global public health emergency of international concern [1] that has spread to many countries around the world, including the Republic of Kazakhstan. [2] Since the first cases recorded in Hubei province, Kazakhstan has taken preventive measures counteraction to prevent the import and spread of coronavirus infection into the territory of their country. In an attempt to overcome the crisis caused by the coronavirus pandemic, many governments have taken different approaches to find a balance [3], each with its own goals, prerequisites and prerequisites:

1. Suppression and containment (China, New Zealand, South Korea, Taiwan, Kazakhstan, Uzbekistan, etc.)
2. Mitigation and control (Brazil, Germany, Italy, USA, etc.)
3. Maintenance and assistance (Sweden)

Kazakhstan is sticking to the first plan and has developed its National Preparedness and Response Plan for COVID-19, addressing three strategic objectives - slowing and stopping transmission, preventing outbreak and delaying spread; providing optimal care for all patients, especially the critically ill; minimizing the impact of the epidemic on health systems, social services and economic activity.

The purpose of this article is to provide a critical commentary on current efforts to combat the COVID-19 pandemic and the challenges facing the response in Kazakhstan.

Geographical location, natural and climatic conditions and the National health policy of Kazakhstan



Kazakhstan, located in the central part of Eurasia, ranks ninth in the world with a total area of 2.7 million km², stretches from west to east (3000 km.), From north to south (2000 km.) And is washed by the Caspian Sea. The country is divided into 14 regions and 3 cities of republican significance - Nur-Sultan, Almaty and Shymkent. With the exception of the south, the climate of Kazakhstan is sharply continental, the range of temperatures ranges from 45 °C to plus 30 °C.

The population density is slightly less than 19 million people, low - 7.0 people per km², the predominant population lives in rural areas, [4]. The natural and climatic conditions of Kazakhstan historically determine the nosogeography of infectious and parasitic diseases, the massive settlement of infection reservoirs and their carriers. The national health policy in Kazakhstan is established by the Ministry of Health and is implemented by public health authorities, local executive authorities (akimats). A system of epidemiological surveillance has been built in Kazakhstan, scientific approaches have been developed to carry out sanitary and preventive, sanitary and anti-epidemic measures, in accordance with the International Health Regulations to prevent the import and spread of especially dangerous and quarantine infections. And this system for the first time faced the challenge of today - COVID-19.

Chronology of events

Since January 2020, Kazakhstan has been pursuing a strategy to prevent the import of coronavirus infection - the first stage of strengthening: sanitary and epidemiological control has been strengthened at checkpoints across the state border, training exercises have been conducted with the introduction of a conditional patient; provided medical monitoring for persons arriving from China; the 72-hour visa-free stay for Chinese citizens in Kazakhstan has been suspended; suspended passenger and air traffic between China and Kazakhstan;

sanitary-preventive and sanitary-anti-epidemic measures have been strengthened in medical and preventive establishments, preschool institutions, schools, boarding schools, nursing homes; seminars were actively held with medical workers on diagnostics, epidemiology and prevention of a new infection. The proposal of the International Tennis Federation to transfer the qualifying matches of the Federation Cup from the Chinese city of Dongguan to the capital of the country, the city of Nur-Sultan from February 4 to 8, was rejected, the qualifying Asian championship was canceled on water polo from 12 to 16 February [5].

On January 31, the second stage of strengthening began - specialists of the sanitary and epidemiological service were additionally sent to the sanitary and quarantine points at all borders; additional training of laboratory staff on the diagnosis of COVID-19 was carried out, the first clinical treatment protocol and algorithms for anti-epidemic measures were developed.

Daytime Quarantine

From March 1, 2020, the fourth stage of strengthening was introduced: persons who arrived from countries of category 1a (France, Italy, Spain, Germany) were placed in 14-day quarantine in a hospital, and then were under medical supervision for 10 days. Persons arriving from countries of category 1b (PRC, South Korea) were placed in home quarantine for 14 days; by decision of the sanitary service, these persons could be quarantined in a medical facility.

Persons arriving from countries of the second category (Philippines, Qatar, Great Britain, USA, India) were under medical supervision at home for 14 days, followed by 10 days of calls. Persons arriving from countries of the third category (epidemiologically safe) were under remote medical supervision by calling for 24 days, air traffic with Iran was suspended and the number of flights to South Korea was limited [6].

The first cases of COVID-19 were registered in Kazakhstan on March 13, 2020. These are two citizens of Kazakhstan - a man born in 1974 and a woman born in 1984 - who arrived in Almaty from Germany, who tested positive for coronavirus infection, both were hospitalized in an infectious diseases hospital. On the same day, a third and a fourth case were reported.

On March 12, the passenger flew to Nur-Sultan on a flight from Moscow. Since upon arrival it was established that she had arrived from Milan, she was immediately quarantined, the test results for COVID-19 are positive. The fourth infected person, born in 1976, arrived in Alma-Ata by plane from Germany, was admitted to a hospital for treatment. Patients with coronavirus were first detected in all regions of Kazakhstan: on March 20, in Karaganda, two passengers (born 1971 and 1972) of the Minsk-Nur flight The Sultan, who was planted not in the capital, but in Karaganda; March 21 - in the Karasai district of the Almaty region; March 22 - in the Aktobe region;

March 24 - in Shymkent (a man born in 1996, who arrived on March 20 from Nur-Sultan by an intercity bus), Zhambyl (a man in 1979 who arrived from Kyrgyzstan) and North Kazakhstan (a woman born in 1993, who arrived from Russia) regions; March 27 - in Atyrau, Pavlodar and Mangistau regions; March 28 - in the East Kazakhstan



and Kyzylorda regions; March 29 - in the West Kazakhstan region; March 31 - in the Turkestan region; April 3 - in the Kostanay region.

So, in all regions of Kazakhstan, there was an import of coronavirus infection. On March 26, two patients were discharged in Nur-Sultan and Almaty, on the same day the first death from coronavirus in Nur-Sultan was confirmed - a 64-year-old resident of the village of Kosshy, Akmola region, who traveled by rail and violated the self-isolation regime. As the epidemic process was studied, the tactics of treatment, sanitary-prophylactic, sanitary-anti-epidemic measures and statistical reporting changed: there was a separate registration of symptomatic and asymptomatic patients, then statistics were displayed separately for pneumonia with signs of coronavirus infection, the ICD 10 coding was adopted [7].

Covid-19 Incidence in the World

The number of cases in the world as of 01/22/21 - 97,512,833 confirmed cases were registered (an increase of 667,303 cases per day, which is 0.69% [8].

Among all regions, the Region of the Americas ranks first (43,196,728), here is the largest increase in cases per day (325,700), the maximum increase was recorded in the African region (0.96%).

Table 1: The number of cases of the disease in the world as of 22.01.21 [9]

No. country date of the first case morbidity per 100 thousand population deaths per 100 thousand population deaths in the last day

№ nn	country	date of the first case	Morbidity per 100 thousand population	Deaths per 100 thousand population	deaths in the last day
1	China	01.12.2019	7,1	0,34	1
2	USA	21.01.2020	7461,4	124,22	3876
3	France	25.01.2020	4424,0	104,76	347
4	Germany	28.01.2020	2536,3	61,52	855
5	Italy	30.01.2020	4032,4	139,83	521
6	Spain	31.01.2020	5234,2	117,27	404
7	Switzerland	25.02.2020	5917,3	104,68	47
8	Kazakhstan	13.03.2020	1171,4	15,67	2
9	Uzbekistan	15.03.2020	225,7	1,79	0
10	Kyrgyzstan	18.03.2021	1281,3	21,37	2

As of January 23, 2021, 178454 patients (PCR +) were registered in Kazakhstan, of which 160131 patients recovered (89.7%), 2403 people died (1.3%). Since August 1, 2020, 47437 patients with pneumonia with signs of coronavirus infection (PCR-), 555 deaths, recovered - 35183 people [8].

Table 2: Summary data on COVID-19 (PCR +) in the context of regions of Kazakhstan as of 23.01.21 *

№ nn	Regions of Kazakhstan	Sick (abs.)	(Recovered (abs.)	Deceased abs.
1	Nur-Sultan	21485	19185	375
2	Almaty city	21276	19312	415
3	Shymkent	5796	5367	86
4	Akmola region	9518	7801	99
5	Aktobe region	3898	3712	48
6	Alma-Ata's region	8791	6444	96
7	Atyrau region	15598	14185	125
8	EastKazakhstan region	19835	19339	324
9	Jambyl Region	5426	5031	63
10	West-Kazakhstan region	10393	8803	183
11	Karaganda region	13308	12328	297
12	Kostanay region	9487	8055	36
13	Kyzylorda Region	3544	3423	15
14	Mangistau region	3971	3714	57
15	Pavlodar region	11912	10383	95
16	North-Kazakhstan region	10214	9496	41
17	Turkestan region	4002	3735	48

* Data of the official source CORONAVIRUS2020KZ

Every day on the official website of the National Center for Public Health of Kazakhstan a matrix of epidemiological risk is published, with a gradation of all regions. At present, the so-called "red zone" includes



several regions, including the Atyrau region, where the incidence rates have been high compared to the national level for a long time, work is being carried out at the Tengiz field with the attraction of non-residents arriving from various countries, all arriving employees are screened for SARS-Cov-2, quarantined people with a positive result, treated patients and monitored contactees.

In the identified epidemic foci, an epidemiological examination is carried out with the establishment of spatial and temporal boundaries, the identification of contact persons, the establishment of a possible source of infection, disinfection, laboratory examinations are carried out, a set of measures to eliminate and localize the emerging focus of infection. Unfortunately, the cities of Nur-Sultan and Almaty were included in "red zone with the introduction of strict restrictive measures.

The reproductive number R_t based on confirmed and probable cases of coronavirus infection is presented in Table 3. For the period from January 20 to January 23 of this year, the daily increase is approaching 1.0% [10].

Table 3

	20.01.2021 г.	21.01.2021 г.	22.01.2021 г.	23.01.2021 г.
Kazakhstan	1,170	1,215	1,244	1,259

According to the status of cases, there are local (9789), imported (644), from the number of contact (7828), and in 2146 cases the diagnosis is specified. Mild forms of the disease (6659), moderate (792) and severe cases (221) are registered in the predominant number. To date, 827 people have recovered from coronavirus infection, 1480 cases have been identified, 16 cases of pneumonia with signs of coronavirus infection have been recorded, 3 deaths and 34 people have recovered

The largest number of cases is noted in the age category - 20-25 years, then - 25-30, 30-35 years and 15-20 years, that is, in the most active age. The lowest incidence is observed at 75 and above. The incidence among children under 5 years of age has increased, of which 128 cases are in males and 81 in females. In the context of the country, at all ages, there is a predominance of sick men in comparison with women [8,10]. COVID-19 Challenges, Efforts and Challenges

The pandemic has exposed problems in the health care system of Kazakhstan. Uneven distribution of financial resources across regions, uneven consumption of medical services and uneven health indicators, despite some improvement in recent years, remain one of the main problems in the country. Residents of Almaty and Nur-Sultan have advantages in access to medical care, since most of the high-tech national clinical centers are concentrated in these two cities; at the same time, the availability of medical services in remote regions of the country is significantly hampered due to the geographical dispersion and sparsely populated territory. The development of telemedicine has become a solution to access medical services for remote regions of the country [11].

The lack of doctors, the unexpectedness of the situation, lack of knowledge on coronavirus infection, powerlessness in front of a new infection have generated a negative mood in the medical community.

At first, there was not enough personal protective equipment, medical workers did not know how and did not know how to work in them. There were difficulties in mass testing, stigma and fear of quarantine forced people not to get tested, which led to an underestimate of the true number of cases.

There were violations in the tracking of contactees, an increase in the burden on the health care system, inadequate readiness of primary care, lack of faith in the presence of the virus and disease, negative attitude of citizens to sanitary-hygienic, disinfection and regime-restrictive measures, peculiarities of burial of corpses, national isolation, the health system was transferred to "Covid" mode of operation, difficulties arose in the provision of medical care for chronic patients, management of pregnant women, planned hospitalization and routine vaccination - this is a small list of difficulties faced by society.

Unfortunately, during the provision of medical services, 120 cases of occupational infection among medical workers occurred, of which 67 cases were among medical workers who directly provided medical assistance to persons suspected of having a coronavirus infection or already sick. The Government allocated funds to encourage and compensate for damage to the health of medical workers [12].

The state of emergency in the country was introduced from March 16 to May 11, 2020 [13]. Educational institutions, office workers were transferred to a remote format, non-food facilities, cinemas, crowded places were closed, entertainment and entertainment events were prohibited, many laboratories were relocated to COVID-19, mobile laboratories, quarantine, provisional and infectious diseases hospitals have been deployed, 24-hour sanitary posts have been placed.

Kazakhstanis were prohibited from leaving the country, with the exception of diplomatic service employees and residents of border settlements to seek medical help; Allowed the entry of Kazakhstanis from another country and the departure of foreigners. To support people who lost their jobs during the emergency, funds were allocated,



groups at risk were given food rations, masks were distributed free of charge, many campaigns provided their employees with sanitizers and other hygiene products.

The euphoria that covered the country after the lifting of the state of emergency after the tough separation, the stage of mitigation, grouping of people came, this immediately gave an increase in the incidence of coronavirus infection in the country, the cases identified were of a familial nature of infection. The system malfunctioned, there was not enough medicine, hospital beds, ventilators, people were alarmed and scared. The number of laboratory not confirmed pneumonia has increased. According to WHO, after the first lockdown was lifted, Kazakhstan entered the country with an accelerated transmission of infection [1]. A second lockdown was urgently introduced (June 2020), the situation was brought under control, the number of patients and those infected gradually began to decline

The situation with coronavirus infection resembles a "swing": an upward curve when the rules are violated and downward when it is observed. The course (development) of the epidemic process once again confirms the need for social distancing, mask regimen, hand hygiene as the main measure for preventing coronavirus infection. Today, the consciousness and alertness of the population of Kazakhstan has grown significantly, people have become more conscious of their health, mask regime, and the commitment to a healthy lifestyle has increased.

The pandemic showed how fragile and dependent the system is: planned vaccination for children under 1 year old was postponed (measles, rubella, mumps, etc.), medical examination and provision of medical services to patients with chronic, oncological diseases, planned hospitalization were temporarily postponed, doctors themselves were ill and nurses, people did not attend clinics as much as possible. This also negatively affected the health of the entire population of the country. But the epidemic season of influenza people approached prepared in matters of vaccination against influenza, coverage at times exceeded the same period last year, the incidence rate in October-December did not exceed the average annual. There are 46 laboratories for the diagnosis of COVID-19 in Kazakhstan. Additionally, 8 mobile laboratories were purchased for carrying out PCR tests, 15 stationary and 5 mobile PCR machines, many private laboratories entered into contracts for these studies, which significantly relieved the burden on state laboratories. The planned number of testing is 1500-2000 tests; by now, 5,942,556 PCR tests have been conducted throughout the country [10]. Despite the existing capabilities of the laboratory service, there are also difficulties - difficulties in the collection and delivery of material from the patient, interruptions in the supply of consumables, overwork and burnout of laboratory staff, the risk of intralaboratory infection. Together with WHO, programs of seroepidemiological research of COVID-19 are carried out, monitoring of the circulation of SARS strains -Cov-2. An interdepartmental government commission was created to prevent the emergence and spread of coronavirus infection, a special body of the Ministry of Health of Kazakhstan is the National Center for Public Health, the work of operational headquarters was organized, a single contact center 1406 was created, where everyone could turn to get advice on treatment or organize medical assistance, leave a complaint, the mobile application "Qoldau 24/7" has been launched [8].

Protests and disinformation

As in many countries of the world, protests with various slogans were held in Kazakhstan, including the introduction of credit vacations due to the COVID-19 pandemic, a "silent" protest by mothers with many children demanding rental housing, as well as cash payments for the child. It should be noted that the sanitary-epidemiological service carried out disinfection work at the gathering places of the protesters. Unfortunately, disinformation related to the COVID-19 pandemic is widespread in the country, spreads through social networks, and one of the countermeasures is the creation of an official website on COVID-19, there is a whole section dedicated to fakes and fact-checking [14].

Conclusion

Efforts to contain the spread of COVID-19 show that the epidemiological situation of COVID-19 in Kazakhstan is under control and supervision, but it is too early to give any predictions about its end. Symptomatic and asymptomatic deaths from SARS-Cov-2 continue to be recorded; the number of cases will vary in different regions with the removal to the so-called "red", "yellow" - and "green" zones, depending on which strict restrictive measures are introduced or the existing restrictive measures are weakened.

The uneven distribution is associated with external and internal migration of the population, including the tourist flow. Tension and fatigue persist in society, but people have become more responsible for their health and hygiene, the number of misinformation and fakes has decreased. Kazakhstan is preparing to vaccinate primarily risk groups, and until post-vaccination "herd" immunity is formed, caution must be exercised when lifting restrictions to prevent an explosion of new cases of disease. The world has become more integrated and now has a common destiny in terms of biosafety and epidemiological complications almost anywhere in the world. The situation in the modern



world can be defined by the words "a threat anywhere is a threat everywhere", which translated means "a threat in one place can be a threat everywhere." Spatial and temporal boundaries are no longer an obstacle and limitation than ever before, and internal and external factors are more complex than those in the past. The modern development of human civilization is accompanied by an unintended increase in the risk of new infectious diseases, poses a challenge to epidemiological research and public health in general. In this regard, the need to ensure infectious safety is greater than at any other time in human history [15].

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