

IMPROVING PROVISION OF EMERGENCY MEDICAL CONSULTATION AND MEDICAL EVACUATION IN KURGAN REGION

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Abstract. The article presents the experience of the specialists of the Department of Emergency consultative medical care (ECMP) of the territorial Center for Disaster Medicine (TCMC) of the Kurgan Region in improving the quality of emergency consultative medical care and medical evacuation in the region when the TCMC operates in the mode of daily activities. Proposals are made on improvement of work of ECMP departments of the territorial centers for disaster medicine.

Key words: *availability and quality of medical care, emergency consultative medical care, emergency situations, Kurgan Region, medical evacuation, performance indicators, territorial center for disaster medicine*

Conflict of interest. The authors declare no conflict of interest

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СОВЕРШЕНСТВОВАНИЕ ОКАЗАНИЯ ЭКСТРЕННОЙ КОНСУЛЬТАТИВНОЙ СКОРОЙ МЕДИЦИНСКОЙ ПОМОЩИ И ПРОВЕДЕНИЯ МЕДИЦИНСКОЙ ЭВАКУАЦИИ В КУРГАНСКОЙ ОБЛАСТИ

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Резюме. Представлен опыт работы специалистов отделения экстренной консультативной скорой медицинской помощи (ЭКСП) территориального центра медицины катастроф (ТЦМК) Курганской области по повышению качества оказания экстренной консультативной скорой медицинской помощи и проведения медицинской эвакуации при работе ТЦМК в режиме повседневной деятельности. Внесены предложения по совершенствованию работы отделений ЭКМП в составе территориальных центров медицины катастроф.

Ключевые слова: *доступность и качество медицинской помощи, Курганская область, медицинская эвакуация, показатели деятельности, территориальный центр медицины катастроф, чрезвычайные ситуации, экстренная консультативная скорая медицинская помощь*

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The purpose of the study is to assess the state and to determine possible ways to improve the provision of emergency advisory ambulance medical care and medical evacuation in the Kurgan region.

Materials and research methods. Under methodological guidance and in close cooperation with specialists from the All-Russian Center for Disaster Medicine "Zashchita", a study of socio-demographic, geographical, climatic characteristics of the Kurgan region was carried out, main indicators of public health, as well as the staffing of medical workers, the structure and state of medical organizations, including hospitals, are analysed. The work of the department of emergency consultative ambulance and medical evacuation, functioning in the structure of the territorial center of disaster medicine is considered. Using the materials of the All-Russian Center of Disaster Medicine "Zashchita" containing respective indicators of the activities of the emergency advisory medical departments of the constituent entities of the Russian Federation (hereinafter referred to as the constituent entities), we took into consideration year 2019 - the last year of the work of healthcare in the mode of daily activity. Were also used the data of industry reporting statistics - form 56. Proposals were made to improve quality and accessibility of field work of the departments of emergency consultative medical care and medical evacuation.

Research results and their analysis. Kurgan Region is a part of the Ural Federal District (UFO), formed on May 13, 2000 [1].

The area of the Kurgan region is 71.5 thousand km²; population as of January 1, 2019 - 834 666 people; population density - 11.7 people / km². Share of urban population - 61.8%, rural - 39.2%. Number of cities of regional subordination - 16, including conventionally large cities - up to 5 thousand population - 6 [2].

It should be noted that at present the budget of the Kurgan region is insufficient to finance social and infrastructural expenditures. For the purpose of additional financing of the region's expenditures, subsidized cash transfers are annually sent from federal budget to regional budget. The financial basis of health care largely influences socio-demographic indicators of the population's health.

The age structure of the population of the Kurgan region is characterized by a high proportion of older people: the proportion of people over working age - 29.2%; people of working age - 49.5; people under working age - 21.3%. The demographic situation is characterized by a natural decline due to an excess of mortality over births. In 2018, the birth rate per 1,000 population was 10.2; general mortality - 15.4; infant mortality - 6.5 per 1,000 live births; maternal mortality - 23.7 per 100 thousand population. The structure of mortality in the Kurgan region is identical to the structure of mortality in the Russian Federation as a whole and is mainly caused by: diseases of circulatory system; malignant neoplasms; external causes, including road traffic accidents; diseases of digestive system and respiratory system.

In the Kurgan region since the 90s years of the previous century negative natural population growth persists.

In Kurgan region the primary incidence in 2018 was 931.3 cases. In Kurgan and Shadrinsk, the primary incidence is 1058.3 cases per 1,000 population. In rural districts of the Kurgan region primary morbidity rate in 2018 is 693 cases per 1,000 population. These indicators do not reflect the health status of rural residents. In the Kurgan region, as in Russia as a whole, the rural health care system is characterized by limited availability of medical care and low efficiency of medical, social and preventive measures. The radius of medical service area for the rural population is about 30 km.

In 2018, there was an increase of 2.3% (579.5 cases per 100 thousand population) in mortality from diseases of the circulatory system, but this figure is lower than in the neighboring Sverdlovsk (654.2) and Chelyabinsk (589.7) regions and corresponds to the national average - 573.6 cases per 100 thousand of population.

On the territory of the region, the protection of the population and its habitat from dangerous biological factors has not been brought to a level at which there are no unacceptable risks of harm to human life and health.

Climatic and geographical features of the Kurgan region, negatively affecting the health of the population:

- sharply continental climate;
- limited opportunities for obtaining drinking groundwater.

The network of state medical organizations located on the territory of the Kurgan region embraces 59 medical facilities, including 43 medical facilities providing inpatient care.

The number of hospital organizations per 10 thousand people is 0.5. The share of people evacuated from central district hospitals amounted to 454 people in 2019, of which 228 people were evacuated by helicopter.

The number of hospital beds per 10 thousand population is 71.5.

The provision of medical personnel per 10 thousand of population - 22.7, including doctors of clinical specialties - 14.3; provision of specialists with secondary medical education - 91.1. The personnel of the ambulance service: general staffing - 52.9%; doctors - 20.3; nursing staff - 49.4%.

In our opinion, low staffing and a decline in the level of medical personnel professionalism are caused by significant socio-economic and everyday difficulties. In this regard, the urgency of improving the organization of the provision of both emergency and planned consultative medical care as well as of mobile forms of medical care is increasing. A considerable effort is required to comply with the routing schemes for patients with acute conditions; organization and improvement of the provision of emergency medical care and medical evacuation to specialized departments also need to be improved.

Since January 1, 2006, in the Kurgan region, the Kurgan Regional Center of Disaster Medicine has been established. It operates under the status of a legal entity and includes a department of emergency advisory ambulance and medical evacuation.

The main tasks of the department:

- to ensure daily readiness of forces and means of the Disaster Medicine Service of the subject to eliminate medical and sanitary consequences of emergency situations;

- to implement the priority project "Ensuring the timely provision of emergency medical care to citizens living in remote areas of the Russian Federation" in the Kurgan region;

- to improve the work on the development of outbound forms of emergency medical care, including the system of emergency consultative medical care and of air ambulance evacuation;

- to provide round-the-clock control of the regional segment of the telemedicine system of the Ministry of Health of Russia and to ensure information exchange with regional information medical systems; to support the federal database "Forces and means of disaster medicine of the Ministry of Health of Russia";

- to develop a dispatching system for ambulance calls, to introduce the modules "Disaster Medicine" and "Head of the Emergency Medical Service", to participate in the creation of a system for calling emergency services through a single number "112";

- to further improve the system of medical assistance to victims of road accidents, ensuring a reduction in the time from the moment of injury to the beginning of providing emergency medical care to victims, including the use of medical aviation, in accordance with the areas of responsibility of the medical organisations;

- to inform promptly on medical and sanitary consequences of emergencies and the course of their elimination.

Being the agency of daily management of Disaster Medicine Service of the Kurgan region, the Center annually develops and monitors the implementation of the Organizational and methodological guidelines for the preparation of the Regional Disaster Medicine Service for protection of life and health of the population in emergency situations. These guidelines aim at improving the provision of emergency medical care to residents of the Kurgan region, including people living in hard-to-reach and remote areas. The implementation of the guidelines ensures a better provision of emergency and specialized emergency medical care, due medical evacuation of patients, timely provision of emergency medical care to victims of emergencies.

One of the most demanded forms of outreach work is the provision of emergency medical care, which includes the use of air transport.

So, in 2005, 2011 and 2019, 8375, 46341 and 12946 applications for the provision of emergency advisory medical care were completed, respectively. The number of applications which included a visit to a medical facility was - 1381, 354 and 842, respectively. 3562, 3280 and 12104 consultations were held by phone, respectively.

In 2005, when the emergency advisory medical care department was a subdivision of the regional clinical hospital, its field work included: delivery of goods - 962 departures; delivery of personnel - 2470 departures. 41% of applications were related to the economic activities of the hospital. This had a negative impact on the work of the department.

Specialists of the emergency advisory medical care department: prepare severe patients for a medical evacuation and organize its implementation; monitor the condition of victims and patients in critical condition and in need of medical evacuation to specialized health care institutions; carry

out medical evacuation of victims and patients to regional institutions on specialized vehicles of the "C" class and on an "ANSAT" helicopter with the provision of necessary medical assistance during the evacuation.

One of the indicators of the quality of work of the specialists of the department is the promptness of departure after receiving an application (Table 1).

From the data in Table 1, it can be seen that by 2020 this indicator reached its maximum.

In order to assess the quality and availability of medical care as objectively as possible, we used the materials of a comparative analysis of some of the main relative indicators of the activities of the department in 2011–2018. The analysis was carried out by the specialists of the All-Russian Center of Disaster Medicine "Zashchita". Based on this methodology, we carried out our own calculations of indicators for 2019. We consider the calculation of relative indicators to be a more informative tool than absolute figures of work performed, especially in the comparative assessment of the activities of the departments of emergency medical care of various subjects (Table 2).

The calculation performed is the initial stage of a large work, during which it is necessary to calculate the respective indicators in relation to the child and rural population. We plan to continue this work after the end of the pandemic.

Currently, the relevance of the outbound form of medical care is increasing due to the emerging increase in the number of seriously injured in emergencies who need emergency medical care. In 2019, in the total number of people injured in emergencies, the share of people in an extremely serious and serious condition amounted to 34.7%; the proportion of hospitalized people - up to 49.3%. There were no deaths during medical evacuation. For comparison - in 2005 these indicators were 11.9 and 44.6%, respectively, 6 people died.

The number of patients with acute coronary syndrome and acute cerebrovascular accident who sought medical help at medical facilities was 4144 people. The number of patients with acute coronary syndrome and acute cerebrovascular accidents, evacuated to specialized departments on the first day after contacting the medical facility, amounted to 3898 people. (94%).

In 2019, 235 flights to the districts of the Kurgan region were performed. 231 patients were evacuated by air, including 68 with acute cerebrovascular accident and 60 with acute myocardial infarction.

Hospital mortality from acute myocardial infarction decreased and reached the target of the local National Project for 2019 - 13.7%.

Таблица 1/ Table No. 1

**Оперативность выезда специалистов ЭКСМП
после получения заявки, абс./%**
Speed of despatch of ECSMP specialists
after receiving the request, abs./%

Время выезда Check-out time	2011	2019
В течение 1 ч/Within 1 hour	4449/94,8	12932/99,9
В течение 2 ч/Within 2 hour	109/2,3	7/0,05
В течение 3 ч/Within 3 hour	33/0,7	4/0,03
В течение более 3 ч/More 3 hour	100/2,2	3/0,02

**Сравнительный анализ некоторых относительных показателей деятельности отделений ЭКМП
субъектов Российской Федерации в составе УФО**

Comparative analysis of some relative indicators of the Emergency consultative ambulance medical care (ECSMP) activities
of various subjects of the Russian Federation

Субъекты в составе УФО Subjects iwithin the Ural Federal District	Оргштатная принадлежность отделения ЭКМП Organizational affiliation of the department of ECSMP	Оказана ЭКМП, на 10 тыс. населения ECSMP provided per 10 thousand people	в том числе с применением сан. авиации including with the use of air ambulance	Проведено очных конс., на 100 выездов Conducted face-to-face consultations, per 100 visits	Выполнено хир. операций, на 100 выездов Performed surgical operations, per 100 visits	Эвакуировано, на 10 тыс. населения Evacuated, per 10 thousand population	в том числе с применением сан. авиации including with the use of air ambulance	Выполнено заявок, на 10 тыс. населения Service request provided per 10 th. pop.	Проведено телемед. консультаций, на 10 тыс. населения Conducted telemedicine consultations, per 10 thous. pop.
2011									
Курганская обл. Kurgan Region	ТЦМК юр.л. ТСМК entity	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Свердловская обл. Sverdlovsk Region	ТЦМК юр.л. ТСМК entity	16,39	0,00	8,33	0,00	0,00	0,00	0,00	0,00
Тюменская обл. Tyumen Region	ТЦМК ОКБ ¹ ТСМК Hosp.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
ХМАО-Югра ² КНМАО-Yugra ²	ТЦМК юр.л. ТСМК entity	27,47	0,00	0,70	0,09	18,19	13,33	0,00	0,00
ЯНАО ³ YANAO ³	ОКБ Hospital	61,83	0,00	25,40	0,26	102,80	100,62	0,00	-
2015									
Курганская обл. Kurgan Region	ТЦМК юр.л. ТСМК entity	62,48	0,00	3,84	1,54	3,51	0,00	3,51	0,00
Свердловская обл. Sverdlovsk Region	ТЦМК юр.л. ТСМК entity	11,59	0,60	6,43	1,29	3,35	0,43	3,35	0,00
Тюменская обл. Tyumen Region	ТЦМК ОКБ ТСМК Hosp.	31,91	1,31	3,82	1,24	7,45	1,31	37,10	0,00
ХМАО-Югра КНМАО-Yugra	ТЦМК юр.л. ТСМК entity	30,64	15,58	2,04	0,02	22,89	15,58	22,89	0,00
ЯНАО YANAO	ОКБ Hospital	81,96	79,81	1,82	1,10	81,96	79,81	42,74	0,00
2018									
Курганская обл. Kurgan Region	ТЦМК юр.л. ТСМК entity	57,75	30,88	32,83	3,62	45,94	33,17	49,18	0,00
Свердловская обл. Sverdlovsk Region	ТЦМК юр.л. ТСМК entity	14,34	0,84	7,33	1,25	3,84	0,55	0,00	0,07
Тюменская обл. Tyumen Region	ТЦМК ОКБ ТСМК Hosp.	47,71	1,40	7,44	1,69	9,05	1,27	8,50	0,00
ХМАО-Югра КНМАО-Yugra	ТЦМК юр.л. ТСМК entity	31,64	18,13	0,27	0,06	24,83	18,13	17,39	0,00
ЯНАО YANAO	ОКБ Hospital	85,43	8,56	10,86	0,63	85,43	85,30	53,77	0,00
2019									
Курганская обл. Kurgan Region	ТЦМК юр.л. ТСМК entity	75,00	3,00	49,40	16,00	17,00	7,00	10,10	26,00

¹ ОКБ – областная клиническая больница, ²ХМАО-Югра – Ханты-Мансийский автономный округ – Югра, ³ЯНАО – Ямало-Ненецкий автономный округ;
²КНМАО-Yugra – Khanty mansiyskiy Avtonomnyy Okrug – Yugra, ²YANAO – Yamalonenetskiy Avtonomnyy Okrug

Unreasonable visits are practically excluded, since before each visit of a specialist, a telemedicine consultation is held, during which the need to go to the site is evaluated. The achievement of this result was facilitated by the creation of a two-level system of evaluation of the quality of medical care provided.

One of the tasks that the specialists of the department of emergency advisory medical care of the territorial center of disaster medicine successfully solve is the provision of emergency and specialized emergency medical care to the population of rural areas, remote and hard-to-reach areas. Thus, as a result of active interaction between the management of the territorial disaster medicine center and municipal authorities in 7 rural areas with a population of more than 5 thousand people 16 zones (settlements) of difficult accessibility,

formed during floods, mudslides and natural fires, have been identified. At each of 16 settlements temporary unpaved landing helipads were equipped meeting safety criteria.

The employees of the emergency advisory medical care department provide medical care both outside a medical organization (including at the scene and during medical evacuation), and in the conditions of any medical facility participating in the implementation of the program of state guarantees of free medical care to individuals [3].

In addition to medical care, which specialized teams and individual specialists of the emergency advisory medical care department provide at the place of departure and in the process of medical evacuation - resuscitation measures and intensive care, surgical interventions of varying degrees of complexity - consultants of the department provide

methodological advice to doctors of the medical facility, evaluate the effectiveness and carry out the adjustment of the ongoing medical and diagnostic measures. It should be noted that only specialists of the emergency advisory medical care department carry out monitoring of the condition of severe and extremely serious patients.

A high level of professional training and civic responsibility allows the specialists of the department to actively participate in scientific and practical research not only within the region, but also at the federal level.

Conclusion and recommendations

1. Many years of experience in providing emergency medical care to the population of the region by the emergency advisory medical care department, functioning in the structure of the territorial Center of Disaster Medicine, allows us to consider such a structure to be optimal. Rationale:

1.1. The full-time consultant physician of the department is released from other duties for the period of duty.

1.2. Doctors-consultants have adequate motivation, since the work in the department is their main activity.

1.3. The response of a consultant to an application received is usually on time.

1.4. Doctors-consultants have an opportunity to receive adequate training for work in emergencies and road accidents in the process of training at the Training Center of the Territorial Disaster Medicine Centre and by participating in regular exercises.

1.5. Despite the recent negative trend, the emergency advisory medical care departments within the Territorial Disaster Medicine Centres are better provided with highly qualified medical personnel.

1.6. A high level of integration of specialists of the department with the specialists of the emergency medical service has been created, there is an opportunity to improve such interaction, especially when working in an emergency mode.

1.7. A significant amount of funding for the activities of the territorial disaster medicine centre goes to improve the material and technical base of the emergency advisory medical care department - for example, in 2020 the department received 7 cars of class "C".

2. We propose to carry out the following measures at the federal level:

2.1. As a part of the planned measures to improve the efficiency of the system of providing medical care to the population of the country, to develop a set of measures to increase the volume of financing for health care and training of medical personnel, taking into account the existing negative trends. Consider the issue of improvement of the compulsory health insurance system in relation to emergency services.

2.2. To improve the air ambulance system, taking into account the demographic, geographical and economic characteristics of the regions, while maintaining the existing historical and national traditions and trends.

2.3. To organize, on the basis of the All-Russian Center of Disaster Medicine "Zashchita", with the involvement of specialists from the leading regional emergency services, a comprehensive work to improve statistical medical reporting with the development of a system of relative indicators for the provision of emergency medical care.

3. Specialists of the Kurgan Regional Territorial Center of Disaster Medicine express their readiness to take part in the relevant pilot projects.

REFERENCES

1. [URL]: [Yandex.ru/search/touch/](https://yandex.ru/search/touch/)
2. [URL]: <https://geographyofrussia.com/gorodskoe-i-selskoe-naselenie-rossii/>
3. Garmash O.A., Banin I.N., Popov V.P., Baranova N.N., Popov A.V., Shilkin I.P. *Organizatsiya Okazaniya Ekstrennoy Konsultativnoy Meditsinskoй Pomoshchi i Provedeniya Meditsinskoй Evakuatsii* = Organization of Emergency Medical Advisory Service and Medical Evacuation, Guidelines. Moscow, VTSMK Zashchita Publ., 2015. 174 p. (In Russ.).

СПИСОК ИСТОЧНИКОВ

1. [Yandex.ru/search/touch/](https://yandex.ru/search/touch/)
2. <https://geographyofrussia.com/gorodskoe-i-selskoe-naselenie-rossii/>
3. Гармаш О.А., Банин И.Н., Попов В.П., Баранова Н.Н., Попов А.В., Шилкин И.П. Организация оказания экстренной консультативной медицинской помощи и проведения медицинской эвакуации: Методические рекомендации. М.: ФГБУ ВЦМК «Защита», 2015. 174 с. (Библиотека Всероссийской службы медицины катастроф).