

## KEY RESULTS OF ACTIVITIES OF THE FEDERAL CENTER FOR DISASTER MEDICINE OF THE FEDERAL STATE INSTITUTION "NATIONAL MEDICAL AND SURGICAL CENTER NAMED AFTER N.I. PIROGOV" AND OF THE DISASTER MEDICINE SERVICE OF THE MINISTRY OF HEALTH OF RUSSIA IN 2021

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**Abstract.** The preparedness of the Russian health care to react to emergency situations, issues of organization and provision of medical care and medical evacuation in emergencies are inextricably linked to the activities of the Disaster Medicine Service of the Russian Ministry of Health, the main component of the All-Russian Disaster Medicine Service. Since March 1, 2021 day-to-day administration of the All-Russian Disaster Medicine Service and of the Disaster Medicine Service of the Russian Ministry of Health is performed by the Federal Center for Disaster Medicine of National Medical and Surgical Center named after N.I. Pirogov.

*The aim of the study* is to define the priorities for the year 2022 for the Federal Disaster Medicine Center, for Disaster Medicine Service of the Russian Ministry of Health and for the All-Russian Disaster Medicine Service as well as for the whole system of population medical support in emergencies. The priorities will be defined based on the analysis of the 2021 year activities for the Federal Center for Disaster Medicine, for territorial centers of disaster medicine, for regional centers of emergency and disaster medicine and for regional centers of disaster and emergency medicine.

*Materials and research methods.* Regulatory and methodological documents governing the organization and functioning of the All-Russian Disaster Medicine Service and of the Disaster Medicine Service of the Ministry of Health of Russia, documents setting the procedure for medical care and medical evacuation of victims in emergencies; reports of territorial centers of disaster medicine, of regional centers of emergency and disaster medicine and of regional centers of disaster and of federal disaster medicine centres on the medical and sanitary emergency response activities in 2021 as well as other documents; scientific papers and publications on current issues of medical care in emergencies, on development of the Disaster Medicine Service information environment and on digitalization of healthcare. Research methods: analytical statistical, method of direct observation, logical and informational modeling.

*Research results and their analysis.* The main results of activities of Federal Disaster Medicine Center and of Disaster Medicine Service of the Russian Ministry of Health in 2021 were considered, including information interaction with the operational services in conference mode, monitoring of the medical and sanitary situation, emergency data, measures to combat the COVID-19 pandemic, etc. The structure of Disaster Medicine Service at the regional level was analyzed. The main directions of Federal Disaster Medicine Center and Disaster Medicine Service of the Russian Ministry of Health activities for 2022 are presented.

**Key words:** All-Russian Disaster Medicine Service, COVID-19 pandemic, emergencies, Federal Center for Disaster Medicine of N.I. Pirogov National Medical and Surgical Center of the Ministry of Health of Russia, patients, Russian Ministry of Health Disaster Medicine Service, victims,

**Conflict of interest.** The authors declare no conflict of interest

**For citation:** Zamyatin M.N., Bystrov M.V., Kolodkin A.A., Kilnik A.I., Belova A.B., Isaeva I.V., Bagaev G.A., Kataev A.S., Magazeishchikova N.G. Key Results of Activities of the Federal Center for Disaster Medicine of the Federal State Institution "National Medical and Surgical Center Named after N.I.Pirogov" and of the Disaster Medicine Service of the Ministry of Health of Russia in 2021. *Meditsina Katastrof* = Disaster Medicine. 2022; 1: 13-19 (In Russ.). <https://doi.org/10.33266/2070-1004-2022-1-13-19>

## ОСНОВНЫЕ ИТОГИ ДЕЯТЕЛЬНОСТИ ФЕДЕРАЛЬНОГО ЦЕНТРА МЕДИЦИНЫ КАТАСТРОФ ФГБУ «НАЦИОНАЛЬНЫЙ МЕДИКО-ХИРУРГИЧЕСКИЙ ЦЕНТР ИМ. Н.И.ПИРОГОВА» И СЛУЖБЫ МЕДИЦИНЫ КАТАСТРОФ МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ в 2021 г.

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**Резюме.** Готовность российского здравоохранения к реагированию на чрезвычайные ситуации (ЧС), вопросы организации и оказания медицинской помощи и проведения медицинской эвакуации пострадавших в ЧС неразрывно связаны с деятельностью Службы медицины катастроф (СМК) Минздрава России – основной составляющей Всероссийской службы медицины катастроф (ВСМК). С 1 марта 2021 г. функции и полномочия органа повседневного управления ВСМК и СМК Минздрава России на федеральном уровне выполняет Федеральный центр медицины катастроф (ФЦМК) ФГБУ «Национальный медико-хирургический центр (НМХЦ) им. Н.И.Пирогова» Минздрава России.

**Цель исследования** – на основе анализа основных итогов деятельности в 2021 г. Федерального центра медицины катастроф, территориальных центров медицины катастроф (ТЦМК), региональных центров скорой медицинской помощи и медицины катастроф (РЦ СМП МК) и региональных центров медицины катастроф и скорой медицинской помощи (РЦ МК СМП) определить приоритетные направления деятельности в 2022 г. ФЦМК, СМК Минздрава России и ВСМК, всей системы медицинского обеспечения населения, пострадавшего в чрезвычайных ситуациях.

**Материалы и методы исследования.** Материалы исследования: нормативные и методические документы, определяющие порядок организации и функционирования ВСМК, СМК Минздрава России, порядок оказания медицинской помощи и проведения медицинской эвакуации пострадавших в ЧС; отчеты ТЦМК, РЦ СМП МК, РЦ МК СМП и ФЦМК о деятельности по ликвидации медико-санитарных последствий ЧС в 2021 г. и другие документы; научные работы и публикации, посвященные актуальным вопросам медицинского обеспечения населения в ЧС, развития информационной среды ВСМК и цифровизации здравоохранения. Методы исследования: аналитический статистический, метод непосредственного наблюдения, логическое и информационное моделирование.

**Результаты исследования и их анализ.** Рассмотрены основные результаты деятельности ФЦМК и СМК Минздрава России в 2021 г., в том числе по информационному взаимодействию с оперативными службами в режиме конференц-связи, мониторингу медико-санитарной обстановки, данные о ЧС, мерах по борьбе с пандемией COVID-19 и др. Проанализирована структура СМК на региональном уровне. Представлены основные направления деятельности ФЦМК и СМК Минздрава России в 2022 г.

**Ключевые слова:** *больные, Всероссийская служба медицины катастроф, пандемия COVID-19, пострадавшие, Служба медицины катастроф Минздрава России, Федеральный центр медицины катастроф ФГБУ «Национальный медико-хирургический центр им. Н.И.Пирогова» Минздрава России, чрезвычайные ситуации*

**Конфликт интересов.** Авторы статьи подтверждают отсутствие конфликта интересов

**Для цитирования:** *Замятин М.Н., Быстров М.В., Колодкин А.А., Кильник А.И., Белова А.Б., Исаева И.В., Багаев Г.А., Катаев А.С., Магазейщикова Н.Г. Основные итоги деятельности Федерального центра медицины катастроф ФГБУ «Национального медико-хирургического центра им. Н.И.Пирогова» Минздрава России и Службы медицины катастроф Министерства здравоохранения Российской Федерации в 2021 г. // Медицина катастроф. 2022. №1. С. 13-19. [org/10.33266/2070-1004-2022-1-13-19](http://org/10.33266/2070-1004-2022-1-13-19)*

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**The aim of the study** is to analyze the main results of the activities of the Federal Center for Disaster Medicine of N.I. Pirogov National Medical and Surgical Center, Territorial Centers for Disaster Medicine, Regional Centers for Emergency and Disaster Medicine, Regional Centers for Disaster Medicine and Emergency Medical Care and to develop proposals for further development and identify priority activities in 2022 for the Federal Center for Disaster Medicine, Disaster Medicine Service of the Russian Ministry of Health and for the All-Russian Disaster Medicine Service, as well as for the whole system of medical care for the population affected in emergency situations.

**Materials and research methods.** The sources of information were as follows: normative and methodical documents determining the order of organization and functioning of the All-Russian Disaster Medicine Service, of the Disaster Medicine Service of the Ministry of Health of Russia, the procedure of medical care and medical evacuation of the emergency victims<sup>1-3</sup>; reports of the Territorial Centers for Disaster Medicine, Regional Centers for Emergency and Disaster Medicine, Regional Centers for Disaster Medicine and Emergency Medical Care and of the Federal Center for Disaster Medicine on the work in the emergency medical care system in 2021; the reports on the state of readiness of the regional Disaster Medicine Service prepared by the specialists of the Federal Center for Disaster Medicine; the materials of the special tactical, command-staff trainings and command-

staff exercises; scientific papers and publications on current issues of medical care in emergencies, on the development of the information environment of the emergency medical response and digitalization of healthcare [1-4]. Research methods: analytical statistical, method of direct observation, logical and information modeling.

**Results of the study and their analysis.** Coordination of interaction between management bodies, as well as the use of forces and means of the All-Russian Service for Disaster Medicine is implemented within the framework of the Unified State System of Emergency Prevention and Response.

In accordance with the Decree of the Government of the Russian Federation from October 12, 2020 No. 1671<sup>4</sup> since March 1, 2021 the functions and powers of the day-to-day management of the All-Russian Disaster Medicine Service at the federal level are entrusted to the Federal State Budgetary Institution "N.I. Pirogov National Medical and Surgical Center" of the Ministry of Health of the Russian Federation.

Based on the order of the Ministry of Health of Russia 1133<sup>5</sup> from October 20, 2021 in the structure of the Federal State Budgetary Institution "N.I. Pirogov Scientific and Surgical Center" of the Ministry of Health of Russia the Federal Center for Disaster Medicine was established as a separate unit and is functioning since March 1, 2021.

At the first stage the key task of Federal Center was to provide continuity in solving all problems of the All-Russian Disaster Medicine Service and the Disaster medicine

<sup>1</sup> On the Protection of the Population and Territories from Natural and Man-Made Emergencies. Federal Law dated December 21, 1994, No. 68-FZ (In Russ.).

<sup>2</sup> On the Fundamental Principles of the Public Health Protection in the Russian Federation. Federal Law dated November 21, 2011, No. 323-FZ (In Russ.).

<sup>3</sup> On the Approval of Regulations of the All-Russian Service for Disaster Medicine. Decree of the Government of the Russian Federation dated August 26, 2013, No. 734 (In Russ.).

<sup>4</sup> On the Introduction of Amendments to Certain Acts of the Government of the Russian Federation and the Recognition of the Decree of the Government of the Russian Federation of May 3, 1994 No. 420 as Invalid. Decree of the Government of the Russian Federation dated October 12, 2020, No. 1671 (In Russ.).

<sup>5</sup> On Approval of the Charter of the Federal State Budgetary Institution "N.I. Pirogov National Medical and Surgical Center" of the Ministry of Health of the Russian Federation: Order of the Ministry of Health of Russia of 20.10.2021 No. 1133

Service of Ministry of Health of Russia, to keep high professional potential and good traditions of the Service, established by "Zaschita" All-Russian Disaster Medicine Center, headed by S.F. Goncharov, RAS academician, main freelance specialist on disaster medicine of the Ministry of Health of Russia.

During the preparatory period, together with the profile department of the Russian Ministry of Health, a great work was carried out to solve personnel, legal, financial, informational, technological, property, medical and other issues. More than 70 experienced employees of "Zashchita" came to work to the Federal Center. In our opinion, the task of ensuring continuity in the transfer of authority has been successfully accomplished.

Starting from March 1, 2021 the Federal Center, as the day-to-day management body of the All-Russian Disaster Medicine Service and of Disaster Medicine Service of the Ministry of Health of the Russian Federation, in accordance with the Regulation, existing agreements and interaction regulations, coordinates actions and carries out interaction: with profile departments of the Russian Ministry of Health, the Main Directorate "National Center for Crisis Management" of the Russian Ministry of Emergency Situations, other units and working groups of the Russian Ministry of Emergency Situations, the National Defense Management Center of the Russian Federation and the Main Military Medical Directorate of the Russian Ministry of Defense, bodies and institutions of Rospotrebnadzor, FMBA of Russia, Russian Academy of Sciences, territorial and regional disaster medicine centres of the subjects of the Russian Federation (hereinafter referred to as subjects), with federal and regional medical organizations.

In 2021 information exchange with the operational services in the videoconferencing mode was conducted: with the Ministry of Emergency Situations of Russia — 960 sessions (in 2020 — 1,101); with the National Defense Management Center of the Russian Federation — 290 sessions (in 2020 — 333).

The Federal Center specialists, in cooperation with the specialists of the territorial and regional centers, monitor the medical and sanitary situation. In 2021, 2,389 emergencies with medical and sanitary consequences were registered (2,102 in 2020).

In 2021 the share of man-made emergencies in their total number was 91.1%. The share of other types of ES was much lower: biological and social ES — 8,0%; natural — 0,5%; social ES — 0,4%.

A special place among man-made ES was held by road accidents and fires: 60,3% and 28,5% respectively of all ES and 66,2% and 31,3% respectively of all man-made ES.

In 2021 the severity of the consequences (ratio of the number of deaths to the number of victims, %) of man-made emergencies was 45.7%. The most severe consequences of man-made emergencies are observed in accidents in life support systems (100%); accidents on railway transport (83.9%); sudden collapse of buildings, structures, rocks (73.1%); fires (68,1%); aviation accidents (66,2%); accidents with water transport (55,8%); accidents on the roads (37,3%), as well as natural (25,8%), biological and social (17,7%) and social emergencies (8,9%).

The rate of victims of man-made emergencies amounted to 81,4% of the total number of victims, biological and social emergencies — 15,5%, social — 2,0 %, natural emergencies — 1,1%.

The share of children in the total number of victims of emergencies was 22.4%.

The rate of death on the spot was: in man-made emergencies 92,4%, including: in accidents on the roads — 53,6%, in fires — 34,8%; in bio-social emergencies — 6,4% — mainly in cases of poisoning by non-medical toxins, carbon monoxide and household gas, alcohol surrogate and others; in natural emergencies — 0,7%; social emergencies — 0,5%.

The children accounted for 11.4% of all killed in emergencies and 19.2% of all injured in emergencies.

The structure of social ES was represented by social conflicts with the use of weapons. The proportion of victims of social emergencies who died and were treated in hospitals was 8.9% and 42.6% respectively.

The share of those hospitalized in the total number of victims in emergencies was 44.2%. The rate of hospitalized persons in man-made emergencies was 79.5% including accidents on highways — 66.6%; in bio-social emergencies — 18%; in social emergencies — 1.9%; the rate of hospitalized persons in natural emergencies was 0.6%.

Of the total number of victims of emergencies who received medical care in hospital, 6.6% were in extremely serious condition and 23.3% in serious condition.

In 2021 5,474 mobile medical teams were involved in elimination of the medical and sanitary consequences of emergencies, including 4,874 emergency medical teams; 336 rapid response teams of the territorial disaster medicine centers; 214 teams of specialized medical assistance; 50 aviation medical teams (AMTs).

On the territory of the Russian Federation 6099 emergency victims were evacuated, including 1644 children; 67 of them were evacuated by air, including 9 children.

On the instructions of the Ministry of Health of Russia in order to coordinate the use of resources and means of Disaster Medicine Service and interagency cooperation between health authorities to provide practical and methodological assistance and to conduct — if necessary — medical evacuations in response to medical and sanitary emergency situations the staff of the Federal Center visited: Stavropol Krai (accident, May 2021); Kazan (terrorist attack, May 2021); Kazan (fire in a hospital, May 2021); Republic of Crimea (emergency case connected with flooding: in 7 municipal districts — June, 2021); Bakhchisaray region (July, 4-5, 2021: for medical support of actions of Tavrida art Festival (September, 2021); Republic of North Ossetia-Alania (violation of medical oxygen supply in the Republican Clinical Hospital, August 2021); Noginsk, Moscow Oblast (gas explosion in an apartment house, September 2021).

In 2021, the staff of the Center for Sanitary Aviation and Emergency Medical Care organized and conducted medical evacuations of 893 people, including 519 children. A total of 147 persons, including 65 children, were evacuated by air. A total of 83 flights were performed, including 61 within Russia and 22 to foreign countries. The aviation medical teams evacuated 23 emergency victims in the Stavropol Territory, the Republic of Tatarstan and the Perm Territory.

Analyzing the work of the Russian Ministry of Health's Disaster Medicine Service in organizing and providing medical assistance to victims of emergencies and their medical evacuation to medical treatment organizations, it should be noted that in all cases the forces and means of the regional level were sufficient to eliminate the medical and sanitary consequences of the emergency. At the same time, monitoring of emergency victims in the hospital period was not established in all territorial and regional disaster medicine

centers. There were cases of medical evacuation of emergency victims in medical organizations with violation of the principles of optimal routing and delays in face-to-face and remote consultations, as well as inter-hospital evacuation of such patients to higher-level medical institutions. Telemedical consultations for victims of emergencies by specialists from federal medical organizations were insufficiently used. In 2021 only 58 telemedicine consultations on emergencies were carried out. In 2021, the Russian Ministry of Health and the Federal Medical Center held a number of meetings via videoconferencing with the heads of the executive authorities of the regional and territorial disaster medicine centers, at which the problematic issues were discussed and measures were outlined to resolve them. As a result of the meetings, provisional regulations for information interaction were developed; a monitoring system for children affected by emergencies was introduced; a draft Concept for Information Development was prepared and sent to the Russian Ministry of Health taking into account the current tasks, experience of digitalization of the Disaster Medicine Service.

In 2021, the staff of the Center for Crisis Management conducted daily monitoring and assessment of the medical and sanitary situation in the regions, with subsequent submission of consolidated information to the Ministry of Health of Russia, including

- during mass events on holidays;
- during the flood and fire hazard period in the Far Eastern, Siberian, Ural, Volga and Southern federal districts;
- on the number of people seeking medical assistance who suffered from hypothermia and frostbite.

In addition, the medical and sanitary situation was monitored of major and high-profile emergencies:

- explosion and shooting in Gymnasium No. 175 in Kazan;
- shooting in Perm State National Research University;
- explosion of a passenger bus in Voronezh;
- accident on a small vessel in Murmansk Oblast;
- domestic gas explosions in the Moscow and Lipetsk Regions;
- plane crash in the Irkutsk region;
- airplane crash in Khabarovsk region;
- helicopter crash in Kamchatka region;
- complex of unfavorable meteorological phenomena in the Republic of Crimea and Krasnodar Krai;
- complex of adverse meteorological phenomena and related waterlogging in the regions of the Far Eastern Federal District;
- natural fires in the Republic of Sakha-Yakutia, Irkutsk Region and a number of other regions;
- acute intestinal infection among Russian tourists in Egypt;
- emergency situation in the Listvyazhnaya mine in the Kemerovo Region.

In 2021, the Federal Center specialists continued the work on monitoring victims of emergencies who were in serious and extremely serious condition in regional medical treatment organisations, carried out by "Zaschita" Disaster Medicine Center together with territorial and regional disaster medicine centers since 2018. In 2021, compared to 2018, there was a 16.0% decrease in the number of medical evacuations of seriously injured persons in emergencies to Level 1 medical organisations. In the reporting year, the proportion of medical evacuations of emergency victims to Level 3 medical organisations was 31.9% of the total number of hospitalized victims. The analysis also revealed a 3.0% decrease in hospital

mortality among the seriously injured in 2021 compared to 2018.

In our opinion, these trends are the result of the work carried out in recent years in the Ministry of Health's Disaster medicine Service to organize the medical evacuation of emergency victims, taking into account the principles of optimal routing, including the monitoring of emergency victims who were in serious and extremely serious condition in regional medical institutions. Work on this important area of the Ministry of Health's Disaster Medicine Service will continue.

In 2021 in accordance with the regulatory requirements of the order of the Ministry of Health of Russia 1202n<sup>6</sup> from 06.11.2020 the material base of the Field multidisciplinary hospital was formed.

Taking into account the urgent tasks of the Ministry of Health of Russia Disaster Medicine Service, in cooperation with the Department of organization of emergency medical care and health risk management of the Ministry of Health of Russia, and with the Ministry of Health of Russia chief freelance specialist on disaster medicine, S.F. Goncharov as well as with the chief freelance specialists on disaster medicine of the Ministry of Health of Russia in federal districts, the Federal Center staff worked out proposals on improvement of the regulatory legal base, which regulates activities of the disaster medicine service.

A draft Regulation on information interaction between the Ministry of Emergency Situations and the Ministry of Health of Russia was agreed upon.

In accordance with the request of the Ministry of Emergency Situations and the Russian Ministry of Health, the Federal Center specialists reviewed the draft federal law "On Civil Defense and Protection from Emergency Situations".

They analyzed the regulatory documents of the Russian Ministry of Emergency Situations regulating the issues of emergency response and operational information exchange.

The Federal Center specialists prepared and submitted to the Russian Ministry of Health for concurrence and approval:

- draft regulations on the Disaster Medicine Service of the Ministry of Health of the Russian Federation;
- draft regulations on the functional subsystem "Medical Resource Reserves";

- changes to the order of the Ministry of Health of Russia from 06.11.2020 N<sup>o</sup> 1202n, adopted by the Ministry of Health of Russia on August 6, 2021.

Specialists of the Federal Center together with specialists of "Federal Resource Center for Informatization and Technological Development" of the Ministry of Health of Russia (from 01.06.2021 — "Central Research Institute of Health Organization and Informatization" of the Ministry of Health of Russia), territorial and regional disaster medicine centers are working on the introduction of the incident management mechanism into the practice of the Ministry of Health of Russia Disaster Medicine Service, providing situational monitoring (control over the passage of milestones and deadlines in accordance with the algorithms of emergency response for each region).

In addition, the specialists of the Federal Center for Emergency Medicine and the Central Scientific Research

<sup>6</sup>. On the Approval of the Procedure for Organizing and Providing Medical Care in Emergency Situations, Including Medical Evacuation, by the All-Russian Service for Disaster Medicine. Order of the Ministry of Health of the Russian Federation dated November 06, 2020, No. 1202 (In Russ.).

Institute of Emergency Medicine of the Ministry of Health of the Russian Federation developed the information system "System for Monitoring Disaster Medicine Centers", which allows the collection and processing of the following information:

- on the medical equipment reserve;
- on the health care institution's irreducible stock;
- on stocks of medical equipment for emergencies;
- on conducted exercises, drills and trainings;
- on conducted exercises, drills and trainings with involvement of medical organizations;
- grouping of forces;
- grouping of equipment;
- grouping of aircraft;
- grouping of watercrafts;
- activity of medical organizations, providing emergency medical assistance and medical evacuation in case of field forms of work;
- demand for medical assistance during the flood period;
- demand for medical care during the fire hazardous period;
- demand for medical care of the citizens who suffered from hypothermia and frostbite;
- indicators of the work of the outreach;
- information systems of emergency medical care and the Regional Medical Information System.

The information system generates summary statistical forms for any period of time and allows to analyze the activities of the Russian Ministry of Health Disaster medicine Service.

Standard algorithms were developed for the response of the Russian Ministry of Health Disaster Medicine Service to man-made emergencies (transport accidents (disasters) on roads and social emergencies (terrorism, banditry, the actions of organized criminal groups, mass riots, etc.), providing methodological support to eliminate the medical and sanitary consequences of these emergencies, which constitute a large proportion of all emergencies that occurred in 2021.

These documents were discussed, finalized and approved in the framework of the Russian Ministry of Health Working Group on the development of standard algorithms of response to emergencies, to monitor their actualization and introduction into practice in the subjects of the Russian Federation.

In order to ensure the readiness of the subjects' disaster medicine service to respond to the medical and sanitary consequences of emergencies, taking into account the current tasks, the specialists of the Federal Center worked out and adjusted the list of basic questions to assess the state and readiness of the subject disaster medicine service to respond to emergencies, which became the basis for to conduct verification activities to assess the state and readiness of the subjects' disaster medicine service.

Based on the results of the on-site inspections, an assessment was made of the state and readiness of the regional disaster medicine service forces and facilities, the reports were prepared with recommendations based on the assessment results — the reports were agreed with the heads of the subject state authorities in the field of public health protection: in Voronezh (March), Tula (April), Kursk (May), Vologda (September), Tver (October) and Ryazan (December) regions.

In the course of inspections the following was assessed: readiness of the disaster medicine service management bodies and medical organizations to act in emergencies;

plans for medical support of population in emergencies; organization of interaction of disaster medicine service with subdivisions and formations of other ministries and organizations, participating in emergency response; possibility of application of sanitary aviation for medical aviation evacuation of seriously injured to higher level medical organisations; efficiency of existing system of passing information about emergency and dispatchers interaction; accumulation, storage and usage of medical resources.

The analysis of the structure of disaster medicine service at the regional level, including the field trips made by the specialists of the Federal Center proves the existence of different organizational models of disaster medicine service functioning at the regional level: territorial disaster medicine center as an independent medical organization; territorial disaster medicine center within the leading regional hospital; united emergency medical center. In large subjects — Moscow, Moscow region, Sverdlovsk region, Khabarovsk krai, Khanty-Mansi Autonomous okrug — Yugra, Kemerovo region — "territorial disaster medicine center as an independent medical organization" model prevails. During the year 2021 the tendency for the organizational unification of territorial disaster medicine centers and the ambulance stations remained; the number of the united regional centers of emergency and disaster medicine (regional centers of disaster and emergency medicine) increased to 34; the territorial disaster medicine center functioning as an independent medical organization — to 35; the number of the territorial disaster medicine center as a part of the leading regional hospital — to 16. In 2021 there were processes of consolidation of emergency medical care stations and territorial disaster medicine centers in the Stavropol Krai, Tver and Smolensk regions, and the Republic of Mordovia. Chuvash Republic, Tula region, Republic of Crimea, etc. register positive impact on the activities of the united centers. At the same time, in some subjects during the process of reorganization and unification of the stations, the "disaster medicine" functionality was not properly provided in terms of staffing. The relevant units responsible for performing the tasks of the day-to-day management body of the disaster medicine service at the regional level were not formed. This is unacceptable and requires measures from the management of the executive authorities of these subjects and the united regional centers to rectify the situation. The principle position of the Federal Center on this issue is that regardless of the organizational model of functioning of the disaster medicine service at the regional level, the functions and powers of the daily management body of the disaster medicine service and the whole disaster medicine service of the subject must be carried out in full. It should be noted that the recommended organizational structure is presented in Appendix No. 9 to the Procedure of organization and rendering of medical aid by the All-Russian Disaster Medicine Service in emergencies, including medical evacuation, approved by the order of the Ministry of Health of Russia from 06.11.2020 No. 1202n.

In 2021, the efforts of regional-level specialists were largely focused on the fight against the new coronavirus infection COVID-19. Territorial and Regional Disaster Medicine Centers were involved in solving various organizational, methodological and therapeutic-diagnostic issues, organizing and conducting medical evacuation of patients with COVID-19. The specialists of the Federal

Center took an active part in this work and provided the formation and coordination of 43 mobile multidisciplinary teams from the staff of federal medical organizations. These teams worked in the republics of Buryatia, Dagestan, Kalmykia, Karelia, Crimea, Sakha (Yakutia), North Ossetia-Alania, Tyva, Khakassia, in the Chechen Republic, in Zabaikalsky, Krasnoyarsky, Perm and Khabarovsk territories, Arkhangelsk, Astrakhan, Vladimir, Volgograd, Irkutsk, Kurgan, Magadan, Novgorod, Orenburg, Pskov, Rostov, Sakhalin, Tambov, Tula, Tyumen, and Chelyabinsk regions.

The teams were staffed with 259 medical specialists, including 226 specialist physicians and 33 mid-level medical staff.

In 2021, the Federal Center specialists were actively involved in the work of the reserve Federal remote consulting center of anesthesiology and intensive care on the diagnosis and treatment of the new coronavirus infection COVID-19 and pneumonias. Employees of the center received 1,537 telephone calls from citizens and organizations providing medical care to patients with the new COVID-19 coronavirus infection.

Every day, the Department of Digital Development and Information Technology of the Russian Ministry of Health submitted a report on the work of federal remote advisory centers for anesthesiology and intensive care on the diagnosis and treatment of the new COVID-19 coronavirus infection and pneumonia in adults, children and pregnant women.

In 2021, in order to train specialists of the Russian Ministry of Health's Disaster Medicine Service, the Federal Center staff conducted tactical-special and command-staff exercises and staff trainings with management bodies, formations and institutions of the federal and regional levels, as well as international command-staff exercises with participation of representatives of the CIS member states and the People's Republic of China.

On April 13-15, 2021 within the framework of the All-Russian staff-command exercises the Center specialists worked through the issues of providing accident-free floods passage, as well as protection of settlements, economic objects and social infrastructure from natural fires. All received signals were processed in the prescribed manner, the notification scheme of the executive staff was checked, 191 operative reports of 39 entities with decisions on drill induction were received and processed.

Specialists of the Crisis Management Center of the Federal Disaster Medicine Center, together with specialists of the Moscow region territorial disaster medicine center worked on the solution of operational tasks for the three introductory scenarios relating to the passage of the complex adverse weather phenomena and disconnection of water and electricity supply in socially important facilities, including medical care organizations, in the Moscow region with subsequent hearing in a video conferencing mode and broadcast for visitors and participants of the XIII International Salon "Integrated Safety and Security".

Employees of the Federal Center participated in the preparation and provision of methodological assistance to the participants in the Interagency Experimental and Research Exercise in the Arctic Zone of the Russian Federation, held by the Ministry of Emergency Situations of Russia in September 2021.

On September 26, 2021, an interregional interdepartmental exercise on improving medical care to victims of road accidents on the administrative border of the Tula and Orel Regions and their border areas was held.

On December 15, 2021 within the framework of the field evaluation of the condition and readiness of the Ryazan region forces and means to respond in emergencies, an emergency drill "Organization of liquidation of medical and sanitary consequences of man-made emergencies (accident with a bus) with a large number of victims" was held. During the exercise, the algorithm of response of the regional and federal level disaster medicine service to an emergency caused by a road traffic accident was practiced.

In 2021 with the participation of the Federal center specialists all-Russian conferences were organized and conducted: in March — the online conference "Teaching First Aid in Life Safety Course: New Textbooks and Contemporary Recommendations", which was attended by more than 800 registered users from many regions; in October — the All-Russian scientific and practical conference with international participation "First Aid — 2021" and a master class at the VIII All-Russian interdisciplinary scientific and practical conference "Socially significant and extremely dangerous infectious diseases"; in December, within the framework of the scientific and practical forum "Russian Health Care Week - 2021", together with the Moscow Territorial Center for Disaster Medicine — "First Aid and Disaster Medicine" section.

Since March, 1, 2021 the specialists of the Federal Center worked on cooperation with WHO, CIS countries and People's Republic of China, making the following: interaction with profile departments of the Ministry of Health of Russia; informing — through the Ministry of Health of Russia — WHO, profile State Committee of the People's Republic of China, Executive Committee of CIS.

To execute the point 7 of the protocol of XXXIV session of the Council for Cooperation in the field of Public Health of the CIS countries the Federal Center with the support of the Ministry of Health of Russia and the CIS Executive committee held 2 international events — a web conference and a command-staff exercise on November 25-26, 2021.

On November 25, 2021, the Federal Center staff organized an international web conference "Medical Response to Biosocial Emergencies (outbreaks of infectious diseases)". The conference was attended by specialists from the Central Office of the Russian Ministry of Health, Federal Center, chief freelance specialists of the Russian Ministry of Health for Disaster Medicine and Infectious Diseases, representatives of Rospotrebnadzor, FMBA of Russia, CIS Executive Committee, CIS member states (Republics of Armenia, Belarus, Uzbekistan, Moldova, Kyrgyz Republic), China, Russian Red Cross, territorial and regional disaster medicine centers of the subjects of the Russian Federation.

"Organization of medical assistance and medical evacuation of victims in case of emergency of biosocial nature (outbreak of infectious disease)" event was organized and conducted on November 26, 2021. At this event, reports were presented by specialists from the Federal Center and regional disaster medicine center of Tula region, Shanghai Eastern Hospital and specialized agencies from the Republic of Armenia and the Republic of Belarus.

It should be noted that the specialists of the Federal Center together with staff from other departments of N.I. Pirogov Institute of the Russian Ministry of Health did a lot of work to prepare for the move of the federal disaster medicine service to a new base, to equip its departments with modern equipment and transport, which will signifi-

cantly increase its technological capabilities to solve current and future problems.

### Conclusion

The analysis of the results of the activities of the Disaster Medicine Service of the Russian Ministry of Health at federal and regional levels allows us to state that the tasks set for it in 2021 have generally been accomplished. In the reporting period, the Russian Ministry of Health Disaster Medicine Service carried out its activities under difficult conditions associated with the spread of the new coronavirus infection COVID-19, as well as with organizational and functional changes in the management bodies at the federal level and in a number of subjects of the Russian Federation.

In 2022, the Federal Center and Disaster Medicine Service of the Russian Ministry of Health will work in the following main areas:

- Improvement of the regulatory legal and methodological framework at the federal and regional levels;
- organization and rendering of medical aid, medical evacuation of victims in emergencies, taking into account the three-level system of medical aid at the regional level, involving, if necessary, federal medical organizations;
- organization and monitoring of emergency medical care in pre-hospital and hospital periods to patients and victims of emergencies, including usage of telemedicine technologies, in various modes of operation;
- information and technological development of the Disaster Medicine Service of the Russian Ministry of Health, introduction of a system of emergency response based on incident management;

- formation and implementation of algorithms for response of the Disaster Medicine Service of the Russian Ministry of Health and medical organizations to various emergencies;

- updating the system of forecasting and monitoring medical and sanitary consequences of emergencies;
- development of outreach forms of medical care, including the system of emergency consultative medical care and medical evacuation (air ambulance);
- improvement of the structure and activities of Disaster Medicine Service at regional and federal levels; control of the performance by the territorial and regional disaster medicine centers;
- conducting operational training activities with the management bodies, organizations and formations of the Ministry of Health of the Russian Federation and medical organizations involved in the provision of medical care to victims of emergencies, on the issues of emergency response preparedness;
- training of managers and specialists of the management bodies, organizations and formations of the Ministry of Health of the Russian Federation Disaster Medicine Service and medical organizations on the issues of disaster medicine;
- development and implementation of measures aimed at improving the first aid system;
- organization of work on the effective functioning of the reserve of medical resources of the health management body of the subject of the Russian Federation in the event of an emergency.

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Материал поступил в редакцию 28.02.22; статья принята после рецензирования 11.03.22; статья принята к публикации 21.03.22  
The material was received 28.02.22; the article after peer review procedure 11.03.22; the Editorial Board accepted the article for publication 21.03.22