

СЛУЖБА МЕДИЦИНЫ КАТАСТРОФ ВОРОНЕЖСКОЙ ОБЛАСТИ: ИСТОРИЯ СОЗДАНИЯ И СТАНОВЛЕНИЯ

Л.Е.Механтьева¹, А.В.Енин¹

¹ ФГБОУ ВО «Воронежский государственный медицинский университет им. Н.Н.Бурденко» Минздрава России, Воронеж, Россия

Резюме. Представлена история создания и становления Службы медицины катастроф (СМК) Воронежской области и Воронежского областного клинического центра медицины катастроф (ЦМК, Центр). Рассмотрены основные направления деятельности СМК и ЦМК, структура и оснащенность Центра и др.

Ключевые слова: Воронежский областной клинический центр медицины катастроф, оснащенность, санитарная авиация, Служба медицины катастроф Воронежской области, структура

Конфликт интересов. Авторы статьи подтверждают отсутствие конфликта интересов

Для цитирования: Механтьева Л.Е., Енин А.В. Служба медицины катастроф Воронежской области: история создания и становления // Медицина катастроф. 2022. №3. С.42-46. <https://doi.org/10.33266/2070-1004-2022-3-42-46>

DISASTER MEDICINE SERVICE OF VORONEZH REGION: HISTORY OF CREATION AND FORMATION

L.E.Mekhantyeva¹, A.V.Enin¹

¹ Voronezh State Medical University named after N.N. Burdenko, Voronezh, Russian Federation

Summary. The article presents the history of foundation and formation of the Disaster Medicine Service of the Voronezh region and of the Voronezh Regional Clinical Center for Disaster Medicine. The basic directions of the Center's and Service's activity, the Center's structure and equipment are examined.

Key words: air ambulance, Disaster Medicine Service of the Voronezh region, equipment, structure, Voronezh Regional Clinical Center for Disaster Medicine

Conflict of interest. The authors declare no conflict of interest

For citation: Mekhantyeva L.E., Enin A.V. Disaster Medicine Service of Voronezh Region: History of Creation and Formation. *Meditsina Katastrof* = Disaster Medicine. 2022;3:42-46 (In Russ.). <https://doi.org/10.33266/2070-1004-2022-3-42-46>

Контактная информация:

Механтьева Людмила Евгеньевна – докт. мед. наук, профессор; заведующая кафедрой медицины катастроф и безопасности жизнедеятельности ВГМУ им. Н.Н.Бурденко
Адрес: Россия, 394036, г. Воронеж, ул. Студенческая, 10
Тел.: +7 (473) 253-05-66
E-mail: Ludm.mekhantjewa2012@yandex.ru

Contact information:

Ludmila E. Mekhantyeva – Dr. Sc. (Med.), Professor; Head of the Department of Disaster Medicine and Life Safety of Voronezh State Medical University after N.N. Burdenko
Address: 10, Studencheskaya str., Voronezh, 394036, Russia
Phone: +7 (473) 253-05-66
E-mail: Ludm.mekhantjewa2012@yandex.ru

In the 1980s in the USSR, as well as in the whole world, a significant growth of the number of man-caused and natural emergencies was registered. First of all it was Chernobyl catastrophe and earthquake in Armenia that were accompanied by great human losses and huge material damage. All that changed an attitude towards the real readiness of the

state to prevent and liquidate emergencies occurring in peacetime. In the late 1980s and early 1990s our country went through times of change in politics, economics and other spheres of life. Changes affected Voronezh region as well. The Novovoronezh nuclear power plant, a number of chemically hazardous and other man-made hazardous fa-

cilities are located on the territory of the region. Federal highways (FAD) M-4 "Don", M-6 "Caspian", A-144 highway, a number of inter-district roads pass through the Voronezh region, the number of road traffic accidents (RTA) on which is 10 times higher than on FAD [1, 2]. Forest and steppe fires and other emergencies of natural, man-made and social nature are not rare in the region [3]. All these factors have determined the necessity of creation and development of the Disaster Medicine Service of Voronezh region.

The fundamental document that gave a start to the creation in Russia of a service for the prevention and liquidation of medical and sanitary consequences of emergency situations was the Resolution of the Council of Ministers of the RSFSR "On creation of the emergency medical aid service in emergency situations" ¹192 of June 14, 1990. In Voronezh Oblast, the Department of Emergency and Planned-Consultative Medical Care, which was part of the Oblast Clinical Hospital (OKB) No. 1, was at the origins of the emergency medical services. The department was located in the main building of OKB. The main function of the department was rendering specialized and highly qualified medical aid to the residents of 32 districts of the region, as well as coordinating the work of interregional centers (toxicology, cardio-surgery, hemodialysis, burns, etc.) and the residents of neighboring regions.

The first mention of the Service dates back to 1938, when it was called "Sanitary Aviation Station" and was headed by Chief Doctor M.K. Komissarov (Fig.1). In that year only 9 calls were registered. In 1939-1951 there were 120-130 calls annually. The station was equipped with air transport and cars [4, 5].

During wartime, due to the evacuation of medical institutions from Voronezh, the air ambulance station temporarily stopped its work. During the Great Patriotic War in the areas of the most active combat operations air ambulance stations evacuated the wounded and sick by air transport to hospital bases. Even during the preparation for the operation on the Central Front in March 1943 over 16 thousand wounded were evacuated by this type of transport from the Kursk region to the district of Yelets. On separate days transport aircraft evacuated up to 1.6 thousand wounded. By the beginning of the defensive battle the hospital base of the Central Front included 3 and 2 echelons of Voronezh Front. In

addition, Voronezh Front had reserve hospitals with 3,500 beds. During the defensive battle the hospital bases of the Central Front received 45 000 wounded and 59 638 wounded and sick persons, which were transported from the troops to hospital bases of the armies of Voronezh Front. In the front line the wounded were evacuated mainly by railway transport. Great experience was gained by medical service in the organization of mass evacuation of the wounded and sick by transport aviation. During the counteroffensive at Kursk up to 20,000 wounded and sick were evacuated by transport planes [6].

Immediately after the liberation of Voronezh from the Nazi occupation, the station resumed its activities. In August 1943 it had one aircraft, in 1944 — two. After the end of the Great Patriotic War sanitary aviation began to replenish with new aircrafts. The peak of its development was in the second half of the XX century. At that time helicopters were widespread, the appearance of which made it possible to land the aircraft (AC) where previously it was not technically possible [4]. From 1939 to 1952 the service was headed by 5 chief physicians. In 1952-1974 the sanitary aviation was headed by Cherkasov Petr Andreevich. Since 1974 the service of urgent and planned-consultative medical assistance is headed by Lev Ivanovich Kochetov — surgeon, obstetrician-gynecologist, public health organizer of higher qualification category.

Flights to the region were made by different types of aircrafts and helicopters — Po-2, Yak-12, An-2, Mi-1, Mi-4, K-26. Sanaviation had 6 vehicles and 2-4 airplanes for calls provision; during spring floods a helicopter was provided. There were 13 flight operators and 10 flight attendants, 128 attached consulting physicians, specialists from regional medical institutions and employees of Voronezh State Medical Institute departments. The flight attendants and doctors-consultants, assigned to the sanaviation, had to be on call 24 hours a day in order to provide emergency qualified medical aid. Emergency skilled medical care was provided in more than 40 specialties (Figure 2).

In 1954 the air ambulance station was united with the regional hospital, which positively influenced the conditions of its work and the quality of emergency and urgent medical aid rendering to the patients in the countryside. In 1970 the air ambulance station had three airplanes, a staff consisting of qualified doctors, necessary equipment and instruments. Professors, associate professors and assistants of the medical institute, as well as residents of clinical hospitals were sent to the districts of the region. In 1960 the number of persons who received medical assistance was 1,881, in 1970 — almost three times more. In 1970, the air ambulance station of the regional hospital received 1360 calls, performed 716 departures. On the spot were performed 189 different operations, 218 blood transfusions, about 1 thousand of laboratory, X-ray and other instrumental examinations. In addition to emergency departures on calls, medical workers of sanitary aviation carried out a lot of work on transportation of patients from rural areas to regional specialized medical institutions and consultations in the order of scheduled departures [7]. The dispatcher service provided round-the-clock reception of calls from rural medical preventive institutions and the organization of specialist consultations by telephone. The head of the sanaviation service was responsible for the profile and staffing of outreach teams, as



Рис. 1. Комиссаров Михаил Козьмич (1895–1976 гг.) – кандидат медицинских наук, доцент, Заслуженный врач РСФСР
Fig. 1. Komissarov Mikhail Kozmich (1895-1976) – candidate of medical sciences, associate professor, Honored doctor of the RSFSR

well as for the order of emergency specialized medical care. For the purpose of quick collection and timely delivery of consultants, blood products and medicines, the work of the vehicles on the line was corrected by walkie-talkies. For better work of specialists of the department and for control of continuity in the work of medical institutions of the districts and the department of emergency and planned-consultative medical aid, incoming calls and consultations were recorded on a tape recorder by telephone.

On May 27, 1991 in our region on the basis of the emergency and planned-consultative medical care department of the Regional Clinical Hospital ¹ 1 for medical care to victims of the emergencies the Regional Center of Emergency Medical Care was established. This date can be considered as the day of establishment of the Disaster Medicine Service of the Voronezh region, because from that moment all the activity of the Center was carried out in the sphere of disaster medicine. L.I. Kochetov, who previously headed the Department of Emergency and Planned-Consultative Medical Care, was appointed Chief Physician of the Center.

Taking into account the great experience of the Voronezh Regional Hospital emergency and consultative medical care department in delivering specialist teams to remote areas of the region and in carrying out medical evacuation of severe patients from districts to regional medical preventive institutions, the Voronezh Territorial Disaster Medicine Center (further — Center) included emergency medical care department for providing assistance to victims on site of emergency and during the first stage of medical evacuation, as well as emergency department for providing emergency medical care to the injured.

Later on, in compliance with the requirements to render specialized emergency medical aid not only in the hospitals of the regional hospitals but also during medical evacuation of severe and extremely severe patients to the regional clinics, mobile resuscitation-anesthesiology teams were formed based on which the resuscitation-anesthesiology department was created. The correctness of this concept was further confirmed by the decision of the Russian Ministry of Health, which used the Voronezh Center experience to create such centers in other constituent entities (hereinafter, constituent entities) of the Russian Federation.

The staff structure of the Center, approved on the basis of such a multifunctional approach to its activity, allowed the regional Disaster Medicine Service to form staff formations consisting of highly qualified specialists to provide medical aid in the first and second stages of medical evacuation, to create teams of permanent and highly prepared specialists.

In March 1996 the first All-Russian Scientific Conference on disaster medicine "Tasks and organization of work of the territorial and regional centers of disaster medicine" was held in Voronezh. The organizers of the conference, along with the Voronezh Center for Disaster Medicine, were the Regional Health Committee and the All-Russian Center for Disaster Medicine "Zaschita" of the Ministry of Health of Russia.

From the very beginning of the regional Center establishment, sanitary aviation was organically included in its composition — its use significantly reduced the time of arrival of the specialists to the patient of the district hospital. For his many years of work on the development of medical aviation and his significant contribution to the formation of the Disaster Medicine Service of the Voronezh region the chief doctor of the Center L.I. Kochetov was awarded the honorary title "Honored Doctor of the Russian Federation" in 1997 (Fig.3).

For a long time the main aircraft of the Center was An-2. In 2012-2014 along with it the medium-range Pilatus PC-12 air ambulance plane with resuscitation module on board was used. During this period 130 sanitary flights were performed, 154 patients were evacuated, including 68 children, including 37 newborns. In 2015, a pilot project was launched in the region to use a Eurocopter EC-135 ambulance helicopter equipped with a life support system. Currently, the Center uses a new domestic-made Ansat helicopter with a medical module, equipped with various medical equipment, including artificial lung ventilation (ALV), oxygen cylinders, pulse oximeters, infusion pumps and other equipment necessary to transport resuscitation patients [7].

The Voronezh Regional Clinical Center for Disaster Medicine has about 50 doctors, including surgeons, intensive care specialists, neurosurgeons, emergency physicians, trauma surgeons and vascular surgeons. There are 4-5 teams of specialists on duty round the clock: intensive care, general surgery, neurosurgery and vascular surgery teams. If necessary, trauma surgeons and thoracic surgeons are involved.



Рис. 2. Работа станции санитарной авиации
Fig. 2. The work of the air ambulance station

The teams are in constant readiness to leave or fly out to the district hospitals. If the patient's condition does not allow his/her transportation, the doctors travel to conduct consultations or perform surgical interventions on site.

In 2020, the Center specialists conducted 2,638 visits by ambulance and 166 flights by Ansat ambulance helicopter to district hospitals in the region. 1,467 remote consultations were conducted: 630 telemedicine consultations and 837 telephone consultations [8]. Emergency consultative medical aid was rendered to 4636 patients. The surgeons of the Center operated on 390 patients in district hospitals and performed 174 fibroendoscopic therapeutic and diagnostic procedures. Resuscitation teams and ambulance crews evacuated 2,540 patients; in 65 cases, interregional medical evacuations were performed, including 38 evacuations of children, 25 of whom were under one year of age [9]. An air ambulance was used to evacuate 161 patients, 97% of them were evacuated within the first 24 hours of the call. Medical specialists performed medical evacuation of patients with new coronavirus infection, including the use of EVI [10, 11]. The Center for Disaster Medicine organized 849 telemedical consultations of COVID-19 patients on ventilation, which were performed by medical specialists of the Federal Intensive Care Consultation Center. 45.1 liters of blood products were delivered to district hospitals.

The Center has a training and methodological department [12]. In 2020 its specialists taught the rules of first aid to more than 200 road users, held 12 field events, of which 2 — in the districts of the Voronezh region. Three training sessions were held for the staff of the emergency medical teams. Within the framework of implementation of the regional program of providing medical organizations with ambulance vehicles, the Center was equipped with 15 class "C" ambu-

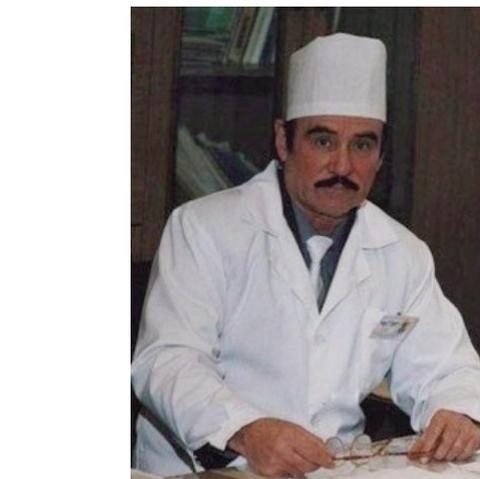


Рис. 3. Кочетов Лев Иванович (1939 г.р.) – врач-организатор здравоохранения высшей квалификационной категории, Заслуженный врач Российской Федерации

Fig. 3. Kochetov Lev Ivanovich (born 1939) – doctor-organizer of public health services of the highest qualification category, Honored doctor of the Russian Federation

lances. At present, the Center's vehicle fleet includes almost 70% of ambulances with less than 5 years of service life.

In the beginning of 2021 the Voronezh Regional Clinical Center for Disaster Medicine won the All-Russian contest "The best territorial center for disaster medicine of the Ministry of Health of the Russian Federation in 2020" (Fig.4). The main evaluation criteria were: readiness to work in emergency situations; level of development of technologies of emergency medical care and improvement of the regional structure of the Center.



Рис. 4. Коллектив Воронежского областного клинического центра медицины катастроф. В центре – главный врач ЦМК А.Н.Артемов (2021)

Fig. 4. The staff of the Voronezh regional clinical center for disaster medicine. Head doctor of the center – A.N. Artemov (2021)

1. Механтьева Л.Е., Енин А.В. Зависимость дорожно-транспортных происшествий на территории Воронежской области от факторов внешней среды // Прикладные информационные аспекты медицины. 2016. Т.19, № 4. С. 43-49.
2. Енин А.В. Особенности оказания медицинской помощи при дорожно-транспортных происшествиях с учетом распределения зон ответственности лечебно-профилактических учреждений Воронежской области // Медико-биологические и социально-психологические проблемы безопасности в чрезвычайных ситуациях. 2013. № 4. С. 40-43.
3. Енин А.В., Механтьева Л.Е., Перфильева М.В., Маршалова В.А., Манжосов О.О. Медико-социальные аспекты пожарной безопасности // Комплексные проблемы техносферной безопасности: Матер. VI Международной научно-практической конференции / Под ред. Дроздова И.Г. Воронеж, 2021. С. 242-249.
4. Фурменко И.П. Очерки истории здравоохранения Воронежского края. Воронеж: Изд-во Воронеж. ун-та, 1968.
5. Казенное учреждение здравоохранения Воронежской области «Воронежский Областной клинический центр медицины катастроф». История центра. Интернет ресурс: <http://www.cmk36.ru/about.php> (Дата обращения: 05.06.2022 г.).
6. Ворсин В.Ф., Ионов В.В. Тыловое обеспечение войск в ходе оборонительного сражения под Курском (2-23 июля 1943 г.) // Военно-исторический журнал. 2021. № 11.
7. Воробьев И.И., Струк Ю.В., Механтьева Л.Е., Артёмов А.Н. Особенности организации системы санитарной авиации в Воронежской области // Медицина катастроф. 2019. № 3. С. 39-41. <https://doi.org/10.33266/2070-1004-2019-3-39-41>.
8. Механтьева Л.Е., Артемов А.Н., Ильичев В.П. Опыт применения телемедицинских технологий в работе Воронежского областного клинического центра медицины катастроф // Медицина катастроф. 2021. №4. С. 17-22.
9. Механтьева Л.Е., Ильичев В.П., Складорова Т.П., Сапронов Г.И. Организация квалифицированной и специализированной медицинской помощи детям в условиях чрезвычайных ситуаций в Воронеже и Воронежской области // Безопасность-2019: Матер. III Межрегиональной научно-практической конференции. Волгоград, 2019. С. 9-11.
10. Ирхин Н.Е., Иващенко Е.С., Матюхина А.М., Сапронов Г.И., Механтьева Л.Е. Новая коронавирусная инфекция: особенности организации помощи пациентам в Воронежской области // Актуальные вопросы биологической безопасности на современном этапе: Матер. V Всероссийской студенческой научно-практической конференции с международным участием. Воронеж, 2021. С. 27-33.
11. Артемов А.Н., Балабаев Г.А., Воробьев И.И., Механтьева Л.Е., Струк Ю.В. Организация этапного оказания медицинской помощи пациентам с подозрением и с подтвержденной новой коронавирусной инфекцией COVID-19 в Воронежской области // Медицина катастроф. 2021. № 2. С. 46-49.
12. Никулина О.И., Дудукина А.Е., Механтьева Л.Е., Петрова А.В., Складорова Т.П., Косьякова Н.А. Медико-психологические аспекты техносферной безопасности // Актуальные вопросы техносферной безопасности на современном этапе: Сборник трудов V Всероссийской студенческой научно-практической конференции с международным участием / Под ред. Сапронова Г.И. Воронеж, 2021. С. 100-105.
1. Mekhant'yeva L.E., Enin A.V. Dependence of Traffic Accidents on the Territory of the Voronezh Region on Environmental Factors. *Prikladnyye Informatsionnyye Aspekty Meditsiny* = Applied Information Aspects of Medicine. 2016;19;4:43-49 (In Russ.).
2. Yenin A.V. Peculiarities of providing medical care in case of road traffic accidents, taking into account the distribution of areas of responsibility of medical institutions of the Voronezh region. *Mediko-Biologicheskiye i Sotsialno-Psikholicheskiye Problemy Bezopasnosti v Chrezvychaynykh Situatsiyakh* = Medico-Biological and Socio-Psychological Problems of Safety in Emergency Situations. 2013;4:40-43 (In Russ.).
3. Yenin A.V., Mekhant'yeva L.Ye., Perfil'yeva M.V., Marshalova V.A., Manzhosov O.O. Medico-Social Aspects of Fire Safety. *Kompleksnyye Problemy Tekhnosfernoy Bezopasnosti* = Complex Problems of Technospheric Safety. Materials of the VI International Scientific and Practical Conference. In 3 parts. Ed. Drozdov I.G. Voronezh Publ., 2021. P. 242-249 (In Russ.).
4. Furmenko I.P. *Ocherki Istorii Zdravoookhraneniya Voronezhskogo Kraya* = Essays on the History of Healthcare in the Voronezh Region. Voronezh Publ., 1968 (In Russ.).
5. Government Healthcare Institution of the Voronezh Region "Voronezh Regional Clinical Center for Disaster Medicine". History of the Center. URL: <http://www.cmk36.ru/about.php> (Date of access: 04/02/2022) (In Russ.).
6. Vorsin V.F., Izonov V.V. Logistic Support of the Troops During the Defensive Battle Near Kursk (July 2-23, 1943). *Voyenno-Istoricheskiy Zhurnal* = Military Historical Journal. 2021;11 (In Russ.).
7. Vorobyev I.I., Struk Yu.V., Mekhant'yeva L.Ye., Artemov A.N. Specifics of Organization of Sanitary Aviation System in Voronezh Oblast. *Meditsina Katastrof* = Disaster Medicine. 2019;3:39-41. <https://doi.org/10.33266/2070-1004-2019-3-39-41> (In Russ.).
8. Mekhant'yeva L.Ye., Artemov A.N., Ilichev V.P. Experience of Applying Telemedicine Technologies in the Work of Voronezh Regional Clinical Center for Disaster Medicine. *Meditsina Katastrof* = Disaster Medicine. 2021;4:17-22 (In Russ.).
9. Mekhant'yeva L.Ye., Ilichev V.P., Sklyarova T.P., Sapronov G.I. Organization of Qualified and Specialized Medical Care for Children in Emergency Situations in Voronezh and the Voronezh Region. *Bezopasnost-2019* = Security-2019. Materials of the III Interregional Scientific and Practical Conference. Volgograd Publ., 2019. P. 9-11 (In Russ.).
10. Irkhin N.Ye., Ivashchenko Ye.S., Matyukhina A.M., Sapronov G.I., Mekhant'yeva L.Ye. New Coronavirus Infection: Features of the Organization of Care for Patients in the Voronezh Region. *Aktualnyye Voprosy Biologicheskoy Bezopasnosti na Sovremennom Etape* = Topical Issues of Biological Safety at the Present Stage. Materials of the V All-Russian Student Scientific-Practical Conference with International Participation. Voronezh Publ., 2021. P. 27-33 (In Russ.).
11. Artemov A.N., Balabayev G.A., Vorobyev I.I., Mekhant'yeva L.Ye., Struk Yu.V. Organization of Stage Medical Care to Patients with Suspected and Confirmed new Coronavirus Infection Covid-19 in the Voronezh Region. *Meditsina Katastrof* = Disaster Medicine. 2021;2:46-49 (In Russ.).
12. Nikulina O.I., Dudukina A.Ye., Mekhant'yeva L.Ye., Petrova A.V., Sklyarova T.P., Kosyakova N.A. *Mediko-Psychological Aspects of Technosphere Safety. Aktualnyye Voprosy Tekhnosfernoy Bezopasnosti na Sovremennom Etape* = Topical Issues of Technosphere Safety at the Present Stage. Proceedings of the V All-Russian Student Scientific-Practical Conference with International Participation. Ed. Sapronov G.I. Voronezh Publ., 2021. P. 100-105 (In Russ.).

Материал поступил в редакцию 10.06.22; статья принята после рецензирования 07.09.22; статья принята к публикации 23.09.22
 The material was received 10.06.22; the article after peer review procedure 07.09.22; the Editorial Board accepted the article for publication 23.09.22