

CLINICAL ASPECTS OF DISASTER MEDICINE КЛИНИЧЕСКИЕ АСПЕКТЫ МЕДИЦИНЫ КАТАСТРОФ

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MEDICAL SUPPORT OF MASS EVENTS DURING THE COVID-19 PANDEMIC: PROBLEMS AND POSSIBLE WAYS OF THEIR SOLUTION

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Abstract. *The purpose of the study is to summarize the experience of organizing and implementing medical support for mass events by the specialists of the medical teams of the All-Russian Center for Disaster Medicine "Zashchita" in 2008–2019; to analyze and to assess the organization of medical support for the Tavrida Forum and Festival, as well as for the Final of the "Big Change" ("Bolshaya Peremena") competition in the Republic of Crimea in 2020 in the face of the threat of the new coronavirus infection COVID-19 spread. Materials and research methods.* We analyzed the data of medical reports of specialists of the Field Multidisciplinary Hospital of the All-Russian Center for Disaster Medicine "Zashchita", who participated in the medical support of mass events held in 2008–2020. The regulatory documents, scientific and methodological publications on the organization of medical support for public events, climatic and geographic conditions in the places of the Hospital's deployment, legal and medical documentation on the prevention, diagnosis and treatment of COVID-19 were studied.

Research results and their analysis. A brief description of the medical support of mass events by the specialists of the Field Multidisciplinary Hospital of the All-Russian Center for Disaster Medicine "Zashchita" in 2008–2019 is given. The organization and implementation of medical support for mass events held in 2020 in the Republic of Crimea in the context of the COVID-19 pandemic are presented. The work of the Consolidated Medical Unit of the FMBA of Russia with the participation of specialists from the All-Russian Center for Disaster Medicine "Zashchita" is analyzed.

Key words: All-Russian Center for Disaster Medicine "Zashchita", anti-epidemic measures, comprehensive medical support, consolidated medical unit of the FMBA of Russia, COVID-19 pandemic, field multidisciplinary hospital, isolation, mass events, medical evacuation, observation, Republic of Crimea, routing

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МЕДИЦИНСКОЕ ОБЕСПЕЧЕНИЕ МАССОВЫХ МЕРОПРИЯТИЙ В ПЕРИОД ПАНДЕМИИ COVID-19: ПРОБЛЕМЫ И ВОЗМОЖНЫЕ ПУТИ ИХ РЕШЕНИЯ

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Резюме. *Цель исследования – обобщить опыт организации и осуществления медицинского обеспечения массовых мероприятий силами специалистов медицинских бригад Всероссийского центра медицины катастроф «Защита» (ВЦМК «Защита») в 2008–2019 гг.; проанализировать и дать оценку организации медицинского обеспечения Форума и Фестиваля «Таврида», а также Финала конкурса «Большая перемена» в Республике Крым в 2020 г. в условиях угрозы распространения новой коронавирусной инфекции COVID-19.*

Материалы и методы исследования. Проанализированы данные медицинских отчетов специалистов Полевого многопрофильного госпиталя ВЦМК «Защита» (ПМГ, Госпиталь), участвовавших в медицинском обеспечении массовых мероприятий, проводившихся в 2008–2020 гг. Изучены нормативные документы, научные и методические публикации по организации медицинского обеспечения массовых мероприятий, климатогеографические условия в местах развертывания Госпиталя, правовая и медицинская документация по профилактике, диагностике и лечению COVID-19.

Результаты исследования и их анализ. Дана краткая характеристика медицинского обеспечения массовых мероприятий силами специалистов ПМГ ВЦМК «Защита» в 2008–2019 гг. Представлены организация и осуществление медицинского обеспечения массовых мероприятий, проводившихся в 2020 г. в Республике Крым в условиях пандемии COVID-19. Проанализирована работа Сводного медицинского отряда (СМО) ФМБА России с участием специалистов ВЦМК «Защита».

Ключевые слова: ВЦМК «Защита», изоляция, комплексное медицинское обеспечение, маршрутизация, массовые мероприятия, медицинская эвакуация, обсервация, пандемия COVID-19, Полевой многопрофильный госпиталь, противоэпидемические мероприятия, Республика Крым, Сводный медицинский отряд ФМБА России

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Introduction

Holding mass events with a large concentration of people in a limited space often brings a threat of injury and illness to their participants. In addition, in places where mass events are held, various crisis situations may arise due to man-made accidents and disasters, antisocial actions, terrorist acts, etc. [1–4].

Over the past decade, a lot has been done to develop the system of organizing medical support of public events. Specialists of the Field Multidisciplinary Hospital of the All-Russian Centre for Disaster Medicine "Zashchita" got a significant experience in organizing medical support for mass events of various duration and scale: car races and other sports competitions, archaeological and geographical expeditions, military parades, festivals, international and interdepartmental exercises, concert tours and performances of children's choirs, youth forums, rock festivals, etc. In 2008–2019 with the involvement of specialists from the Center for Sanitary Aviation the All-Russian Centre for Disaster Medicine "Zashchita", in cooperation with other medical organizations (LMO), medical support was organized for more than 80 mass events, medical assistance was provided to over 18 thousands of their participants and guests.

In addition, over the years, concepts have been developed for the organization of medical support for various mass events by medical units of "Zashchita" Center with eventual involvement of specialists from other medical entities, taking into account possibility of occurrence of various crisis situations upon their implementation.

In 2020, due to the COVID-19 pandemic, most public events were suspended. At the same time, in the Republic of Crimea, restrictive measures were eased and a possibility of holding a number of cultural events within the framework of the Presidential and State programs appeared.

The epidemiological situation made significant adjustments to the organization of medical support for mass events — it was necessary to take additional tough anti-epidemic measures. At the time of elaboration of options for medical support of mass events in the Republic of Crimea in the context of the COVID-19 pandemic, medical units and organisations did not have relevant prior experience. The elaboration of the issue was complicated by the lack of understanding by the organizers of these events of the need to take enhanced anti-epidemic measures, which required an increase in human and financial resources.

All this contributed to further complication of the organizational and clinical background and negatively influenced the process of preparation, organization and implementation of medical support.

The relevance of research. Mass events require careful preparation and continuous medical support during the entire period of their holding [5–7]. Each event has its own specifics related to the place of its holding, to the composition of its participants, to the attitude of the organizers to the restrictive events. As a rule, the structure of medical care requests depends on the topic of the event, its focus and the contingent of its participants. For example, at music festivals

injuries, poisoning with alcohol and its surrogates, infectious diseases and disorders of psychosomatic state prevail, while at sports events there are mostly injuries, etc. [5–8]. In view of this, the medical support of mass events requires a deep preliminary study in order to form an adequate composition of medical teams and to equip them with appropriate equipment [8–14].

In 2020, FMBA of Russia and, in particular, All-Russian Centre for Disaster Medicine "Zashchita" were entrusted with the task of comprehensive medical support for participants, guests, staff and organizers of Tavrida Forum and Festival (hereinafter referred to as Forum, Festival), as well as of the Final of "Big Change" ("Bolshaya Peremena") competition (hereinafter — Final of the Competition). A distinctive feature of the medical support in 2020 is the work in a difficult epidemic situation, due to the threat of a spread of the new coronavirus infection COVID-19. The experience of preparation and implementation of medical support for the Forum, the Festival and the Final of the competition, the analysis of the activities of the medical units of the All-Russian Centre for Disaster Medicine "Zashchita" and of the Consolidated Medical Unit of the FMBA of Russia determined the relevance of this study.

The aim of the study is to analyze the experience of medical support for mass events with a large number of participants within an unfavorable epidemiological situation.

Research objectives:

- to summarize the experience of organizing medical support of mass events, carried out by the medical teams of the All-Russian Center for Disaster Medicine "Zashchita" in 2008–2019;

- to assess the organization of medical support for Tavrida Forum and Festival, as well as for the Final of the "Big Change" competition in 2020 in the face of the threat of the spread of the new coronavirus infection COVID-19;

- to study scientific and methodological publications on the organization of medical support for public events, legal and medical documentation on the prevention, diagnosis and treatment of COVID-19.

Materials and research methods. The data of medical reports of specialists of the field multiprofile hospital of the All-Russian Centre for Disaster Medicine "Zashchita", who participated in the medical support of mass events in 2008–2020, have been analyzed. The regulatory documents, scientific and methodological publications on the organization of medical support for mass events, climatic and geographic characteristics of the places of the Hospital's deployment in 2020, legal and medical documentation on the prevention, diagnosis and treatment of COVID-19 were studied.

Research results and their analysis.

Brief description of medical support for mass events held in 2008–2019.

Specialists of the field multiprofile hospital of "Zashchita" Centre have significant experience in organizing and implementing medical support for mass events of various duration and scale.

As already noted, in 2008–2019. more than 80 mass events were provided with medical support. Within 11 years, more than 18 thousand people have applied for medical help, including 600 children.

Experience shows that successful implementation of medical support for mass events depends, among other things, on its preliminary preparation. In all cases, at the stage of preparation, the employees of field multiprofile hospital took part in the meetings of the event organizers, where the details of the participation of medical teams were agreed and the following points were specified: approximate number, contingent, age categories of participants and guests of the event; its duration; location of event facilities and evacuation routes. The tiniest details were agreed, including the requirements for the site for the deployment of field multiprofile hospital units, energy and water supply, communications.

Depending on the format of the event, medical support was provided in various formats: deployment on the basis of pneumatic and metal frame modules, in premises provided by the organizers, on ambulances, as well as using combined and mixed options.

The demand for medical care depended not only on the number of participants in the event, but also on its duration. So, if the event lasts for up to 5 days (the rock festival "Invasion" ("Nashestvie"), performances of the children's choir, car racing), the demand for medical care was 1–2% of the total number of the event's participants. However, with long-term medical support (archaeological and geographic expeditions), the turnover increased to 60% or more. So, for example, within the medical support of archaeological excavations in the Krasnoyarsk Territory and in the Republic of Tyva, the appealability even exceeded the number of participants, which was associated with their repeated appeals, as well as with the significant remoteness of the only medical facility of the 1st level. Since level 2 medical facilities were located at a distance of 100–300 km, and level 3 medical facilities were at an even greater distance from the excavation site, only the field multiprofile hospital specialists provided medical assistance. In exceptional cases — if it was necessary to provide specialized medical care — a medical evacuation was carried out using medical transport or transport provided by the organizers of the event.

During excavations, the average daily load on medical specialists was 30–100 people / day.

Characteristics of medical support for public events held in 2020

The main difference between the medical support of mass events held in 2020 is work in the context of the COVID-19 pandemic.

In 2020, mass events — in order to avoid a simultaneous large gathering of people — were held in "closed" territories and were of a prolonged nature. The number of participants, guests and staff also varied (Table 1).

Medical support of the Forum of young workers of culture and arts "Tavrida" and of the Festival "Tavrida-Art".

In preparation for the medical support of mass events in June 2020 in Simferopol and Sudak, working meetings were held with the participation of the heads of the Council of Ministers of the Republic of Crimea, All-Russian Centre for Disaster Medicine "Zashchita" of the FMBA of Russia, the Ministry of Health of the Republic of Crimea, the Crimean Republican Center for Emergency and Disaster Medicine, the Interregional Administration of Rospotrebnadzor in the Republic of Crimea and in the federal city of Sevastopol, the State Committee for Youth Policy of the Republic of Crimea and the Federal Agency for Youth Affairs, as well as the organizers of Tavrida Forum and Festival.

During the meetings, the main issues of medical support were discussed; measures to prevent the emergence and spread of infectious diseases among guests, participants and organizers of events; issues of interagency interaction and patient routing during the Forum and the Festival. The following issues were considered in detail: the minimum number of participants and employees, their remote placement; a schedule of periodic testing and collection of biological material, followed by laboratory PCR tests; the availability of a sufficient number of personal protective equipment, disinfectants, rapid tests for antibodies and COVID-19 antigen; observance of the mask regime, social distancing and separate nutrition; uninterrupted water supply with guaranteed quality of drinking water; cleaning and sanitizing of the territory; mandatory availability of the necessary medical documentation for participants and employees, including a confirmed negative laboratory PCR test result for COVID-19.

Таблица 1 /Table No. 1

Характеристика массовых мероприятий, проводившихся в 2020 г.

Description of mass public events held in 2020

Массовое мероприятие Mass event	Место проведения Location	Даты – продолжительность – мед. обеспечения Dates – duration of medical support	Число участников, гостей и персонала Number of participants, guests and staff	Особенности проведения Features
Форум молодых деятелей культуры и искусства «Таврида» "Tavrida" Forum of young culture and arts workers	Бухта Капсель, г.о. Судак, Республика Крым Kapsel bay, Sudak urban district, Republic of Crimea	03.07–13.10.2020 – 3,5 мес 03.07–13.10.2020 – 3.5 months	2,5 тыс. чел. – 10 смен, в среднем – 200 чел. в смену 2.5 thousand people: 10 shifts, on average – 200 people per shift	Частые заезды смен, длительность мероприятия Frequent arrivals of shifts, event duration
Фестиваль «Таврида-Арт» – проведение в рамках Форума "Tavrida-Art" festival – held within the framework of "Tavrida" Forum	Бухта Капсель, г.о. Судак, Республика Крым Kapsel bay, Sudak urban district, Republic of Crimea	31.08–07.09.2020 – 8 сут 31.08–07.09.2020 – 8 days	До 7 тыс. чел. Up to 7 thousand people	Одновременный заезд большого числа участников и гостей Simultaneous arrival of a large number of participants and guests
Финал конкурса «Большая перемена» Final of "Big Change" ("Bolshaya Peremena") competition	Международный детский центр «Артек», пгт. Гурзуф, Республика Крым International Children's Center "Artek", Gurzuf settlement, Republic of Crimea	26.10–07.11.2020 – 12 сут 26.10–07.11.2020 – 12 days	До 3 тыс. чел., в том числе 1,2 тыс. – дети Up to 3 thousand people, including 1.2 thousand children	Детское мероприятие – одновременный заезд большого числа участников и гостей, среди участников – дети-инвалиды и дети с хроническими заболеваниями Children's event – simultaneous arrival of a large number of participants and guests, disabled children and children with chronic diseases among the participants

A reconnaissance of the event territory was carried out. Together with the organizers, the issues of the deployment of the Hospital in the conditions of the infrastructure of the living quarters of the Forum and the Festival were resolved, additional premises for medical purposes were identified, including a separate temporary isolation ward for patients suspected of COVID-19, as well as the accommodation of specialists. Routing of reanimobiles across the territory was outlined. At meetings with the leadership of the nearest medical centers, the possibility of eventual hospitalization of sick and injured was discussed.

The Forum and the Festival were held on an area of over 50 hectares. Taking into account the epidemiological situation, the arrival of the participants was divided into shifts, the duration of one shift was 1 week. The number of participants, teachers (experts) and guests — 18–35 years old — was up to 200 people per shift. Forum and Festival participants lived in double stationary houses and tourist tents, they ate in the canteen and on the territory of the field kitchen. All drinking water was consumed in bottled form. A sufficient number of sanitary zones were organized on the territory of the Forum. Showers, toilets, and a bath and laundry plant functioned. The total daily number of staff and coordinators was no more than 350 people.

The first combined medical unit of FMBA of Russia was formed at the beginning of July 2020 from the specialists of the All-Russian Center for Disaster Medicine "Zashchita" and of the Clinical Hospital No. 85 of the FMBA of Russia.

Taking into account the duration of the medical support, a schedule was drawn up for the shifts of the health care specialists (1st shift: July – August; 2nd - August – September; 3rd shift - September – October).

The hospital was fully deployed, equipped and operational on July 5, 2020 (Figure 1).

Hospital structure:

1. Receiving and sorting department.
2. Control module.
3. Surgical department.
4. Department of intensive care.
5. Day hospital.
6. Diagnostic department (X-ray).
7. Pharmacy.
8. Module for disinfection treatment.
9. Isolator for patients with intestinal infection.
10. Isolator for patients with airborne infection.
11. Isolation unit for patients with suspected COVID-19.
12. Special transport area — 2 reanimobiles.

A mobile telemedicine complex of secure satellite communications was deployed in the control unit of the coordination and technical center of the All-Russian Center for Disaster Medicine "Zashchita". The complex allowed to access the Internet, to communicate via video conferencing through the on-call service of "Zashchita" Centre with 36 National Medical Research Centers and with 26 leading consulting medical organizations for organising telemedicine consultations in emergency, urgent and planned forms, and also made it possible — in case of emergencies — to contact the duty services of the National Center for Crisis Management of EMERCOM of Russia and of the National Center for Defense Management of the Russian Federation.

Organization of field work. At the arrival of each new shift, combined medical unit specialists carried out express testing for COVID-19, as well as the thermometry and medical records of all Forum participants at the airport of Simferopol. The same control was carried out at railway stations in case of arrival of organized groups by rail. Participants with positive results of rapid testing for COVID-19 and with signs of acute respiratory viral infections were transferred to the

team of the Territorial Center for Emergency and Disaster Medicine and then were hospitalized in infectious diseases hospitals. Thus, the risks of the spread of infections in buses on the route from the airport to the closed territory of the Forum and the Festival were minimized.

In parallel with the work of the combined medical units, at the airport and at the railway station the specialists of the Territorial Centre for Emergency and Disaster Medicine carried out a selection of biomaterials for COVID-19 from all participants, including those who had the necessary medical documentation and had no complaints. The materials were transferred to the laboratories of the Center for Hygiene and Epidemiology and the Anti-Plague Station of the Republic of Crimea of Rospotrebnadzor in the Republic of Crimea and in the city of Sevastopol for PCR research. The research results were provided no earlier than a day later. In case of receiving information about a positive laboratory test for the SARS-CoV-2 virus, the participant and persons from among his close contacts were promptly isolated. The representative of Rospotrebnadzor conducted an epidemiological investigation, wrote out decrees and orders. Subsequently, the sick were hospitalized in infectious diseases hospitals, and the contact persons of the medical teams of the Territorial Centre for Emergency and Disaster Medicine were isolated in observators. Before entering the event site, all participants and guests underwent thermometry.

When seeking medical help, thermometry, pulse oximetry, examination of the throat, collection of anamnesis and clarification of complaints were performed.

In the premises on the territory of the event, the mask regime and social distance were observed. Dispensers with antiseptics and air recirculators were installed in places of mass gatherings. In order to maintain social distance, all Forum premises were marked with lines. At the entrance to the dining room and the Big Educational Tent, the volunteer corps carried out constant thermometry putting the data into an electronic journal. Meals for the Forum staff and participants were provided using only disposable tableware. Between shifts of the Forum — within a break of 1 to 3 days — employees of the management company carried out preventive disinfection of all residential and industrial premises. Entry to and exit from the territory of employees and participants of the Forum and the Festival were strictly limited.

On August 30, 2020, during the Tavrida-Art Festival, an additional group of forces and means of the FMBA of Russia was formed. In the immediate vicinity of the tent camp of the participants, at a distance of 1.3 km from the field multiprofile hospital (Hospital-1), the 2nd mobile hospital (Hospital-2) was deployed, and reanimobiles were dispersed throughout the territory of the Festival (Fig. 2).

Subdivisions of Hospital-2, deployed on the basis of medical trucks with all-terrain vehicles of the Rapid Response Brigade:

1. Rapid Response Brigade "Bandaging Station".
2. Rapid Response Brigade "Reanimation".
3. Rapid Response Brigade "Surgery Station".
4. Rapid Response Brigade "Headquarters Dispatching".
5. Cargo van for the toxicology team.
6. Special transport platform — 4 reanimobiles (Fig. 3).

In preparation for the medical support of the Festival on September 1, 2020, after the deployment of Hospital-2, special tactical exercises were held to eliminate the medical and sanitary consequences of a simulated fire on the central stage of the festival. During the exercise, the effectiveness of passing information about the fire to the headquarters of the Combined Medical Unit of the FMBA of Russia and the Unified Duty Dispatch Services was checked, as well as the interaction of the services involved in the elimination of the

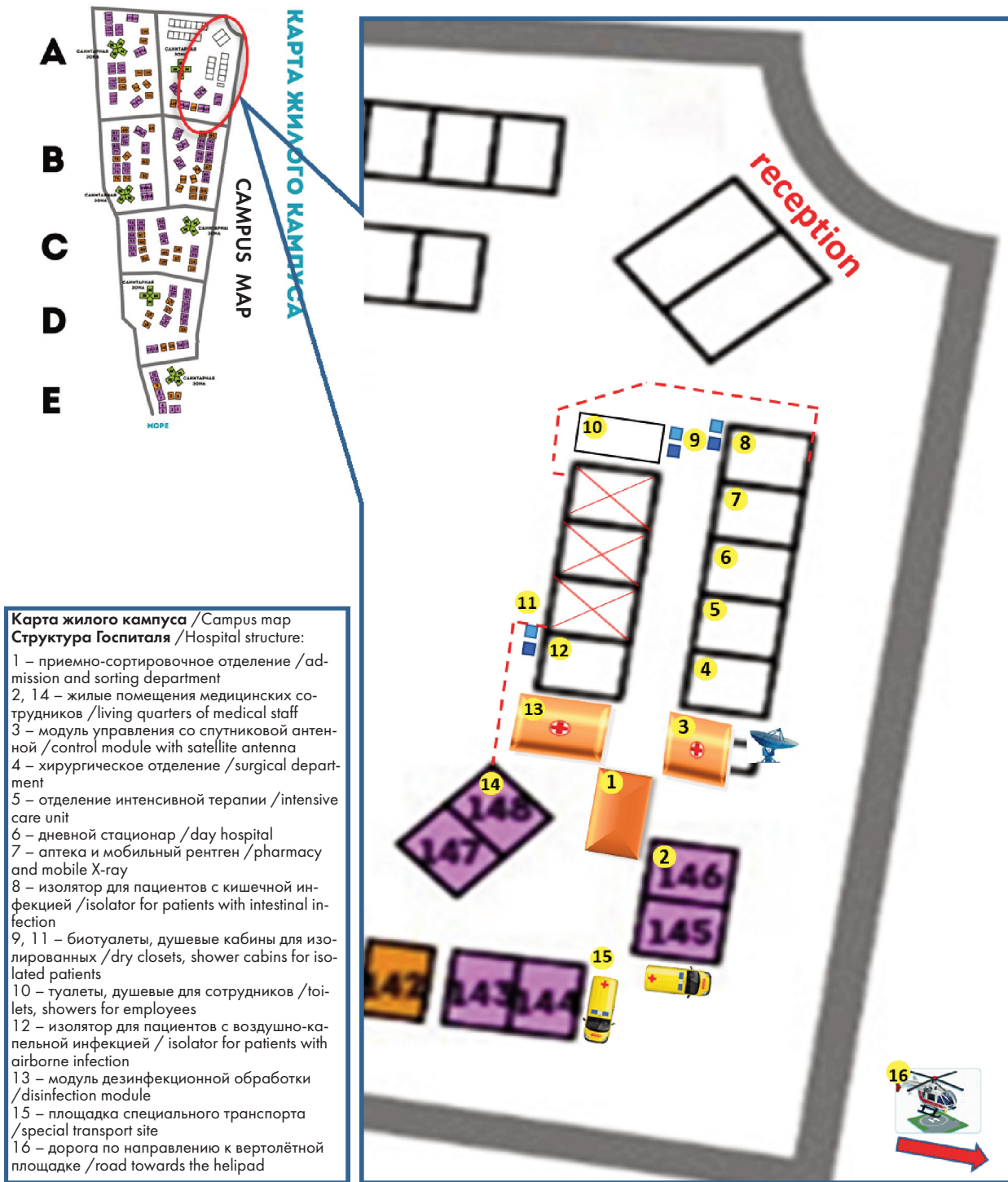


Рис. 1. Развертывание Полевого многопрофильного госпиталя ВЦМК «Защита» (Госпиталь-1) в составе Сводного медицинского отряда (СМО) Федерального медико-биологического агентства (ФМБА России) в жилой зоне Форума и Фестиваля «Таврида 2020»

Fig. 1. Deployment of the Field Multiprofile Hospital of the All-Russian Centre for Disaster Medicine "Zashchita" (Hospital-1) as part of the Consolidated Medical Unit of the Federal Medical and Biological Agency (FMBA) of Russia in the residential area of "Tavrida" Forum and Festival

consequences of the fire was checked (Fig. 4).

On September 2, 2020, specialists from the FMBA of Russia began to provide medical support for the participants and guests of the Festival.

Considering that the estimated total number of participants will be up to 7 thousand people, as well as the fact that buses with organized groups of 1-2 thousand people will arrive every day, at the checkpoint of the event combined medical units specialists of FMBA of Russia and of the Crimean Regional Center for Emergency and Disaster Medicine de-

ployed a sanitary checkpoint — an inlet filter. The main forces of the combined medical units were involved in the work on the inlet filter for the entire period of the event. Each arriving person was examined by a combined medical unit specialist, express testing for COVID-19, thermometry, collection of anamnesis and complaints as well as medical records were carried out. Thanks to the experience gained by the combined medical units specialists in the previous 2 months, the strengthening of anti-epidemic measures, the well-coordinated interaction of all security services, during the Festi-

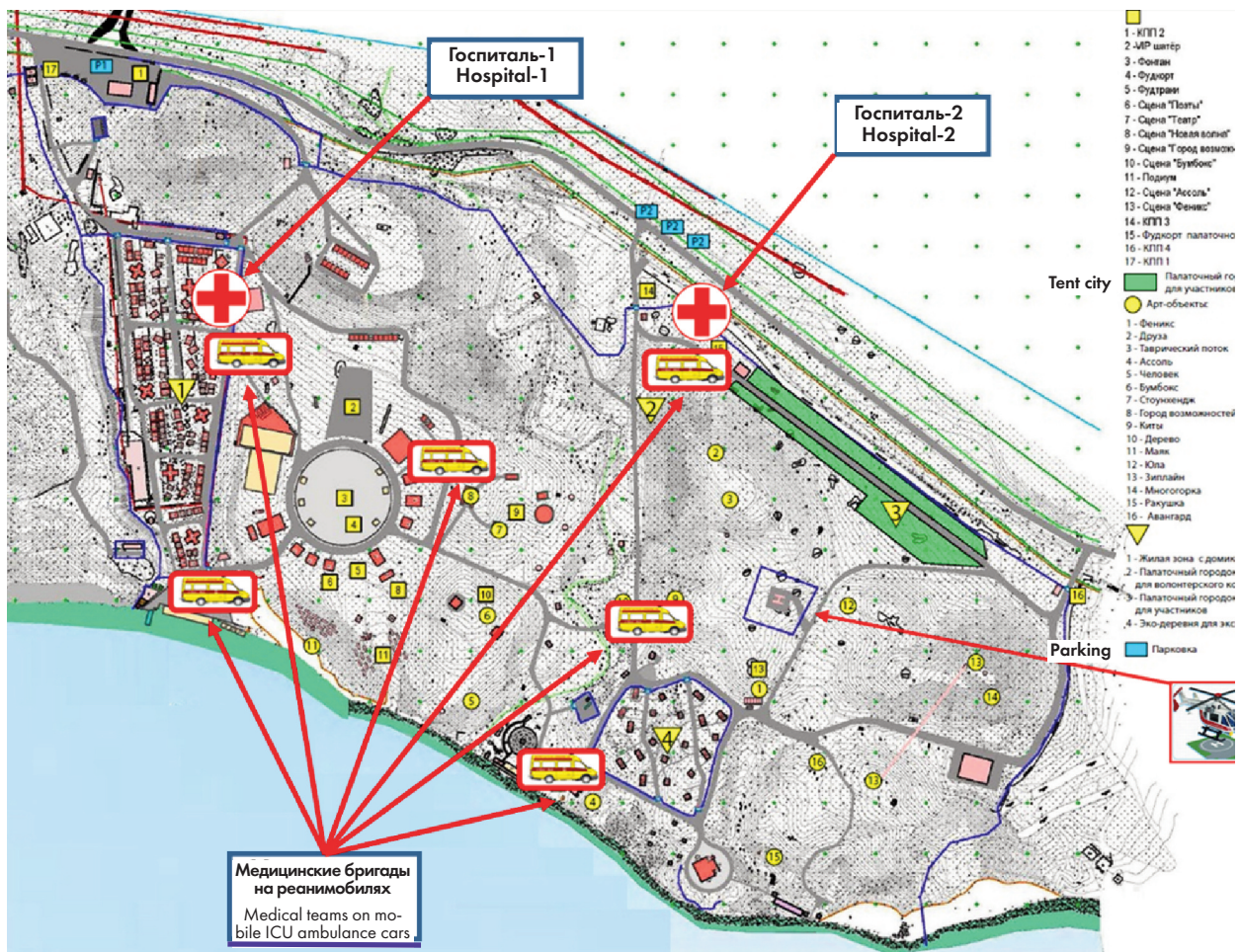


Рис. 2. Расположение сил и средств СМО ФМБА России на Фестивале «Таврида-Арт», 02–06.09.2020 г.

Fig. 2. Location of forces and means of consolidated medical unit of the FMBA of Russia at "Tavrida-Art" Festival, 02-06.09.2020

val, the spread of the new coronavirus infection COVID-19 was avoided.

The main problem in organizing medical support for the Forum and the Festival was the absence of laboratories, observers, infectious diseases hospitals and converted "covid" hospitals in the immediate vicinity of the territory of their holding. In this regard, from the moment of isolation of an infectious patient or of a contact to the moment of his hospitalization isolation in the observatory, it could take up to 12 hours.

During the Forum "Tavrida" and the Festival "Tavrida-Art" 2439 people applied for medical help; 1846 COVID-19 rapid tests were performed; 44 people were sent for hospitalization and examination at the medical organisations of the Republic of Crimea, of whom 26 were hospitalized, including 16 people with COVID-19; 31 COVID-19 contact persons were sent to Observatory. The structure of the appealability: surgical and traumatological profile — 37.15%; therapeutic profile, including infection — 62.85%.

At the same time, if we take into account the preliminary examination of the participants and guests of the event at the arrival of each shift, as well as multiple repeated requests for medical assistance by the personnel who lived almost without leaving the event territory, at different times the number of requests was from 20 to 60%, which was due to both the event duration, and to the need for taking anti-epidemic measures.

Taking into account thermometry, additional express testing for COVID-19 and verification of the submitted medical documentation, the total workload on combined medical units specialists ranged from 200 to 2 thousand people / day.

Medical support of the final of the All-Russian competition "Big Change"

Work on preparation for medical support of the final of the All-Russian competition "Big Change", held in October-November 2020 on the basis of the International Children's Center "Artek" — Republic of Crimea, Gurzuf, was carried out remotely and was based on the successful experience of medical support for Tavrida Forum and Festival. In addition to remote meetings, preliminary working meetings were held with the participation of the organizers of the event, the medical and sanitary unit of "Artek", the Crimean Regional Center for Emergency and Disaster Medicine and Rospotrebnadzor in the Republic of Crimea and in the city of Sevastopol.

Taking into account the existing experience, the presence of a number of problems in the medical provision of the Tavrida Forum, anti-epidemic measures were strengthened and adjusted. The participants, who arrived from different regions in Simferopol, settled in the Base — the hotel "Artek" (evacuation base), where they lived for 1-3 days immediately before visiting "Artek". The specialists of the Medical Unit of the Artek Medical Center carried out medical examinations and control of the medical records of the children-participants. In case of suspicion of an infectious disease, biomaterials were taken for COVID-19, and then transferred to the reference laboratory of Simferopol. While waiting for the results of the PCR study, the participants were isolated in separate rooms of the evacuation base. In case of a negative result, children were taken to the event territory by buses.

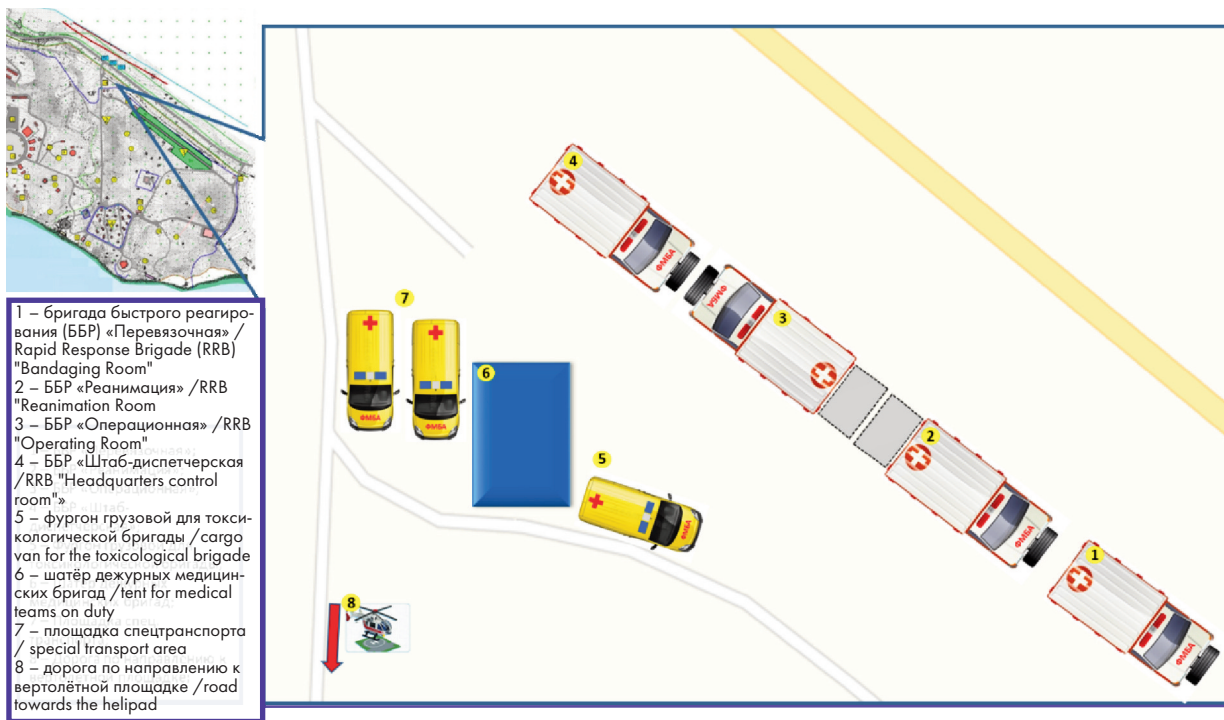


Рис. 3. Развертывание на базе медицинских грузовых автомобилей повышенной проходимости Госпиталей-2 в составе СМО ФМБА России в палаточном городке Фестиваля «Таврида-Арт»

Fig. 3. Deployment on the basis of Hospital-2 off-road medical trucks as a part of consolidated medical unit of the FMBA of Russia in the tent city of "Tavrida-Art" Festival

Most of the guests, experts and involved personnel lived in a sanatorium-resort complex 30 km away from the event site and were daily delivered to its territory by buses. Upon arrival, everyone, without exception, underwent the procedure of inspection and express testing in the sanitary checkpoint (entrance filter) of the FMBA of Russia, which was deployed before entering "Artek".

Thus, due to the enhanced anti-epidemic measures at the time of the Competition Final, the territory of the Artek ICC was a "green zone".

Medical support was carried out by the combined medical units of FMBA of Russia — specialists from All-Russian Centre for Disaster Medicine "Zashchita", Clinical Hospital No. 85, Central Children's Clinical Hospital, Federal Scientific and Clinical Center — together with the staff of the Medical Center of "Artek". The management of the FMBA of Russia set several tasks for the specialists of the medical organization: participation in medical support for the Final of the competition; express testing for a new coronavirus infection of the organizers, service personnel and participants of the event; individual medical support for children diagnosed with diabetes mellitus; consultation of infectious disease doctor within the analysis of medical records on the input filter.

Taking into account the need to simultaneously solve several tasks, the forces and means of the combined medical unit were concentrated at two points on the territory of the event:

1. *Sanitary checkpoint — inlet filter.* Deployed on the basis of frame modules and stationary premises in front of the checkpoint on the territory of "Artek" administrative and economic zone. It included: an admission and diagnostic department — express testing for COVID-19, if necessary — selection of biomaterials, PCR testing for COVID-19 and an infectious disease doctor's advisory office — analysis of the submitted medical documentation, issuance of an admission / refusal opinion for event.

2. *Medical center — emergency response brigade.* Deployed in stationary premises converted for medical purposes on the territory of the Rechnoy children's camp of the "Artek" in the building where children-participants with chronic diseases, including those diagnosed with diabetes mellitus, lived. Its structure includes: a medical center — consultative assistance and monitoring of glycemia by an endocrinologist, on duty of pediatric medical and nursing teams; special transport platform — on duty of medical and paramedic brigades on reanimation vehicles.

During the event, 64 people applied for medical help, including 61 children. In addition, 154 consultations of an infectious profile were conducted on the basis of submitted medical documents. 1344 COVID-19 tests performed. Denied for medical reasons in admission to the event — 31 people. The structure of appealability: surgical and traumatological profile — 15.7%; therapeutic profile, including diabetes mellitus — 84.3%. Children with diabetes were constantly monitored for glycemia.

Combined medical unit specialists: surgeons, pediatric surgeons, traumatologists, anesthesiologists-resuscitators, toxicologists, emergency doctors, infectious disease specialists, endocrinologists, therapists, pediatricians, paramedics, operating nurses, nurses-anesthetists, laboratory assistants (engineers, non-medical specialists)

Such an expanded staff of specialists was necessary to organize and conduct events for the prevention of COVID-19 for participants, guests and employees of the support services of the events (Table 2).

Medical evacuation routing for medical support of mass events in 2020

In case of the need for hospitalization of patients and injured in the medical facilities of the Republic of Crimea, medical evacuation was carried out in accordance with the developed routing (Table 3, 4; Fig. 5, 6).

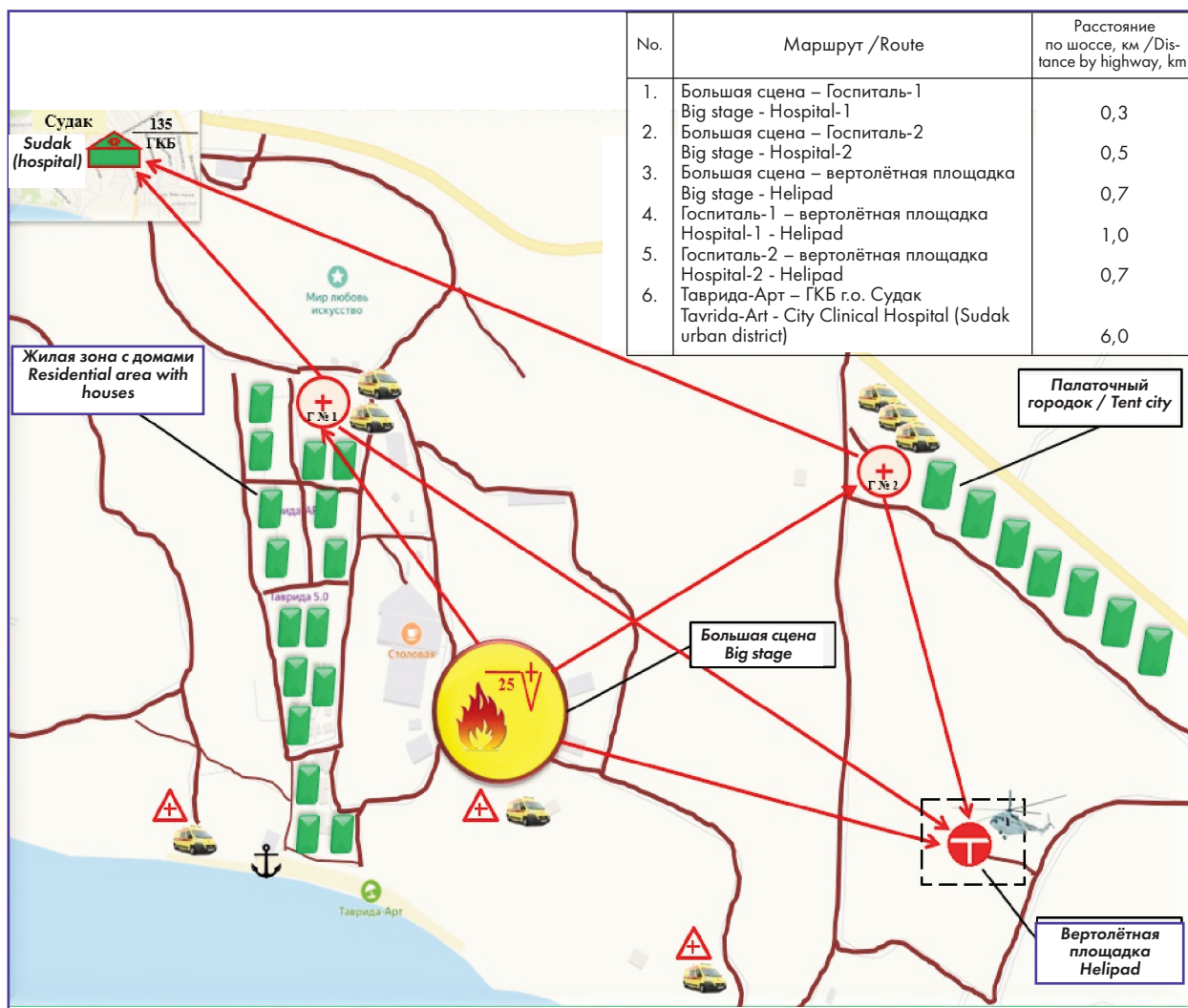


Рис. 4. Тактико-специальные учения / Fig. 4. Special tactical exercises

Considering the large shoulder of the evacuation to the medical facilities, it was decided that the medical evacuation of the sick and injured is carried out: at a distance of up to 60 km — by the teams of the Emergency Department of the Federal Medical and Biological Agency of Russia, more than 60 km — by the brigades of the Territorial Centre for Emergency and Disaster Medicine.

Helipads were created on the territory of the events, which were located 1.0–1.5 km from the base of the combined medical unit. The medical helicopter "Ansar" of the Territorial Centre for Emergency and Disaster Medicine was permanently based at the Simferopol airport, its estimated time of arrival was 20 minutes. During the events, the medical helicopter was not used.

If we analyze the demand for medical care in medical support of mass events in 2020, then on average it amounted to 20% of the total number of participants and guests of events. An increase in the number of people in circulation compared to previous years by 1–2% is due to the need to carry out anti-epidemic measures. At the same time, when holding prolonged mass events, this is due to the large number of repeated appeals. Since, in comparison with previous years, the number of combined medical unit staff has increased, the workload on medical specialists has remained the same — about 30 people / day.

Conclusion

The experience of organisation of medical support for mass events in the context of the COVID-19 pandemic made it possible to draw a number of conclusions that should be taken into account in the future:

1. The area where the event is held must be closed.
2. It is obligatory to organize a sanitary checkpoint (inlet filter), the work of which is aimed to prevent attending the event by: persons with suspected infectious disease; persons who do not have a certificate of a negative PCR test for COVID-19, as well as persons with such a certificate, after the issuance of which more than 72 hours have passed.
3. When holding mass events in a closed area with a long stay, the following measures should be taken: check medical documentation — a certificate of epidemiological well-being, vaccinations; organise thermometry in places of mass stay of people; carry out PCR testing every 5-7 days; limit as much as possible temporary exit from the territory of the event.
4. Not allowed: accommodation of guests, experts and staff outside the territory of the event; failure to perform thermometry; non-observance of the mask regime and social distance in the premises on the territory of the event.
5. If an infectious disease is suspected, it is necessary to: isolate a sick person in a specially equipped room; notify the ter-

Постоянный состав СМО ФМБА России и число обратившихся за медицинской помощью при осуществлении медицинского обеспечения массовых мероприятий в Крыму в 2020 г.

Permanent composition of the Consolidated Medical Unit of the Federal Medical and Biological Agency (FMBA) of Russia and number of requests within the framework of the implementation of medical support for mass events in Crimea in 2020

Мероприятие Event	Даты – продолжительность мед. обеспечения Dates – duration of medical support	Подведомственные организации, участвовавшие в мед. обеспечении Subordinate organizations involved in medical support	Число привлеченных специалистов Number of involved specialists	Число обратившихся, чел. Number of requests, people
Форум молодых деятелей культуры и искусства «Таврида» "Tavrida" Forum of young culture and arts workers	03.07–13.10.2020 – 3,5 мес 03.07–13.10.2020 – 3.5 months	ВЦМК «Защита» / All-Russian Centre for Disaster Medicine "Zashchita"; КБ №85 / Clinical Hospital No. 85	48 чел. за 3 смены – 18 врачей, 15 медсестер/фельдшеров, 15 немедиков* 48 people in 3 shifts – 18 doctors, 15 nurses / paramedics, 15 non-physicians*	1640
Фестиваль «Таврида-Арт» – проведение в рамках Форума "Tavrida-Art" festival – held within the framework of "Tavrida" Forum	31.08–07.09.2020 – 8 сут 31.08–07.09.2020 – 8 days	Центральный аппарат ФМБА России / Central office of FMBA of Russia; ВЦМК «Защита» / All-Russian Centre for Disaster Medicine "Zashchita"; ФКЦ ВМТ / Federal Clinical Centre of High Medical Technologies; ФНКЦ / Federal Research and Clinical Centre; ГНЦ ФМБЦ им. А.И.Бурназяна / A.I. Burnazyan Federal Medical Biophysical Centre; КБ №85 / Clinical Hospital No. 85; ФНКЦ ФХМ / Federal Research and Clinical Centre for Physical and Chemical Medicine; КБ №101 ФГБУ СКФНКЦ / Clinical Hospital №101 of North Caucasian Federal Research and Clinical Centre; НКЦ / Research and Clinical Centre; ЮОМЦ / South District Medical Centre; КДЦ ФКЦ ВМТ / Clinical Diagnostic Centre of the Federal Clinical Centre of High Medical Technologies	56 чел. – 27 врачей, 15 медсестер / фельдшеров, 14 немедиков* 56 people: 18 – doctors, 15 – nurses / paramedics, 15 – non-physicians*	799
Финал конкурса «Большая перемена» Final of "Big Change" ("Bolshaya Peremena") competition	26.10–07.11.2020 – 12 сут 26.10–07.11.2020 – 12 days	Центральный аппарат ФМБА России / Central office of FMBA of Russia; ВЦМК «Защита» / All-Russian Centre for Disaster Medicine "Zashchita"; КБ № 85 / Clinical Hospital No. 85; ФНКЦ детей и подростков / Federal Research and Clinical Centre for Children and Adolescents; ФНКЦ / Federal Research and Clinical Centre	28 чел. – 7 врачей, 14 медсестер/фельдшеров, 7 немедиков* 28 people: 7 - doctors, 14 - nurses / paramedics, 7 - non-physicians*	64, в том числе детей - 61 64, from them children - 61
Всего / Total			132 чел. – 52 врача, 44 медсестры/фельдшера, 36 немедиков* 132 people: 52 - doctors, 44 - nurses / paramedics, 36 - non-physicians*	2503, в том числе детей - 61 2503, from them children - 61

* Инженеры, водители, IT-специалисты; привлечены 24 единицы спецтехники
* Engineers, drivers, IT specialists; number of special technic - 24

ritorial department of Rospotrebnadzor; carry out medical evacuation to a specialized medical facility; identify contact persons with their subsequent evacuation to the observatory.

6. Dispensers with antiseptics and air recirculators must be installed in the premises on the territory of the event.

7. In preparation for a mass event, together with the heads of local government bodies, medical and other services responsible for protecting life and health of the population, it is necessary to work out in detail the routing for the medical evacuation of patients with various pathologies to medical organisations of the region, paying special attention to patients with infectious diseases.

8. During the period of the spread of infectious diseases, comprehensive medical support for mass events, including all anti-epidemic measures, is possible after organising a shift arrival of organized groups of participants and after ensuring a strict compliance with the above mentioned conditions of passage to the closed area.

9. An effective epidemiological measure is the organization of medical examinations, control of medical records of participants on the territory of the evacuation base, where those arriving at the event live for 1-3 days before attending the event.

10. While organising medical support for mass events during the spread of infectious diseases, it is required to increase the staffing of mobile teams, as well as to equip them with medical, engineering and technical equipment, medicines and consumables.

11. The experience of participation in the medical support of large-scale mass events has shown that the problem of medical safety of its participants can be solved only with a comprehensive preparation and concerted actions of the event organizers, heads of local health authorities, medical and other services responsible for protecting life and health of the population.

Маршрутизация медицинской эвакуации при медицинском обеспечении массовых мероприятий в 2020 г.

Medical evacuation routing for medical support of mass events in 2020

Начальный пункт медицинской эвакуации Beginning of medical evacuation	Расстояние до конечного пункта медицинской эвакуации, км Distance to the final point of medical evacuation, km				
	Судакская ГБ Sudak City Hospital	Филиал ФНКЦ ФМБА России в Крыму, г.Ялта Branch of Federal Research and Clinical Centre of FMBA of Russia in Crimea, Yalta	Алуштинская ЦГБ* Alushta Central City Hospital	ЛМО 3-го уровня, г.Симферополь Medical organization of the 3rd level, Simferopol	Бахчисарайская ЦРБ** Bakhchisarai Central District Hospital
Форум и Фестиваль «Таврида», Бухта Капсель, г.о. Судак "Tavrida" Forum and festival, Kapsel bay, Sudak urban district	5	130	86	130	150
Финал конкурса «Большая перемена», МДЦ «Артек», пгт. Гурзуф Final of "Big Change" ("Bolshaya Peremena"), International Children's Center "Artek", Gurzuf settlement	170	25	22	90	110

* ЦГБ – центральная городская больница / Central City Hospital; ** ЦРБ – центральная районная больница / Central District Hospital

Таблица 4 /Table No.4

Маршрутизация медицинской эвакуации при медицинском обеспечении массовых мероприятий в 2020 г.

Medical evacuation routing for medical support of mass events in 2020

Начальный пункт медицинской эвакуации Beginning of medical evacuation	Расстояние до конечного пункта медицинской эвакуации, км Distance to the final point of medical evacuation, km			
	Феодосийская инфекционная больница Feodosia Infectious Diseases Hospita	Симферопольская ГКБ* №7 Simferopol City Clinical Hospital №7	Евпаторийская инфекционная больница Evpatoria Infectious Diseases Hospital	Обсерваторы санаторного комплекса «Здравница», г.Евпатория Evpatoria Infectious Diseases Hospital
Форум и Фестиваль «Таврида», Бухта Капсель, г.о. Судак "Tavrida" Forum and festival, Kapsel bay, Sudak urban district	55	130	200	200
Финал конкурса «Большая перемена», МДЦ «Артек», пгт. Гурзуф Final of "Big Change" ("Bolshaya Peremena"), International Children's Center "Artek", Gurzuf settlement	180	90	160	160

* ГКБ – городская клиническая больница / City Clinical Hospital



Рис. 5. Маршрутизация медицинской эвакуации при проведении Форума и Фестиваля «Таврида», г.о. Судак
Fig. 5. Routing of medical evacuation during "Tavrida" Forum and Festival, Sudak urban district

СХЕМА ЛЕЧЕБНО-ЭВАКУАЦИОННЫХ МЕРОПРИЯТИЙ
Финал конкурса «Большая перемена», МДЦ «Артек», пгт. Гурзуф

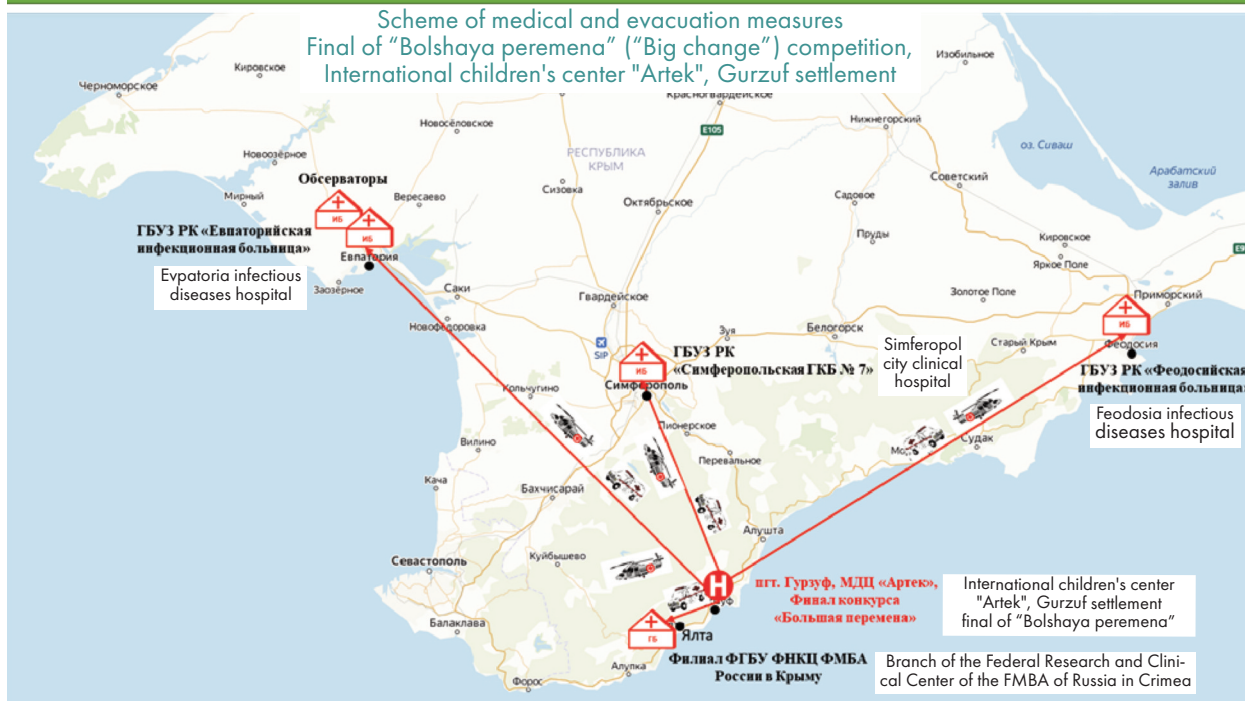


Рис. 6. Маршрутизация медицинской эвакуации при проведении финала конкурса «Большая перемена», Международный детский центр (МДЦ) «Артек», пгт. Гурзуф

Fig. 6. Routing of medical evacuation during the final of “Bolshaya peremena” (“Big change”) competition, International children's center “Artek”, Gurzuf settlement

REFERENCES

СПИСОК ИСТОЧНИКОВ

1. Lobanov A.I. Specifics of Management of Medical Aspects of Security of Mass Religious Events. *Meditsina Katastrof = Disaster Medicine*. 2009; 2: 11–13 (In Russ.).
2. Asadullin Sh.G., Akhmetov F.R., Rodionov I.Yu. Medico-Sanitary Service of Mass Arrangements. *Meditsina Katastrof = Disaster Medicine*. 1999; 3: 5–11 (In Russ.).
3. Kostomarov L.G., Fedotov S.A., Spiridonova E.A. Organizational Technology of Medical Support of Mass Gathering Events. *Meditsina Katastrof = Disaster Medicine*. 2005; 1: 5–8 (In Russ.).
4. Jaslow D, Yancy A 2nd, Milsten A. Mass Gathering Medical Care. National Association of EMS Physicians Standards and Clinical Practice Committee. *Prehosp Emerg Care*. 2000; 4: 359–360.
5. Chubaiko V.G., Radchenko I.V., Cheplyaev A.A., Grabchak S.A., Bobiy B.V., Savvin Yu.N., Chernykh S.I., Avelisov G.M. Organization of Medical Support of Mass Events. *Meditsina Katastrof = Disaster Medicine*. 2018; 4: 5–10 (In Russ.).
6. Kostomarov L.G., Fedotov S.A., Krugovykh E.A., Buk T.N., Meleshkov Yu.S., Potapov V.I. Medical and Sanitary Support of All-City Mass Events in Moscow. *Meditsina Katastrof = Disaster Medicine*. 2013; 1: 52–54 (In Russ.).
7. Goncharov S.F., Baranova N.N., Bobiy B.V. To Issue of Organization of Delivery of Medical Care in Emergency Situations in Mass Sports Events. *Meditsina Katastrof = Disaster Medicine*. 2016; 3: 4–13 (In Russ.).
8. Goncharov S.F., Baranova N.N. Features of the Medical Provision of the Population at Mass Events. *Aktualnye Voprosy Skoroj Meditsinskoj Pomoshchi na Sovremennom Etape = Actual Issues of Emergency Medical Care at the Present Stage*. Collection of Materials II Scientific and Practical Conference with International Participation. Moscow Publ., 2014, pp. 18–19 (In Russ.).
9. Spiridonova E.A., Fedotov S.A. Medical Support of Mass Gathering Events. *TSEPIFORM*. 2004; 1: 3–11 (In Russ.).
10. Kutyrev V.V., Karnaukhov I.G., Goncharov S.F., Prosin V.I., Suranova T.G., Avelisov G.M. Ensuring Sanitary and Epidemiological Well-Being of the Population When Conducting Mass Activities as One of the Components of the Biological Security System. *Meditsina Katastrof = Disaster Medicine*. 2018; 3: 42–46 (In Russ.).
11. Kuchma V.R., Sedova A.S., Shakaryan A.K., N.N., Rapoport I.K., Sayfullin M.A. Rekomendatsii po Organizatsii Otdykh Detey i Ikh Ozdorovleniya v Period Novoy Koronavirusnoy Infektsii (COVID-19) = Recommendations for Children's Recreation and Recovery during the New Coronavirus Infection (COVID-19). Guidelines. Moscow Publ., 2020, 19 p. (In Russ.).
12. Pakhomenko L.A., Rybakov V.P., Makarov I.A., Dolzhikov O.P. Medical Support of Mass Gathering Events as One of the Types of Activity of Territorial Centre for Disaster Medicine of Moscow Region. *Meditsina Katastrof = Disaster Medicine*. 2005; 1: 9–12 (In Russ.).
13. Grant W.D., Nacca N.E., Prince L.A., Scott J.M. Mass-Gathering Medical Care: Retrospective Analysis of Patient Presentations over Five Years at a Multi-Day Mass Gathering. *Prehosp. Dis. Med.* 2010; 183–187.
14. Arbon P. Mass-Gathering Medicine: A Review of the Evidence and Future Directions for Research. *Prehosp Disaster Med.* 2007; 22: 131–135.

1. Лобанов А.И. Особенности организации медицинского обеспечения безопасности массовых религиозных мероприятий // *Медицина катастроф*. 2009. №2. С. 11–13.
2. Асадуллин Ш.Г., Ахметов Ф.Р., Родионов И.Ю. Медико-санитарное обеспечение массовых мероприятий // *Медицина катастроф*. 1999. №3. С. 5–11.
3. Костомарова Л.Г., Федотов С.А., Спиридонова Е.А. Технологии организации медицинского обеспечения массовых мероприятий // *Медицина катастроф*. 2005. №1. С. 5–8.
4. Jaslow D, Yancy A 2nd, Milsten A. Mass Gathering Medical Care. National Association of EMS Physicians Standards and Clinical Practice Committee // *Prehosp Emerg Care*. 2000. No.4. Pp. 359–360.
5. Чубайко В.Г., Чепляев А.А., Черняк С.И., Радченко И.В., Грабчак С.А., Бобий Б.В., Саввин Ю.Н., Аветисов Г.М. Организация медицинского обеспечения массовых мероприятий, по опыту работы Полевого многопрофильного госпиталя ВЦМК «Защита» в 2018 г. // *Медицина катастроф*. 2018. №4. С. 5–10.
6. Костомарова Л.Г., Федотов С.А., Потопов В.И. и др. Организация медицинского обеспечения мероприятий с массовым сосредоточением людей // *Медицина катастроф*. 2013. №4. С. 1–6.
7. Бобий Б.В., Гончаров С.Ф., Баранова Н.Н. К вопросу об организации оказания медицинской помощи при чрезвычайных ситуациях во время проведения массовых спортивных мероприятий // *Медицина катастроф*. 2016. №3. С. 4–13.
8. Гончаров С.В., Баранова Н.Н. Особенности медицинского обеспечения населения при массовых мероприятиях // Сборник материалов II научно-практической конференции с международным участием «Актуальные вопросы скорой медицинской помощи на современном этапе». М., 2014. С. 18–19.
9. Спиридонова Е.А., Федотов С.А. Медицинское обеспечение массовых мероприятий // *ЦЭМПИНФОРМ*. 2004. №1. С. 3–11.
10. Кутырев В.В., Карнаухова И.Г., Гончаров С.Ф., Просин В.И., Суранова Т.Г. Обеспечение санитарно-эпидемиологического благополучия населения при проведении массовых мероприятий как одна из составляющих системы биологической безопасности // *Медицина катастроф*. 2018. №3. С. 42–46.
11. Кучма В.Р., Седова А.С., Шакарян А.К., Зверева Н.Н., Рапопорт И.К., Сайфуллин М.А. Рекомендации по организации отдыха детей и их оздоровления в период новой коронавирусной инфекции (COVID-19): Методические рекомендации. М., 2020. 19 с.
12. Пахоменко Л.А., Рыбаков В.П., Макаров И.А., Должиков О.П. Медицинское обеспечение массовых мероприятий // *Медицина катастроф*. 2005. №1. С. 9–12.
13. Grant W.D., Nacca N.E., Prince L.A., Scott J.M. Mass-Gathering Medical Care: Retrospective Analysis of Patient Presentations over Five Years at a Multi-Day Mass Gathering // *Prehosp. Dis. Med.* 2010. Pp. 183–187.
14. Arbon P. Mass-Gathering Medicine: A Review of the Evidence and Future Directions for Research // *Prehosp Disaster Med.* 2007. No.22. Pp. 131–135.

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