

# Problems of establishment and activity of the antituberculosis service in Kazakhstan during Virgin Lands campaign (early 1960s)

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**Abstract.** The paper notes that after the formation of the Virgin Lands area in December 1960, the local health authorities faced a pressing issue of solving the problems of tuberculosis spread among the local population, as well as people resettled there. Tuberculosis, like other infectious diseases, was widespread in Kazakhstan. The establishment of tuberculosis dispensaries and the creation of fluorography and X-ray machines have provided an opportunity to expand preventive measures for the examination and detection of tuberculosis patients. The health authorities of the Virgin Lands area considered work in this direction as improving the quality of medical care. However, the quality of treatment was often reduced due to the facts that the treatment regimen was violated in several dispensaries, there were not enough specialists, control over the full and long-term treatment of tuberculosis patients was not imposed. The authors of the paper concluded that insufficient and not universal organization of medical care was one of the reasons for the high incidence of tuberculosis among the population.

## 1 Introduction

Undoubtedly, the virgin lands campaign of the Khrushchev decade was controversial [1–12]. Today no one doubts major accomplishments in the development of the healthcare system in Kazakhstan during the reclamation of fallow lands [13]. However, the rapid population growth during the reclamation of “new” lands raised many health problems. Among them, it is worth noting the issues of establishing a network of tuberculosis institutions in the Virgin Lands area, created at the end of 1960 [14].

The network of tuberculosis institutions of Tselinograd region, as the centre of the Virgin Lands area, consisted of the following: the Tselinograd regional tuberculosis dispensary for 75 beds, district dispensaries in the town of Atbasar for 45 beds and the village of Alekseevka of Leninsky district for 25 beds; rural district dispensaries in the village of Elizavetinka of Tselinograd district for 35 beds; dispensaries in the village of

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Maksimovka of Balkashinsky district for 25 beds, and in the grain farm named after Central Executive Committee of Kazakh SSR in Shortandinsky district for 15 beds; the tuberculosis department in the town of Makinsk and the town of Tselinograd; and 13 tuberculosis consulting rooms [15]. In 1962, within the existing bed capacity of districts, tuberculosis departments in the town of Atbasar, the village of Alekseevka of Leninsky district, and the grain farm named after Central Executive Committee of Kazakh SSR in Shortandinsky district were reorganized into dispensaries. However, the executive committees of Atbasar, Leninsky and Shortandinsky districts did not allocate additional premises to consolidate those dispensaries, as well as did not allocate them to an independent budget, thereby did not comply with the decision of the regional executive committee No. 515 dated February 6, 1962.

There was not a single standard tuberculosis dispensary in the Tselinograd region. The premises where the tuberculosis institutions of the region were located were not adapted for the reception of tuberculosis patients. Exemplarily, the regional tuberculosis dispensary was located in a former merchant's house, where the basement was flooded with groundwater, and the walls rot through, there was no courtyard for patients to walk and so on. All those unresolved problems created an extremely difficult situation with the coverage of the population with antituberculosis measures and a high probability of an outbreak of the disease and other problems of a socio-economic nature [16–18].

## **2 Materials and Methods**

The article is based on the general scientific principle, systematicity, and comparative-experimental analysis. In a methodological arsenal based on scientific and applied methods, we grouped the research into a chronological and thematic system. Interdisciplinary research principles have been taken into account for a full and comprehensive analysis of the problem. Statistical material is used extensively, with particular emphasis on comparative research and data.

## **3 Discussion of the results**

### **3.1 Network of tuberculosis institutions**

In the regional tuberculosis dispensary, due to the lack of usable space, it was impossible to provide specialized types of care, particularly, surgical, bone-joint, skin, sanatorium, and other types, which sharply reduced the treatment of tuberculosis patients. However, the decision of the regional executive committee was made in 1962 on the construction of a standard tuberculosis dispensary in Tselinograd in 1963, as well as the decision of the regional executive committee No. 515 dated February 6, 1962, on the construction of a regional tuberculosis hospital in the village of Alekseevka. During 1962, the development of the network of tuberculosis institutions was expressed in the establishment of urban and rural tuberculosis dispensaries. See Table 1. [19].

**Table 1.** Network of tuberculosis dispensaries.

Name of the region	Number of dispensaries as of 31.12. 1962					
	In urban areas		In rural areas		Total	
	1961	1962	1961	1962	1961	1962
Tselinograd region	1	2	2	2	3	4
Kokchetav region	3	3	3	4	6	7
Kustanay region	3	3	1	1	4	4
Pavlodar region	2	2	2	4	4	6
North Kazakhstan region	1	3	–	2	1	5
Total in the area	10	13	8	13	18	26

The increase in tuberculosis dispensaries in urban areas occurred in the North Kazakhstan region, where a 50-bed dispensary was opened in the working village of Bulayevo and the Petropavlovsk city tuberculosis dispensary without an in-patient department. For the North Kazakhstan region, where for many years there was only one dispensary located in the regional centre, the establishment of two tuberculosis dispensaries in the city and two in rural areas (Ishim dispensary for 40 beds and Maryevsky dispensary for 25 beds) was a moment, which significantly brought tuberculosis care to the population.

In Kokchetav region, a rural tuberculosis dispensary for 20 beds was established in Chkalovsky district. In Pavlodar region, two rural tuberculosis dispensaries were opened: one for 25 beds in Maysky district and one for 30 beds in Ermakovsky district. In Tselinograd region, a tuberculosis dispensary for 35 beds was established in the working village of Alekseevka. Thus, during 1962, the following tuberculosis dispensaries were opened in the Virgin Lands area: 3 in urban settlements, two of them with in-patient departments with a total number of beds – 85, as well as 5 rural dispensaries with a total of 140 beds. The quality of dispensary care was determined not only by the number of dispensaries, but also by their capacity, equipment, and the number of occupied medical positions.

In the area, the most efficient dispensaries were in regional centres. See Table 2.

**Table 2.** Characteristics of urban dispensaries.

Name of regions	Number of dispensaries in regional centres	Number of beds in them
Tselinograd region	1	75
Kokchetav region	1	125
Kustanay region	1	145
North Kazakhstan region	1	150
Pavlodar region	1	150
Total	5	645

The capacity of tuberculosis dispensaries is significantly lower in urban areas located outside regional centres – in towns and work settlements. Dispensaries did not exist in all urban areas of the region, not to mention work settlements. There were no dispensaries in the towns of Atbasar and Makinsk in Tselinograd region, a town of Krasnoarmeysk in Kokchetav region.

On average, each rural dispensary, opened in 1962, had a capacity of 28 beds. A tuberculosis consulting room could not replace a dispensary, it was not able to carry out the full scope of preventive and medical work, therefore, their number did not increase in the regions, and regional health departments established rural tuberculosis dispensaries based on some tuberculosis consulting rooms. See Table 3 [20].

**Table 3.** Number of tuberculosis dispensaries.

Name of the region	Number of tuberculosis consulting rooms					
	In urban areas		In rural areas		Total	
	1961	1962	1961	1962	1961	1962
Tselinograd region	10	9	10	9	20	18
Kokchetav region	–	2	6	6	6	8
Kustanay region	2	2	5	5	7	7
Pavlodar region	6	5	6	5	12	10
North Kazakhstan region	5	5	7	7	12	12
Total in the area	23	23	34	32	57	55

In total, at the end of 1962, 81 dispensary-type institutions were opened in the Virgin Lands area, that is, the institutions conducting outpatient reception, accounting the tuberculosis patients, carrying out mass preventive measures, managing the work of institutions of the tuberculosis control network. However, out of 81 tuberculosis institutions, only urban and rural tuberculosis dispensaries were independent and full-fledged, i.e., 1/3 of all dispensary-type institutions.

As before, the main task of the health authorities in the development of the network of tuberculosis institutions was the establishment of rural tuberculosis dispensaries, as well as bringing specialized tuberculosis care to the rural population.

### 3.2 Beds for tuberculosis patients

The health authorities tried to increase the number of beds for tuberculosis patients. Thus, the number of hospital beds increased by 486 in 1962 [18]. See Table 4.

**Table 4.** Number of beds for tuberculosis patients.

Name of the region	Number of beds as of 31.12. 1962					
	In urban areas		In rural areas		Total	
	1961	1962	1961	1962	1961	1962
Tselinograd region	270	283	226	253	496	536
Kokchetav region	310	320	120	168	430	488
Kustanay region	260	260	223	341	483	601
Pavlodar region	235	235	90	170	325	405
North Kazakhstan region	150	220	140	260	290	480
Total in the area	1225	1318	799	1192	2024	2510

93 beds were created in urban settlements, what meant an increase of 7.5%, as well as 393 beds in villages (an increase of 49%). Most tuberculosis beds were created in the North Kazakhstan region – 190, and Kustanay region – 118.

The work of regional health departments on the increase of beds was systematic. Thus, the increase in tuberculosis beds in 1962 by region was:

- Tselinograd region – 40
- Kokchetav region – 58
- Kustanay region – 118
- Pavlodar region – 80
- North Kazakhstan region – 190
- Total – 486.

However, despite those data, the creation of tuberculosis beds in 1961–1963, planned by the Ministry of Health in the area, was implemented only by 46.5% [21]. See Table 5.

**Table 5.** Statistics on the creation of tuberculosis beds.

Name of the region	The plan for 1961–1962	Actually implemented in 1961–1962	% Implemented
Tselinograd region	285	125	43.8
Kokchetav region	225	91	40.4
Kustanay region	440	210	47.7
Pavlodar region	325	75	23.0
North Kazakhstan region	200	185	92.5
Total in the area	1475	686	46.5

The issues of expansion of the network in Pavlodar, Kokchetav and Tselinograd regions were dealt with particularly unsatisfactorily.

As it can be seen from Table 6, there were 0.7 beds per 1000 people in the area, i.e., almost half the standards, which, with a high incidence of tuberculosis among the population, was insufficient to meet the need for hospitalization of tuberculosis patients [18]. See Table 6.

**Table 6.** Availability of beds to the population.

Name of the region	Availability per 1000 people as of January 1	
	1961	1961
Tselinograd region	0.61	0.63
Kokchetav region	0.76	0.78
Kustanay region	0.51	0.63
Pavlodar region	0.67	0.66
North Kazakhstan region	0.62	1.13
Total in the area	0.63	0.7

### 3.3 Medical personnel of antituberculosis institutions

In 1962, 27 people were sent to the area to work in the sphere of phthisiology. The total number of specialized phthisiologists in the area had not actually increased in previous years. It can be seen according to the data from the Table 7 [19].

**Table 7.** Number of phthisiologists in the region.

Name of the region	Number of doctors as of 31.12. 1962					
	In urban areas		In rural areas		Total	
	1961	1962	1961	1962	1961	1962
Tselinograd region	17	26	6	4	23	30
Kokchetav region	41	33	5	6	46	39
Kustanay region	13	15	16	13	29	28
Pavlodar region	13	18	3	4	16	22
North Kazakhstan region	15	11	3	3	18	14
Total in the area	97	103	35	30	132	133

This table shows the number of specialized phthisiologists, excluding graduate doctors sent to work in the antituberculosis network. The significant difference between the phthisiologists, sent to work, and the actual increase in their number by region can also be explained by a large turnover of personnel.

The total number of phthisiologists in urban area increased by 6 people. In Tselinograd region, the number of phthisiologists working in urban areas was 9 more, in Kustanay

region it was 3 more, and in Pavlodar region it became 5 more. The number of phthisiologists in Kokchetav and North Kazakhstan regions decreased. The number of phthisiologists working in rural areas in the area decreased by 5. There were 2 fewer phthisiologists in Tselinograd region, 3 fewer in Kustanay region, and it remained at the same level in the North Kazakhstan region.

Thus, the increase in the number of rural tuberculosis dispensaries (by 5 units) was not accompanied by their corresponding provision with medical personnel. That fact explained the unsatisfactory organization of work in rural dispensaries, poor registration of tuberculosis patients, insufficient detection of them, as well as unsatisfactory organization of medical and preventive work. In the regions of the Virgin Lands area, where most of the population lived in villages, there was a reduction in the number of phthisiologists, which sharply worsened the medical service to the public.

### 3.4 Mass medical examinations to detect tuberculosis

The number of people who underwent mass medical examinations in 1962 increased slightly, in both urban and rural areas. The total number of examined people exceeded 1200000 people. As it can be seen from Table 8, the work on preventive targeted examinations was carried out more widely by medical institutions of the general network and antituberculosis institutions in both urban and rural areas. See Table 8.

**Table 8.** Mass medical examinations in 1962 in urban area.

Name of the region	Number of examined people in thousands					
	Urban hospitals	Children's hospitals	Antituberculosis institutions	Total	Number of medical examinations per 1 thousand people in 1962	Number of medical examinations for 1 thousand people in 1960
Tselinograd region	58.2	41.1	85.7	185.0	549	578
Kokchetav region	32.0	23.4	41.8	98.1	653	359
Kustanay region	51.1	38.3	72.6	162.0	613	383
Pavlodar region	31.6	34.7	69.2	135.5	667	543
North Kazakhstan region	16.0	33.3	42.4	91.7	511	750
Total in the area	178.3	101.7	311.7	672.3	589	522

The relative indicator, the number of people examined per 1000 people in 1962, was significantly higher in Kokchetav and Kustanay regions. However, in some regions, even considering the increase in the urban population, there was a slight decrease in the work on mass medical examinations (North Kazakhstan region). In Tselinograd and North Kazakhstan regions, the activity of preventive examinations in urban hospitals and polyclinics somewhat decreased.

It is worth noting that in rural areas the number of examined people per 1000 people was three times lower than in urban areas. See Table 9.

**Table 9.** The number of examined people in urban areas.

Name of the region	Number of examined people in thousands					Number of medical examinations per 1 thousand people	
	District hospitals	Health district hospitals	Local tuberculosis institutions	Regional mobile X-ray fluorographic tuberculosis dispensaries	Total	1962	1960
Tselinograd region	16.9	38.6	6.6	20.0	82.2	163	158
Kokchetav region	14.2	15.1	13.6	20.2	63.1	134	118
Kustanay region	97.5	79.3	14.0	16.3	207.1	301	137
Pavlodar region	17.6	36.7	6.2	9.7	70.2	173	160
North Kazakhstan region	26.8	27.3	28.1	30.5	112.7	309	64
Total in the area	173.0	197.0	68.5	96.7	535.2	220	147

The number of examined people per 1000 representatives of rural population of Kustanay and North Kazakhstan regions increased significantly. In Tselinograd region, the number of people examined in absolute numbers increased from 63.5 thousand to 82.2 thousand, but there was just a slight increase in the indicator per 1000 people, that happened due to a large increase in the population in the region. As in previous years, not all examined people were subjected to X-ray examination. The use of X-ray and fluorographic methods of mass medical examinations was insufficient for the area.

During medical examinations of adults in urban area, an average of 2.7 patients per 1000 examined people was detected according to the data of urban hospitals. According to the data of children's medical and preventive institutions that indicator was 6.1; according to the data of urban tuberculosis institutions it was 2.6.

On average, in the area, 8.1 patients with active tuberculosis per 1000 examined people were identified in rural tuberculosis institutions, 4.0 – in health district hospitals, and 6.4 – in district hospitals.

In 1962, the Ministry of Health of the Kazakh SSR launched a plan for revaccination of the population against tuberculosis for the Virgin Lands area. The plan provided by the Ministry for the area was completed by 49.4% [20]. See Table 10.

**Table 10.** Revaccination implementation plan.

Region	Plan of the Ministry of Health of the Kazakh SSR	Implemented	% implemented
Tselinograd region	96500	24488	25.3
Kokchetav region	101800	75033	73.7
Kustanay region	152500	33139	21.7
Pavlodar region	72250	53168	73.5
North Kazakhstan region	85120	62404	73.3
Total in the area	508170	251231	49.4

There was a difficult situation concerning revaccination of the population. The revaccination plan was not implemented because the regional health department considered that the specified plan was significantly overstated. According to the regional health department, based on the instructions for vaccinations, 310089 people were subject to revaccination by area. That figure consisted of the following data. According to the calculations made and according to the data of the statistical department, there were 100845 two-year-old children in the area on January 1, 1962, and 80% of them were subject to revaccination, i.e., 80676 people. There were 67232 children aged 6–7, and 70% of them were subject to revaccination, that is, 47000 people. The age group of 11–12 years old consisted of 50420 people, of whom 50% were subject to revaccination, that is, 2510 people. There were 67232 teenagers aged 14, of whom 40% were subject to revaccination, that is, 26891 people. The age group of 17 years old consisted of 67230 people. 25% or 16807 people were subject to revaccination. The group of population from 18 to 30 years old amounted to 486362 people, of which 10% were subject to revaccination, that is, 48634 people.

When drawing up the plan, people who were not revaccinated in 1961 and were subject to revaccination in 1962, that is, 64809 people, were taken into account. Thus, in general, not 508.170 people were subject to revaccination in the area, as it was indicated in the plans of the Ministry of Health of the Kazakh SSR, but 310089 people [18].

### 3.5 Vaccination against tuberculosis

In 1962, the rate of coverage of new-borns with tuberculosis vaccination (according to the type of service institutions) was 96.4% in urban areas, and 90.6% in rural areas. The highest incidence rates in 1962 were observed in Tselinograd and Kokchetav regions; the incidence rate of tuberculosis in urban areas of the region amounted to 28.6.

On average, the incidence rate decreased slightly in the area (1962 – 23.5; 1960 – 25.0), there were significant fluctuations in certain regions. In Kustanay and North Kazakhstan regions, it increased due to the efficient work of regional mobile X-ray fluorographic tuberculosis dispensaries in the summer of 1962.

But these indicators for rural areas did not reflect the true situation, due to severe deficiencies in phthisiologists in rural areas and the unsatisfactory state of statistical reporting in health district hospitals.

In 1962, the plan to increase the network of bone tuberculosis hospitals by 185 beds was not implemented, since the executive committees of local councils did not allocate premises for the establishment of antituberculosis institutions, thereby they did not comply with the decision of the regional executive committees. In total, there were 501 tuberculosis beds in the region: 255 of them in urban areas and 246 in rural areas. Thus, at the rate of 3 beds, there were 0.6 beds per 1000 people in the region. The population in the region increased rapidly, however, the number of beds remained approximately at the same level, as can be seen from the following comparisons: in 1959 (0.53), in 1960 (0.61), in 1961 (0.7), and in 1962 (0.62).

At the rate of 3 patients per 1 bed, there were 13 patients per 1 bed in Tselinograd region. These data indicate that it was necessary to have at least 2.000 beds for tuberculosis patients in the region, i.e., to increase the existing bed stock by 4 times to be able to hospitalize all patients with fresh forms of tuberculosis, as well as those who secrete tuberculosis micro bacteria, and patients with exacerbation of chronic forms of tuberculosis. For comparison, it can be said that in the Virgin Lands area there were 15 patients per 1 bed, in the Kazakh SSR there were 7 patients per 1 bed, while in many republics there were 2 patients per 1 bed.

Despite the limited number of beds in the rural areas, they were not used sufficiently, while the regional tuberculosis and other dispensaries worked at full capacity. So, in rural areas, each bed was used on average 160–200 days a year, while in the regional tuberculosis dispensary it was used up to 350 days a year. The low rate of use of tuberculosis beds in rural areas was conditioned by striving of patients to receive treatment at in-patient departments at dispensaries, where treatment of tuberculosis patients was better, as well as the fact that the profile of beds by the chief doctors of health district hospitals was not complied. It followed therefrom that in rural areas it was impractical to have a bed capacity scattered in 5–10 beds.

## 4 Conclusion

There was a network of tuberculosis dispensaries in the republic, in which certain results were achieved. Patients got medical care; health authorities organized beds to treat patients with active tuberculosis. However, the quality of treatment in some cases decreased, since clinical and bacteriological laboratories and X-ray rooms were not organized and did not work in dispensaries located principally in rural areas. That created significant difficulties for controlling over treatment and taking medical measures for tuberculosis patients. That fact significantly reduced the quality of medical services provided and affected the increase in the incidence level of this dangerous infectious disease. Insufficient and not ubiquitous organization of medical care was one of the reasons for the high incidence of tuberculosis among the population [21].

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