

Medical trains for improved access to health services across Kazakhstan

Overview

A clear rural-urban divide in the availability and accessibility of health services persists across Kazakhstan, with large differences in existing health infrastructure and the geographic distribution of resources, including health professionals. These discrepancies have contributed to higher levels of morbidity and mortality in rural populations compared to their urban counterparts. In response to these challenges, the Ministry of Health and the Committee of Emergency Situations within the Ministry of Internal Affairs introduced a programme for train-based services delivery, making use of the existing railway infrastructure to reach rural areas. Three mobile medical trains have been established: Densaulyk, based in Almaty, Zhardem based in Aktobe and Salamatty Kazakhstan based in Karaganda. The three trains serve southern, eastern and western, and northern regions of the country, respectively. Each train consists of eight wagons and 80 staff members in total, of which half are health providers. The trains are equipped with modern clinical, diagnostic and radiology equipment. Advanced infrastructure and resources on board the train allow for complex diagnosis and treatment of patients, including minor outpatient surgery and dental care. Together, these three trains have increased access to health services for rural and remote areas, treating more than 56 000 people between 2010 and 2014.

Problem definition

Kazakhstan faces a rural-urban health divide, with discrepancies in resources distributed across the country, particularly with regards to human resources (Box 1). Many rural and remote areas experience a general shortage of health workers. For example, in 2010 the northern region of Kostanay had 266 physicians per 100 000 population compared to a national average of 388 per 100 000 population.¹ Persisting challenges, including limited health

infrastructure, constrained resources and poor sanitation, have reportedly constrained the ability of the health system to substantively reduce morbidity and mortality among the country's rural populations.¹

Health services delivery transformations

Timeline of transformations
In 2005, in line with the introduction of the National Programme for Health Care Reform and Development 2005–2010, and to address concerns

Box 1

What problems did the initiative seek to address?

- Among the lowest life expectancy in the WHO European Region.
- Unequal distribution of health professionals across the country.
- Geographic disparities in health status between rural and urban areas.

over the geographic distribution of health resources and health professionals, the concept of transport medicine was first put forward (Table 1). The vision of train-based services proposed implementation of a series of trains travelling to 17 stations in the southern provinces of the country in order to extend the delivery of services to rural populations using the country's existing infrastructure.

In 2010, a first experiment with transport medicine was undertaken. Building upon the 2005 announcement, the State Health Care Development Programme for 2011–2015 “Salamatty Kazakhstan” (Healthy Kazakhstan) sought to continue advancements and add additional medical trains. Train-delivered health services were expanded in 2011 to also cover eastern-western and northern regions.

Description of transformations

Selecting services. The introduction of medical trains has put focus on tackling the health divide between urban and rural populations by delivering primary and specialist services directly to rural communities. Health trains each have eight wagons, equipped to provide a range of services with modern clinical, diagnostic and radiology equipment. This infrastructure allows specialists to carry out complex diagnosis and treatment of patients aboard trains at stations across the

Table 1

What were the chronological milestones for the initiative?

2005	Initial implementation of National Programme for Health Care Reform and Development 2005–2010.
2009	Presidential decision in coordination with the Ministry of Internal Affairs and Ministry of Health to invest in the first medical train, “Densaulyk”.
2010	First medical train launched in July; State Health Care Development Programme for 2011–2015 “Salamatty Kazakhstan” approved.
2011	Development begins on a second and third medical train in conjunction with the planning and development phase of the State Health Care Development Programme “Salamatty Kazakhstan”.
Present	All three medical trains continue to run, serving rural populations across the country.

country. Services also include minor outpatient surgeries, lab work and dental care, all of which is provided free of charge.

Designing care. Services are provided directly on the trains. Providers are expected to adhere to the same standards and protocols as services delivered in health facilities. Three different routes extend services across the country as needed.

Organizing providers. Medical trains are each equipped

Table 2

How was the delivery of health services transformed through the initiative?

Before	After
Selecting services	
Inequitable service provision between urban and rural settings, with difficulty accessing acute care in many parts of the country.	Medical trains provide range of services from diagnostics to treatment; trains transport patients to health facilities as needed.
Designing care	
Services in rural areas struggle to meet the needs of rural populations and provide a comprehensive package of services.	Train routes organized for trains to deliver care in remote areas; care pathways defined according to new standards of providing care in conventional facilities.
Organizing providers	
Limited access to health providers in rural areas; poor coordination of care.	Medical trains equipped with multiple providers who offer services at the different stations trains travel to; real-time video communication used to link onboard providers with professionals in hospitals.
Managing services	
Resource constraints challenge optimal delivery of services to rural communities.	Managers onboard trains responsible for ensuring availability of resources for providing selected services and general oversight of the train itineraries.
Improving performance	
Need for skill strengthening at the primary care level.	Training for providers on new guidelines and standards planned; indicators for performance monitoring in development.

with 18 specialists including an internist, pediatrician, neurologist, gynaecologist, cardiologist, ophthalmologist and general physician. In total, 36 medical staff work on each train, with an additional 44 individuals assisting in running and supervising train functions.²

During a visit to the medical train patients are seen by multiple professionals, moving between specialists on board based on their specific needs. While practitioners on board continue to practice independently, the close proximity of each facilitates communication.

Managing services. Representatives from local executive bodies manage the trains. Managers on board each train are responsible for ensuring a specific itinerary is followed and that trains are appropriately resourced throughout their trips.

Health system enabling factors

The investment and implementation of medical trains has taken shape in the context of broader comprehensive health system reform through the State Health Care Development Programme for 2011–2015 “Salamatty Kazakhstan” (Table 3). As a result of this overarching policy, several changes to health system financing have been made. In 2011, a new capitation-based payment system, including a payment-for-performance component, was implemented. All the necessary conditions for differentiated payments have been established under the Programme and basic salaries for physicians and nurses have increased as a result.

Strengthening competencies of health professionals working within the health system has also been an important focus, including improvements in graduate level training and several new postgraduate level courses, such as the upgrading of nursing education

Table 3

How has the health system supported transformations in health services delivery?

System enablers	Example
Accountability	<ul style="list-style-type: none"> • Launch of overarching State Health Care Development Programme “Salamatty Kazakhstan”. • Formal decision taken by the president to invest in medical trains.
Incentives	<ul style="list-style-type: none"> • Reworking of provider payments underway; payment-for-performance incentives introduced, and basic salaries increased.
Competencies	<ul style="list-style-type: none"> • Graduate level education has increased; postgraduate medical institute provides continuing education programmes. • Focus on developing management competencies within the health sector.
Innovation	<ul style="list-style-type: none"> • Development of Centre for Life Sciences to support the development of medical technologies.

to postgraduate level status. Medical education aligned with international models is now available through Nazarbayev University. Linking to the strengthening of competencies is the investment in developing high-quality research in medical sciences and novel technologies. With this goal in mind, the Centre for Life Sciences was founded in the capital, Astana.

Outcomes

Ongoing monitoring and registration of patients has recorded the initial impact of the initiative, finding positive outcomes notably in terms of improved access to services (Box 2).

Change management

Key actors

The Ministry of Health first led the introduction of medical trains as a means of tackling health disparities between rural and urban areas. With the President of the Republic of Kazakhstan’s support, cross-sector action was made possible, linking with the Ministry of Internal Affairs and partnering with the

Box 2

What were the main outcomes of the initiative?

- Between 2010 and 2014 medical trains treated 56 851 people.²
- Accessibility of medical services in rural areas has improved, with trains taking approximately 20 days to cover 832 remote stations.³
- More than 30% of patients seen on each train are diagnosed during their first appointment, of which one in four are diagnosed with a serious disease requiring intervention.

company responsible for railway transportation, Kazakhstan Termir Zholy (Box 3).

Box 3

Who were the leading actors and what were their defining roles?

- **President.** Put forth a vision for the expansion of mobile medicine and the development of medical trains.
- **Ministry of Health.** Led implementation of medical trains and financed care rendered through these.
- **Committee of Emergency Situations, Ministry of Internal Affairs.** Provided cross-sector support in the implementation of medical trains with the Ministry of Health.
- **Kazakhstan Termir Zholy.** Partner in the development of medical trains; responsible for operation and maintenance of railway transportation in Kazakhstan.

Initiating change

The launch of the State Health Care Development Programme “Salamatty Kazakhstan” put focus on the health and development of the population,

setting out plans to modernize and expand health services across Kazakhstan. In the context of this overarching policy, the expansion of medical trains was put forth as an approach to improving access to services.

Implementation

Backed by presidential support, a partnership was established between the Ministry of Health, the Committee of Emergency Situations within the Ministry of Internal Affairs, and Kazakhstan Termir Zholy, the national company responsible for operating the railway network in Kazakhstan. Together, these actors designed a

programme for the introduction of the first train, Densaulyk, in 2010. Two additional trains, Zhardem and Salamatty Kazakhstan, were set up the following year.

Moving forward

Medical trains continue to cover remote regions of the country stopping according to predetermined schedules to deliver care to patients.

Highlights

- Aligning transformations with the goals of overarching system reforms and gaining cross-sector buy-in from the government helped to support implementation of medical trains.
- Building upon existing infrastructure helped to alleviate the burden of additional resources in the set up and rollout of transformations.
- Solutions for population health problems were based in a strong understanding of current challenges and adapted to population and geographic attributes.

1 Katsaga, A., Kulzhanov, M., Karanikolos, M., Rechel B. (2012). Kazakhstan. *Health systems in transition*. 14(4): 1-154.

2 JSC Kazakhstan temirzholy. (2015). *Medical trains*. Retrieved from <http://www.railways.kz/en>

3 JSC Kazakhstan temirzholy. (2012). *Medical trains for people's health*. Retrieved from <http://www.railways.kz/en/node/2423>