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## MAIN RESULTS OF ACTIVITIES OF ALL-RUSSIAN CENTRE FOR DISASTER MEDICINE ZASHCHITA OF FEDERAL MEDICAL BIOLOGICAL AGENCY IN 2020 AND TASKS FOR 2021

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**Abstract.** The objective of the study based on the analysis and evaluation of key performance indicators of the all-Russian center for disaster medicine "Zashchita" FMBA Rossii (WCMC "Protection" in the Center) and disaster medical Service (QMS), Russian Ministry of health to develop proposals and to identify priority areas for further development and improvement of the system of medical support of the population in emergency situations (es).

**Materials and methods of research.** Materials research: normative and methodical documents governing the organization and operation of the all-Russian service for disaster medicine (VSMK), medical aid to victims in emergency and medical evacuation; records of the regional centers of emergency medical care and disaster medicine (SMP RC and IC), the territorial centers of emergency medicine (TSMC) and WCMC "Protection" on the activity of the elimination of the health consequences of emergencies in 2020 etc.

**Research methods:** analytical, statistical, direct observation method, logical and information modeling.

**The results of the study and their analysis.** In 2020, 2108 emergencies with health consequences occurred in the Russian Federation, excluding the COVID-19 pandemic, which is almost 25% less than in 2019. This situation can be explained by a decrease in the intensity of transport operations and the activity of the population during the pandemic.

In order to further develop the system of medical support for the population in emergencies, the tasks for 2021 are formulated.

**Key words:** All-Russian Center of Disaster Medicine "Zashchita", All-Russian Service of Disaster Medicine, COVID-19 pandemic, emergencies, medical evacuation, medical organizations, monitoring of medical care, patients, regional centers of emergency medical care and disaster medicine, routing, telemedicine consultations, territorial centers of disaster medicine, victims

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

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## ОСНОВНЫЕ ИТОГИ ДЕЯТЕЛЬНОСТИ ВСЕРОССИЙСКОГО ЦЕНТРА МЕДИЦИНЫ КАТАСТРОФ «ЗАЩИТА» ФМБА РОССИИ В 2020 Г. И ЗАДАЧИ НА 2021 ГОД

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**Резюме.** Цель исследования – на основе анализа и оценки основных итогов деятельности Всероссийского центра медицины катастроф «Защита» ФМБА России (ВЦМК «Защита», Центр) и Службы медицины катастроф (СМК) Минздрава России разработать предложения и определить приоритетные направления дальнейшего развития и совершенствования системы медицинского обеспечения населения, пострадавшего в чрезвычайных ситуациях (ЧС).

**Материалы и методы исследования.** Материалы исследования: нормативные и методические документы, определяющие порядок организации и функционирования Всероссийской службы медицины катастроф (ВСМК), оказания медицинской

помощи пострадавшим в ЧС и их медицинской эвакуации; отчеты региональных центров скорой медицинской помощи и медицины катастроф (РЦ СМП и МК), территориальных центров медицины катастроф (ТЦМК) и ВЦМК «Защита» о деятельности по ликвидации медико-санитарных последствий ЧС в 2020 г. и др.

Методы исследования: аналитический, статистический, метод непосредственного наблюдения, логическое и информационное моделирование.

Результаты исследования и их анализ. В 2020 г. в Российской Федерации произошло, без учета пандемии COVID-19, 2108 ЧС с медико-санитарными последствиями, что почти на 25% меньше, чем в 2019 г. Такое положение можно объяснить снижением интенсивности эксплуатации транспорта и активности населения в период пандемии.

В целях дальнейшего развития системы медицинского обеспечения населения в ЧС сформулированы задачи на 2021 год.

**Ключевые слова:** больные, Всероссийская служба медицины катастроф, Всероссийский центр медицины катастроф «Защита», лечебные медицинские организации, маршрутизация, медицинская эвакуация, мониторинг оказания медицинской помощи, пандемия COVID-19, пострадавшие, региональные центры скорой медицинской помощи и медицины катастроф, телемедицинские консультации, территориальные центры медицины катастроф, чрезвычайные ситуации

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Currently, humanity is threatened by a wide variety of dangers, its vulnerability from the consequences of natural disasters, accidents, catastrophes, terrorist acts, armed conflicts (hereinafter - emergencies) - is increasing. The past year has been no exception. The pandemic caused by a new coronavirus infection has made significant adjustments to the activities of the country's health care, of the All-Russian Disaster Medicine Service and, in particular, the All-Russian Disaster Medicine Center «Zashchita» of the FMBA of Russia.

Emergencies occur annually in almost all regions of Russia. This implies a necessity to develop and to improve technologies for eliminating their medical and sanitary consequences [1, 2]. The introduction of new information technologies makes it possible to move to a new level in solving problems of organizing and providing medical care to victims of emergencies and in ensuring medical evacuation with adequate observance of routing principles [3–7]. The monitoring system ensures implementation of control over the timeliness of patients' hospitalization in medical organizations and over the quality of medical care and medical evacuation [8].

A constant systematic study and assessment of the All-Russian Disaster Medicine Service actions in emergencies, are crucial. Considering the above, in accordance with the Order of the Government of the Russian Federation dated March 28, 2020 No. 771-r, the Resolution of the Government of the Russian Federation dated October 12, 2020 No. 1671 and the order of the FMBA of Russia dated November 30, 2020 No. 347, it can be stated that the analysis of the activities of the All-Russian Disaster Medicine Service in 2020 is required.

**The purpose of the study** is, based on the analysis and assessment of the main results of the activities of the All-Russian Center for Disaster Medicine «Zashchita» of the FMBA of Russia and of the Disaster Medicine Service of the Ministry of Health of Russia, to develop proposals and to de-

termine the priority tasks for further development and improvement of the system of medical care for the population affected by emergencies.

**Materials and research methods.** The sources of data were: normative and methodological documents defining the procedures for organizing and functioning of high-speed medical systems, for providing medical assistance to victims of emergencies and for their evacuation; reports of regional centers of emergency medical care and disaster medicine, of territorial centers of disaster medicine and of All-Russian Centre of Disaster Medicine «Zashchita» on elimination of health consequences of emergencies in 2020; acts of control checks of the Disaster Medicine Service of the regions, carried out by the specialists of the All-Russian Center for Disaster Medicine «Zashchita»; reports on the special tactical command and staff exercises and command and staff trainings; scientific works and publications devoted to topical issues.

Research methods: analytical, statistical, direct observation, logical and information modeling.

**Research results and their analysis.** According to the reports of the territorial Centers of Disaster Medicine, and of the Regional Centers of Emergency and Disaster Medicine and other sources, in 2020, in the Russian Federation, excluding the COVID-19 pandemic, 2108 emergencies with medical and sanitary consequences occurred, which is almost 25% less than in 2019. This situation can be explained by a decrease in intensity of transport operation, a decrease in all types of population activity during the COVID-19 pandemic. The distribution of the number of emergencies and their health consequences by federal districts is presented in Table 1.

The study showed that the largest number of emergencies occurred in the Krasnodar Territory - 120, the Republic of Bashkortostan - 93 and the Krasnoyarsk Territory - 77. At the same time, in the Republic of North Ossetia - Alania, the Kostroma Region, Nenets and Chukotka Autonomous Districts, there were no emergencies with health consequences.

## Медико-санитарные последствия ЧС, произошедших в 2020 г. в Российской Федерации

Health consequences of emergencies that occurred in 2020 in the Russian Federation

Российская Федерация Федеральный округ Российской Федерации  Russian Federation Federal District of Russian Federation	Кол-во ЧС, абс. Number of emergency situations	Число пострадавших, чел. Number of victims, people		Из них /From them					
				погибли на месте ЧС died at the place of emergency situation		госпитализированы hospitalized		эвакуированы evacuated	
		всего total	в т.ч. детей children	всего total	в т.ч. детей children	всего total	в т.ч. детей children	всего total	в т.ч. детей children
<b>Российская Федерация / Russian Federation</b>	2108	9194	1550	3916	378	4126	977	4636	977
Центральный/Central	412	1694	171	823	68	692	95	791	100
Северо-Западный/Nord-West	196	832	129	376	31	359	87	409	93
Южный/South	218	1036	177	345	25	544	123	628	136
Северокавказский/ North-Caucasian	72	558	150	112	15	397	123	313	69
Приволжский/Volga	553	2188	378	1030	96	932	237	1064	256
Уральский/Uralsky	213	878	148	400	34	366	97	434	109
Сибирский/Siberian	346	1502	296	680	92	566	143	687	153
Дальневосточный/Far Eastern	98	506	101	150	17	270	72	310	61

As in previous years, man-made emergencies dominated in the general structure of emergencies. 8.5 thousand people were affected by them, including 1.3 thousand children. Road accidents prevailed among man-made emergencies - 1328 - 63.0% of all man-made emergencies, in which 6.2 thousand people suffered, including about one thousand children.

The severity of the medical and sanitary consequences of man-made emergencies - the ratio between the number of deaths and the number of victims in% - decreased in 2020 compared to 2019 by 28.0%. At the same time, the share of victims who needed medical care and treatment in a hospital (4.1 thousand people) in 2020 compared to 2019 increased by 6.0%. The greatest severity of medical and sanitary consequences of emergencies was observed in accidents on water (77.3%) and railway (76.0%) transport, as well as in fires and explosions (74.6%).

The study of health consequences of emergencies showed that in the past year their greatest severity was observed in the regions of the Central (48.6%), Volga (47.1%), Ural (45.6%) and Siberian (45.2%) federal districts, the smallest - in the regions of the Southern (33.3%), Far Eastern (29.6%) and North Caucasian (21.1%) federal districts.

In various regions, the share of hospitalized people in the total number of victims of emergencies fluctuated within fairly significant limits: in the North Caucasus Federal District, it was 71.1%; Far East - 53.4%; in the Urals and Central Federal Districts - 41.7 and 40.9%, respectively.

In 2020, 4.3 thousand medical teams were involved in the elimination of medical and sanitary consequences of emergencies, and almost all of these teams were the Disaster Medicine Service teams of the constituent entities of the Russian Federation (hereinafter referred to as the constituent entities). A total of 4.5 thousand people were evacuated at the regional level, including about one thousand children, of which 66 were evacuated by air.

In addition, in accordance with the tasks of the Ministry of Health and the Federal Medical and Biological Agency of Russia, as well as at the request of Territorial Centers of Disaster Medicine and Regional Centers of Emergency and Disaster Medicine or of health authorities of the constituent entities, the specialists of the Center for Medical Aviation of the All-Russian Center of Disaster Medicine «Zashchita» performed a significant amount of medical evacuations of patients and victims (Table 2).

Table 2 shows that the number of air medical evacuations decreased by 18.6% compared to 2019. It is associated with a significant limitation of number of regular flights and, as a result, with a decrease in the number of tourists leaving for foreign countries. At the same time, in the context of pandemic, number of people evacuated by ambulance vehicles has increased - these are mainly patients with coronavirus infection COVID-19. Medical evacuation of patients with COVID-19 to Moscow was carried out from Japan, Afghanistan, the Republic of Kazakhstan, as well as from some regions of Russia. In total, 825 such patients were evacuated, including 110 by air ambulance.

Specialists of the All-Russian Center of Disaster Medicine «Zashchita», as part of the consolidated mobile medical unit of the FMBA of Russia, provided medical support for events with a large number of participants held in Crimea - «Tavrída» Forum (Sudak) and «Big change» (Artek) - during which 2264 people sought medical help. At the same time, 1846 people were tested for COVID-19. 16 people were hospitalized afterwards in the medical organisations of the Republic of Crimea, 31 people were under observation.

The results of the organization of medical support for these activities in the context of the COVID-19 pandemic made it possible to develop a set of measures to ensure epidemic well-being. These measures include organization of a sanitary access control, examination of arriving participants, definition of procedure for determining routes of movement through the territory, routing of patients sent to the medical center of the Republic of Crimea. The optimal staffing of the mobile team for medical support of such events has been determined.

As a part of such mobile teams, specialists of the All-Russian Center of Disaster Medicine provided medical assistance to employees of Roscosmos (Baikonur, Svobodny). Certain specialists of the Center were involved in the provision of medical assistance and medical evacuation of employees of the Russian Embassy in the Republic of Kazakhstan (Nur-Sultan).

The experience of a consolidated medical unit of the FMBA of Russia highlighted some important issues: in order to provide medical care in an emergency or to ensure medical support at events with a large number of participants, it is necessary to have full-time mobile medical units; systematic special training of personnel of mobile medical units should be organized in the likely conditions of their work;

**Медицинская эвакуация больных и пострадавших специалистами ВЦМК «Защита», чел.**

Medical evacuation of patients and victims by specialists of the ARCDM Zashchita, people

Год Year	Медицинская эвакуация /Medical evacuation					Итого Total
	воздушным транспортом /by air ambulance			санитарным ав- тотранспортом by ambulance	прочими видами транспорта by other kinds of transport	
	всего /total	из них / from them				
		по России/in Russia	из-за рубежа/from other contries			
2019	258	100	158	900	11	1169
2020	210	170	40	1429	12	1651

these formations should be equipped with modern high-tech medical and diagnostic equipment, devices; their equipment should be able to be delivered not only by road, but also by air.

Because of the spread of a new coronavirus infection, information letters were prepared and sent to the Territorial Centers of Disaster Medicine, and to the Regional Centers of Emergency and Disaster Medicine. The letters were dedicated to the prevention and identification of infectious patients, organization and implementation of anti-epidemic measures. A teaching aid "New coronavirus infection: etiology, epidemiology, clinical picture, diagnosis, treatment and prevention" was developed. A number of specialists of the Center participated in the development of temporary guidelines of the Ministry of Health of Russia «Prevention, diagnosis and treatment of new coronavirus infection (COVID-19)». These guidelines present basic principles of medical, including air ambulance, evacuation, as well as routing of patients with COVID-19. Recommendations on the use of transport isolation boxes are given, general principles of medical evacuation are determined.

An important component of All-Russian Disaster Medicine service activities to improve the quality of medical care provided to victims of emergencies, is the monitoring of: condition of patients; medical care quality; need for consultations (including telemedicine), and medical evacuation. Some of the results of this work are presented in Table 3.

Currently, patient routing is of particular importance. This is a medical evacuation technology designed for timely hospitalization of victims in medical organizations, in which they will be provided with comprehensive medical care. Treatment of victims who are in serious condition in the 1st level medical treatment facilities; their untimely transfer to specialized hospitals of the 2nd - 3rd level, not only does not contribute to recovery, but can significantly aggravate their condition and lead to their death.

As a result of control over the routing during medical evacuation to the regional medical facilities and timely informing of the heads of the Territorial Disaster Medicine Centers and the Regional Centers of Emergency and Disaster Medicine, a decrease - by 8.1% compared to 2019 - of the number of evacuation to medical facilities of level 1 and the share of re-evacuations due to an increase in the number of medical evacuations in medical facilities of levels 2 and 3 - 78.9%.

At the same time, despite the measures taken, the proportion of victims evacuated to level 1 medical facilities remains quite high. At the same time, only 15.3% of patients were re-evacuated from level 1 to level 2 and 3 medical facilities.

When studying the organization of monitoring, it was revealed that in some regions, routing in medical facilities by their levels was insufficiently controlled. There were facts of

absence (delay) of consultations of patients who were in serious and extremely serious condition. Sometimes the victims were not transferred or were untimely transferred to the higher level medical facilities. At the same time there was no information or the information about them was presented with a delay in the All-Russian System of Operational Reports on Emergencies. All this was aggravated by errors of the «human factor» when filling in the initial and subsequent reports.

One of the reasons for the delay in transferring patients to medical facilities of higher level is their non-transportability. In the course of the study, it was found that the proportion of victims delivered to the 1st level medical treatment facilities was 20.1%. After relative stabilization of their condition, they were transferred to medical facilities of a higher level. According to the results of work in 2020, the number of people injured in emergencies subjected to monitoring decreased by 35.5% compared to 2019.

During 2020, work was organized to maintain the proper level of preparedness of specialists and organizations of the All-Russian Disaster Medicine Service to eliminate medical and sanitary consequences of various emergencies, including their functioning in the context of the COVID-19 pandemic.

Taking into account this main target indicator, the employees of the Center checked the state and operation of the Disaster Medicine Service in two regions - Lipetsk (January 27–31) and Tambov (February 10–14) regions. The state

Таблица 3/Table No 3

**Данные мониторинга пострадавших в ЧС, находившихся в тяжелом и крайне тяжелом состоянии в ЛМО в 2020 г., чел./%**

Monitoring data of emergency victims who are in serious and extremely serious condition in medical organizations in 2020, people/%

Показатель Indicator	Подвергались мониторингу Subjected to monitoring	Уровни ЛМО Levels of medical organizations		
		1-й/1st	2-й /2nd	3-й /3rd
<b>Всего/Total</b>	<b>1261/100,0</b>	<b>267/21,2</b>	<b>587/46,5</b>	<b>407/32,3</b>
Переведены Transferred	143/11,3	49/18,4	90/15,3	4/1,0
Летальность Mortality	117/9,3	37/13,9	57/9,7	23/5,7
<b>Взрослые Adults</b>	<b>1029/100,0</b>	<b>220/21,4</b>	<b>477/46,3</b>	<b>332/32,3</b>
Переведены Transferred	101/9,8	34/15,5	65/13,6	2/0,6
Летальность Mortality	94/9,1	26/11,8	47/9,9	21/6,3
<b>Дети Children</b>	<b>232/100,0</b>	<b>47/20,3</b>	<b>110/47,4</b>	<b>75/32,3</b>
Переведены Transferred	42/18,1	15/31,9	25/22,7	2/2,7
Летальность Mortality	23/9,9	11/23,4	10/9,1	2/2,7

and activity of the Disaster Medicine Service in both regions was assessed as "meets the requirements". Based on the results of the inspections, the heads of health care of the regions were given recommendations on the further development of the Disaster Medicine Service, taking into account their characteristics and the prospects for the development of the country's health care sector.

In the II-IV quarters of 2020, checks of the state of readiness of the Disaster Medicine Service and civil defense units in healthcare organizations were not carried out due to the introduction of a high alert regime and restrictive measures for COVID-19 in the constituent entities. In 2020, in the Belgorod, Vologda, Kursk, Samara, Sverdlovsk, Tula regions, 2 special tactical and 6 command and staff exercises were prepared and run. They were focused on the organization of medical support for victims of various large-scale emergencies with the deployment of an evacuation receiver in the emergency area.

During the exercise, special attention was paid to the development of practical skills by the personnel of health authorities, medical organizations and medical units in planning and organizing medical support for the population in the event of various emergencies; on the organization of a system of operational management and interaction with the Ministry of Emergency Situations and the Ministry of Defense of Russia, other interested management bodies and organizations.

Due to the introduction of restrictive measures on COVID-19, no other planned exercises were held.

In addition, Disaster Medicine Service specialists took part in:

- strategic command and staff training on organizing interaction with federal executive bodies, conducted by the Russian Ministry of Defense;
- interdepartmental exercise to work out issues related to countering the spread of a new coronavirus infection, conducted by the Russian Emergencies Ministry;
- All-Russian headquarters training on organizing the implementation of civil defense measures on the territory of the Russian Federation, conducted under the leadership of EMERCOM of Russia

In the framework of special training for all subjects, the situational task «100 affected» continued to be solved. The specialists of the Headquarters of the All-Russian Disaster Medicine Service analyzed the readiness of the heads of the Territorial Centers of Disaster Medicine, Regional Centers of Emergency and Disaster Medicine to organize the elimination of medical and sanitary consequences of emergencies, to ensure the provision of emergency medical care and medical evacuation of victims.

As a result of the analysis of the presented solutions, the following shortcomings were identified: dynamics of medical evacuation of victims from the emergency zone to the 1st-3rd level medical facilities and organization of medical care were insufficiently substantiated; issues of re-evacuation of victims on the first day from the 1st level medical treatment facilities to the 2nd and 3rd level medical treatment facilities were not fully taken into account; number of medical forces and means involved in eliminating medical and sanitary consequences of emergencies was not always indicated; dynamics of the provision of emergency medical care at medical facilities, as well as the number of intensive care beds, operating tables, operating teams, etc.; there was no data on the specific weight of the routing options used during medical evacuation of victims from emergency zone to the 1st-3rd level medical treatment facilities.

The employees of the Center ensured round-the-clock collection, receipt, analysis and transmission of operational reports on emergencies and on elimination of their medical and sanitary consequences - during 2020 2108 reports were received and sent to the FMBA and the Ministry of Health of Russia, the National Center for Crisis Management of the EMERCOM of Russia and the National Defense Control Center of the Russian Federation.

In addition, in order to maintain the All-Russian Disaster Medicine Service readiness for response and actions in emergencies, the Center's employees took part in operational meetings conducted via videoconferencing under the leadership of the EMERCOM of Russia (1101) and the National Defense Control Center of the Russian Federation (333).

As part of improving the organization and provision of medical assistance to victims of emergencies, on the basis of the order of the FMBA of Russia «On the main freelance specialists of the Federal Medical and Biological Agency» dated December 16, 2020 No. 366, the chief freelance specialist of the FMBA of Russia for «emergency medical care and disaster medicine» was appointed, the goals and objectives of his work are determined. The key task is to formulate a strategy for the development of the Disaster Medicine Service of the FMBA of Russia, tactical solutions for its implementation, aimed at increasing availability and quality of medical care provided to victims of emergencies. Along with this, the tasks of the main specialist are: study and dissemination of new medical technologies; coordination and implementation of educational events, remote consultations, audit of departmental organizations; analysis and assessment of the quality of medical care and medical evacuation.

It should be noted that the work of the automated information and telecommunication system of All-Russian Disaster Medicine Service, which operates around the clock, is being improved every year.

The continuous functioning of the information systems of the Disaster Medicine Service of the FMBA of Russia and the Ministry of Health of Russia was ensured by the Coordination and Technical Center of «Zashchita». Currently, 2016 medical organizations are connected to the federal segment of the telemedicine system, including 208 medical facilities of FMBA of Russia. Regional segments of the telemedicine system operate in 18 subjects.

At the federal level, 108,047 telemedicine consultations were carried out, including 679 telemedicine consultations carried out by consulting medical organizations of the FMBA of Russia. Even these data indicate that within the framework of the FMBA of Russia, a system for organizing and conducting telemedicine consultations has been created and is successfully functioning, which is consistent with a similar system of the Ministry of Health of Russia. The telemedicine system has been modernised, software for 18 regional telemedicine systems has been updated, a constructor of report forms has been developed and introduced.

Within the framework of the federal project «Development of the network of national medical research centers and the introduction of information medical technologies», 1.7 thousand scientific and practical events were held in the video broadcast mode.

In order to improve the quality of the prompt response, the specialists of the All-Russian Center of Disaster Medicine «Zashchita» prepared and held 6 videoconferences with the heads and specialists of the Disaster Medicine Service of the regions on topical issues of their activities and on work in the context of the COVID-19 pandemic.

Each meeting was accompanied by a detailed analysis of the actions of the Disaster Medicine Service specialists of the regions in which the large-scale emergencies occurred and the elimination of their health consequences was carried out. At the same time, recommendations were given on the implementation of specific measures aimed at increasing the effectiveness of the work of Disaster Medicine Service specialists, taking into account the conditions existing in the region, and the directions of development of its healthcare system.

Experience in providing operational information on emergencies and their health consequences, on the course of liquidation of consequences highlighted the need to train the persons responsible for the transfer of such information using the information system «Operational reports on the progress of liquidation of medical and sanitary consequences of emergencies of the FMBA of Russia.» The specialists of «Zashchita» organized and conducted training in 5 regional medical centers and in more than 20 medical centers of the FMBA of Russia.

To ensure a prompt response to emergencies, there was a round-the-clock watch of the forces and means of the Disaster Medicine Service, which were in constant readiness for: advance to the scene of the event, deployment, provision of medical assistance, medical evacuation of victims. Measures were taken to reduce the terms of their deployment.

As part of improving the regulatory and methodological documents governing the procedure for medical support of the population affected by emergencies, the Center's specialists prepared a draft Procedure for the organization and provision of medical assistance by the All-Russian Disaster Medicine Service, including medical evacuation, in emergency situations, which was approved by the order of the Ministry of Health Russia dated November 6 and entered into force on November 23, 2020.

In addition, the following guidelines were prepared:

1. Medical evacuation of patients with infectious diseases, including patients or persons with suspected illness caused by pathogens of especially dangerous infections.
2. Organization of the work of the evacuation receiver in the system of medical and evacuation measures in the elimination of the consequences of emergencies.

Organizational and methodological guidelines for the preparation of the Disaster Medicine Service of the Ministry of Health of Russia in the field of protecting the life and health of the population in emergency situations for 2020 were developed and sent to the subjects. The implementation of their provisions ensured the stable functioning of the All-Russian Disaster Medicine Service and the solution of the tasks assigned to it.

It is known that ensuring the constant readiness of the Disaster Medicine Service is achieved, among other things, by creating a reserve of medical equipment and medicines intended for eliminating the consequences of emergencies. A lot of work has been done in this area.

The constituent entities have a reserve of medicines and medical property for 37 thousand people affected by emergencies.

However, only 11 regions created a 100% - for 500 affected - volume of the reserve; in 44 regions it is 50–90%, and in 9 regions it is 20–45%.

The level of provision of medical organizations with irreducible reserves of medical property is extremely low. The most difficult situation is in the republics of Kalmykia and North Ossetia - Alania, Tver and Pskov regions. The presence of a stock of medical equipment in the medical facilities of the indicated regions allows providing medical assistance to no more than 10-30 victims in emergencies.

At the federal level, the reserve of medical property of the Ministry of Health of Russia cost is about 43 million rubles. It is ready to be released in a short time. Due to renovation process in 2020, medical property was transferred to the medical facilities in the amount of more than 25 million rubles.

During the transition of «Zashchita» to the Federal Medical and Biological Agency, the Center's specialists developed planning documents on civil defense, carried out round-the-clock duty at the FMBA of Russia and ensured the reception and delivery of warning signals in the prescribed manner.

There is no doubt that the level of professional training of medical workers largely determines the quality of medical care and medical evacuation of victims of emergencies. In order to improve the qualifications of healthcare professionals, on the basis of «Zashchita» in 2020, 27 training cycles were held, which trained 575 specialists from 35 regions.

Particular attention was paid to the training of specialists of air ambulance brigades, heads of regional centers for emergency medical care and disaster medicine, heads of medical centers and their deputies, chief doctors and their deputies, chiefs of civil defense and emergency situations of medical organizations of outpatient and inpatient types.

The development of new training technologies requires: conducting short - within two to three days - trainings, including on-site training; holding remote training events; conducting practice-oriented training sessions for emergency medical teams. However, this requires good preliminary methodological support and full-fledged high-quality educational and methodological materials.

The Center's specialists participated in the creation of the textbook «Medicine of extreme situations», developed by teachers - scientists of the Military Medical Academy named after S.M. Kirov of the Russian Ministry of Defense. The textbook is intended for the training of medical specialists of the power ministries and will be published in the first half of 2021. Many of the employees of the All-Russian Center of Disaster Medicine «Zashchita» became the authors of this textbook.

The following measures for the improvement of the organization of the provision of medical care and the conduct of medical evacuation of victims in emergencies and patients when working in the mode of daily activity were taken:

1. Online All-Russian scientific and practical conference «Development of the system for the provision of emergency medical care and medical evacuation, within the creation of medical districts» was held. Among other topics, the conference discussed the activities of the All-Russian Disaster Medicine Service in the context of the COVID-19 pandemic.

2. Active participation of Disaster Medicine Service specialists in various scientific and practical events, primarily devoted to the problems of emergency medical care and disaster medicine, road traffic injuries.

In the year of the 75th anniversary of Victory in the Great Patriotic War of 1941-1945, the specialists of the Disaster Medicine Service of the Russian Ministry of Health carried out organizational and methodological work to study the experience of the activities of health authorities and medical workers in organizing the provision of medical care and treatment of wounded and sick military personnel in medical organizations (evacuation hospitals) of civil health. A number of scientific articles devoted to the multifaceted labor-intensive activities of these medical institutions during the war years have been published on the pages of the journal «Disaster Medicine».

The research results presented in these articles can, to one degree or another, be taken into account in the course of improving the organizational structure and the procedure for the functioning of the system of medical and evacuation measures carried out in the interests of the wounded and sick military personnel by means of civil health care in large-scale military conflicts.

It must be admitted that in the past year the volume and intensity of scientific research carried out by the All-Russian Disaster Medicine Service specialists did not give the desired result. This is convincingly evidenced by the number and pace of dissertation work, as well as the content of published scientific articles prepared on the previously proposed topics.

*As before, the main directions of research work on the problems of medical provision of the population in emergencies should be considered:* development, improvement and implementation of technologies for management activities, organization and provision of medical care, medical evacuation during the elimination of the consequences of emergencies and when working in daily activities taking into account the development of the country's health care, including the improvement of the infrastructure of medical organizations of the FMBA of Russia; improving regional system of organizing medical assistance to victims and their medical evacuation during emergency response, taking into account the introduction of a three-level system of medical care, creation of medical districts, intermunicipal medical centers, regional centers of emergency medical care and disaster medicine; development and implementation of information and telecommunication technologies into the activities of the Disaster Medicine Service of the FMBA and the Ministry of Health of Russia; creation and improvement, implementation and methodological support of the functioning of the monitoring system for the provision of emergency medical care, need for telemedicine consultations and medical evacuation of patients in life-threatening conditions; continuation of scientific research on the development of air ambulance evacuation, taking into account the principles and features of routing in each specific region; improvement of technologies for the organization and implementation of medical support for patients and victims in emergency situations when performing medical evacuation by various types of transport; participation in the creation of technologies and medical and technical means for medical evacuation of patients and victims in emergency situations; scientific substantiation of the creation, promotion, deployment and operation of mobile medical units of the Disaster Medicine Service, including the FMBA of Russia; monitoring of infectious diseases in emergency situations; the work of Disaster Medicine Service specialists in the context of the COVID-19 pandemic; scientific and methodological support for the creation and functioning of the International Emergency Medical Teams.

The international activities of «Zashchita» have been significantly reduced due to the COVID-19 pandemic. At the same time, in 2020, in order to increase the efficiency of cooperation in the field of emergency prevention and elimination of their consequences, and to exchange experience on these issues, representatives of the All-Russian Center of Disaster Medicine «Zashchita» took part in three international events dedicated to various aspects of disaster medicine.

Within the framework of the Memorandum of Cooperation in the field of disaster medicine between the Russian Ministry of Health and the State Committee on Healthcare and Fertility Planning of the People's Republic of China and

in order to implement the provisions set forth in the Protocol of the 20th meeting of the Russian-Chinese Commission on Humanitarian Cooperation, work continued on the development of methodological recommendations «Results of the interstate tactical and special exercises on the organization of emergency medical aid and medical evacuation of victims of a large-scale earthquake.»

Undoubtedly, the Profile Commission of the Federal Medical and Biological Agency of Russia on disaster medicine and emergency medical care will play an important role in the development of a strategy and tactics for increasing the level of organization, accessibility and quality of medical care provided to victims in various emergencies, and their medical evacuation.

We believe that it should be agreed that at the initial stage of its activities a purposeful and clear roadmap for the development and improvement of the medical support system for victims of emergencies at the facilities and territories served by the FMBA of Russia has not yet been developed.

The development of this system obliges to increase the level of work of many main freelance specialists of the FMBA of Russia, heads and specialists of medical organizations in the field of disaster medicine, and to work more actively and fruitfully in the overall system of saving lives and preserving the health of victims of emergencies.

### Conclusion

The results of the work of «Zashchita» and the All-Russian Disaster Medicine Service allow us to state that its specialists are able to solve the assigned tasks, including in the context of the COVID-19 pandemic.

The active digitalization of the Disaster Medicine Service made it possible to significantly increase the number of telemedicine consultations, to ensure the functioning of the information system «Passport of a medical organization», to expand the possibilities for monitoring patients and victims of emergencies.

*The main tasks for 2021 should be considered:*

- achievement of the goals and priorities of medical, social, sanitary and epidemiological security of the population of the Russian Federation, contained in the annual Address of the President of the Russian Federation to the Federal Assembly of the Russian Federation, as well as in the Decree of the President of the Russian Federation «On the national development goals of the Russian Federation for the period up to 2030» dated July 21, 2020 No. 474;

- ensuring the day-to-day level of readiness of control systems, information systems, as well as the forces and means of the Disaster Medicine Service for response and actions to eliminate medical and sanitary consequences of emergencies;

- continuation of work to increase the level of operational response of the command and control bodies, forces and means of the High Speed Command in an emergency, to ensure timely and sustainable information interaction at the federal, interregional, regional and intermunicipal levels;

- further development of the monitoring system for the provision of emergency medical care to victims of emergencies and compliance with the principles of routing during their medical evacuation;

- improving the work of the Territorial Disaster Medicine Centers, the Regional Centers of the Emergency and Disaster Medicine on medical support of the population in various emergencies, provision of emergency consultative medical care and medical evacuation in the modes of daily preparedness and emergency situations, the development of regional telemedicine systems;

- further development of air ambulance evacuation in accordance with the implementation of the federal project «Ensuring the timely provision of emergency medical care using air ambulance»;
- formation of the organizational and staff structure of the Regional Centers of Emergency and Disaster Medicine, which allows for the harmonious development of all main areas of their activities - the work of the emergency brigades, ensuring the readiness of the regional medical care facilities to respond to emergencies, preserving the functions of the day-to-day management body of the Disaster Medicine Service of the subject, creating an Automated control system for a unified dispatch service and others;
- creation in the regions and territories served by the FMBA of Russia of mobile medical units of constant readiness, providing them with the necessary office equipment, communication means, ambulance transport, etc.;
- continuation of work on the creation and maintenance of a reserve of medical property in the subjects based on the predicted types and scale of emergencies, the expected volume of work to eliminate their medical and sanitary consequences;
- improving the quality and efficiency of command post exercises in the subjects;
- continuation of work on the formation of medical districts, building algorithms for medical evacuation with the implementation of the principles of optimal routing in the medical facilities of the 2nd level - inter-municipal medical centers and

the medical facilities of the 3rd level - the leading regional centers of specialized medical care;

- advanced training of the personnel of the emergency rescue teams of the Ministry of Emergency Situations, the Ministry of Internal Affairs of Russia and other law enforcement agencies in the course of the command post exercises for providing first aid to victims, as well as advanced training of medical specialists in providing medical assistance in an emergency form;
- implementation of a program for automating monitoring of victims of emergencies, who are in serious and extremely serious condition, and patients who need emergency medical care for various reasons;
- increasing the level of proficiency in the information system, the database on the forces and means of the Disaster Medicine Service, telemedicine consultations;
- regular solution of educational situational tasks with a large number of victims;
- creation of unified registration and reporting forms for medical organizations that provide field emergency medical care and medical evacuation;
- continuation of work to ensure the availability of medical care, including with the use of telemedicine technologies, for residents of remote and hard-to-reach regions of the country.

The solution of these problems will ensure an increase in the availability and quality of medical care and medical evacuation carried out in various emergency situations, which will save the lives and preserve the health of many victims.

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