

SAFETY IN EMERGENCY ENVIRONMENT БЕЗОПАСНОСТЬ В ЧРЕЗВЫЧАЙНЫХ СИТУАЦИЯХ

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SOME ISSUES OF OPTIMIZING MANAGEMENT ACTIVITIES IN ORGANIZING PROVISION OF MEDICAL CARE TO VICTIMS OF TERRORIST ACTS

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Abstract. *The purpose of the study is to develop and to substantiate proposals for optimizing management activities for organizing the provision of medical care and medical evacuation of victims of terrorist attacks with the use of explosive devices and conventional weapons.*

Materials and research methods. Research materials: normative and methodological documents regulating the procedure for management activities in the medical provision of the population affected in emergency situations; data of expert assessment maps on the research topic; scientific works and publications devoted to topical issues of management activities in the framework of the issue under study.

In the course of the study, the following scientific methods were used: methods of content analysis and expert assessment, statistical method, method of logical and information modeling, analytical method.

Research results and their analysis. The results of the study showed that one of the organizational issues in the system of countering terrorism and of organizing the elimination of medical and sanitary consequences of terrorist attacks is the presence of a coordinating management body, on which it is advisable to assign the appropriate functions to coordinate the activities of medical forces and means. In the course of the study, the rank value of each medical brigade and medical unit participating in the elimination of medical and sanitary consequences of terrorist attacks was determined; quality of methodological support for predicting medical and sanitary consequences of terrorist attacks and for planning the organization of medical assistance to victims of terrorist attacks has been studied; main methodological approaches that should be taken into account when planning the organization of medical care and medical evacuation of victims of terrorist attacks in each constituent entity of the Russian Federation were formulated; a list of most effective measures has been identified, which make it possible to increase the readiness of health authorities, medical units and organizations to work to save lives and to preserve the health of victims of terrorist attacks, etc.

Key words: *basic methodological approaches, forecasting, management activities, medical care, medical evacuation, medical teams and formations, methodological support, optimization, planning, rank value, standard measures, terrorist acts, victims*

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НЕКОТОРЫЕ ВОПРОСЫ ОПТИМИЗАЦИИ УПРАВЛЕНЧЕСКОЙ ДЕЯТЕЛЬНОСТИ ПРИ ОРГАНИЗАЦИИ ОКАЗАНИЯ МЕДИЦИНСКОЙ ПОМОЩИ ПОСТРАДАВШИМ В РЕЗУЛЬТАТЕ ТЕРРОРИСТИЧЕСКИХ АКТОВ *

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Резюме. *Цель исследования – разработать и обосновать предложения по оптимизации управленческой деятельности при организации оказания медицинской помощи и проведения медицинской эвакуации пострадавших при террористических актах с применением взрывных устройств и обычных средств поражения.*

Материалы и методы исследования. Материалы исследования: нормативные и методические документы, регламентирующие порядок управленческой деятельности при медицинском обеспечении населения, пострадавшего в чрезвычайных ситуациях (ЧС); данные карт экспертной оценки по теме исследования; научные работы и публикации, посвященные актуальным вопросам управленческой деятельности в рамках изучаемого вопроса.

В ходе проведения исследования применялись следующие научные методы: методы контент-анализа и экспертной оценки, статистический метод, метод логического и информационного моделирования, аналитический метод.

Результаты исследования и их анализ. Результаты исследования показали, что одним из организационных вопросов в системе противодействия терроризму и организации ликвидации медико-санитарных последствий терактов является наличие координационного органа управления, на который целесообразно возлагать соответствующие функции (полномочия) по координации деятельности медицинских сил и средств как при работе в режиме повседневной деятельности, так и при ликвидации медико-санитарных последствий терактов. В процессе исследования было определено ранговое значение каждой медицинской бригады и медицинского формирования, принимающих участие в ликвидации медико-санитарных последствий терактов; изучено качество методического сопровождения прогнозирования медико-санитарных последствий терактов и планирования организации оказания медицинской помощи пострадавшим при терактах; сформулированы основные методические подходы, которые следует учитывать при планировании организации оказания медицинской помощи и проведения медицинской эвакуации пострадавших при терактах в каждом субъекте Российской Федерации; выявлен перечень типовых наиболее результативных мероприятий, позволяющих повысить готовность органов управления здравоохранением, медицинских формирований и организаций к работе по спасению жизни и сохранению здоровья пострадавших при терактах и др.

Ключевые слова: медицинская помощь, медицинская эвакуация, медицинские бригады и формирования, методическое сопровождение, оптимизация, основные методические подходы, планирование, пострадавшие, прогнозирование, ранговое значение, террористические акты, типовые мероприятия, управленческая деятельность

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In the health sector of the country, a large range of program measures is being implemented, aimed at further development of the system of providing medical care, while ensuring an increase in its availability and quality. These measures include the creation of medical districts, of inter-municipal medical centers in the regions, as well as, on the basis of the integration of ambulance stations and territorial centers of disaster medicine — if unified regional centers of emergency and disaster medicine^{1,2} – [1, 2].

An important step here is to improve the management of the industry in general as well as the management of medical organizations and their activities in particular. There is no doubt that this direction should be developed in the system of medical support for the population affected in various emergency situations, including those caused by terrorist acts³ [3].

The results of studying the current regulatory and methodological documents of the Ministry of Health of Russia indicate that healthcare, including the Disaster Medicine Service of the Ministry of Health of Russia, taking an active part in eliminating the consequences of terrorist attacks, is not yet sufficiently “equipped” with comprehensively developed recommendations for the management. Some issues have to be addressed, in “improvisation” mode.

It should be noted that until now, on this problematic issue, there are only a few scientific works and methodological

documents concerning mainly the basics of managing medical forces and means when organizing provision of medical care and carrying out medical evacuation of victims in emergencies of natural and man-made character. As for terrorist acts, there are practically no such works and related documents [4–7].

Perhaps this is one of the reasons for a certain imperfection of the management activities of the Disaster Medicine Service of the regions related to this problem. This was confirmed by the results of scheduled inspections, exercises and trainings carried out by specialists from the All-Russian Center for Disaster Medicine “Zashchita”, as well as by the experience in eliminating medical and sanitary consequences of terrorist attacks [1, 2].

In modern times, when terrorist activity is growing, accumulated experience in eliminating medical and sanitary consequences of terrorist attacks requires comprehension and development on a scientific platform of proposals for optimization of management activities, both in preparing health care for responding to terrorist attacks, and in medical treatment and evacuation measures in such emergencies.

The purpose of the study is to develop and to substantiate proposals for optimizing management activities for organizing provision of medical care and medical evacuation of victims of terrorist attacks with the use of explosive devices and conventional weapons.

Materials and research methods.

research materials: normative and methodological documents regulating the procedure for management activities in medical provision of the population affected by emergencies; data of expert assessment maps on the research topic; scientific works and publications devoted to topical issues of management activities in the framework of the issue under study.

In the course of the study, the following scientific methods were used: methods of content analysis and expert assessment, statistical method, method of logical and information modeling, analytical method.

* In this article, the issues of management activities are considered in relation to terrorist acts with the use of conventional weapons. Conventional means of destruction are weapons that are based on the use of the energy of explosives and of incendiary mixtures — artillery, missile and aviation ammunition, small arms, mines, incendiary ammunition and fire mixtures, as well as edged weapons and non-standard explosive devices.

¹ National Project “Healthcare”: Approved by the Presidium of the Council under the President of the Russian Federation for strategic development and national projects, minutes of December 24, 2018 No. 16.

² Improving emergency medical care and the All-Russian Service for Disaster Medicine: Order of the Ministry of Health of Russia dated October 2, 2019 No. 827.

³ On the unified state information system in the field of health care: Resolution of the Government of the Russian Federation dated May 5, 2018 No. 555.

Research results and their analysis. The results of the study showed that one of the issues in the system of countering terrorism and of organizing elimination of medical and sanitary consequences of terrorist attacks is the presence of a coordinating management body (commission, headquarters, working group, etc.), which, depending on the level of the health care system and on specific conditions, should be assigned with appropriate functions (powers) to coordinate the activities of medical forces and means both when working in the mode of daily activities and when eliminating medical and sanitary consequences of terrorist attacks.

It is known that at the federal level in the field of healthcare, such a governing body is the Commission of the Ministry of Health of Russia for the prevention and elimination of emergencies and for fire safety (hereinafter referred to as Commission). The regulations on the Commission and its composition are approved by the order of the Ministry of Health of Russia. However, in the executive body of a constituent entity of the Russian Federation (hereinafter referred to as the subject) in the field of public health protection, creation and functioning of such a governing body is not framed by regulatory or methodological documents^{4,5}.

This situation required — in relation to the problem of countering terrorism — a study using the method of expert assessments of the feasibility of creating a collegial coordinating governing body as part of a governing body in the field of protecting the health of citizens of the subject.

In the course of the study, it was found that the question of the need for the mentioned non-staff management body in any organizational form in the composition of the specified regional health management body, the tasks of which would be to develop and to adjust measures to counter terrorism, to coordinate the activities of the health care system in its preparation for response and work on eliminating the consequences of terrorist attacks — 81.5% of experts gave a positive answer; 8.8 — believed that there was no need to create such a body; 9.7% of experts — could not (found it difficult to) give any answer. In addition, 83.3% of experts agreed that such a management body should be created in advance and should function constantly. 16.7% of experts indicated that such a body should be created upon the occurrence of a terrorist act and elimination of its medical and sanitary consequences.

Based on these data, the following conclusion can be drawn: the question of the need to create such a governing body should be decided depending on the characteristics of the region, the risks and likelihood of terrorist attacks on its territory, as well as on the state of the healthcare infrastructure, including the Disaster Medicine Service. At the same time, the relevant medical specialists of the region — first of all, from among the main freelance specialists — are obliged to actively participate in the development of measures to counter terrorism, to maintain health care in a state of high readiness to work to eliminate medical and sanitary consequences of terrorist attacks.

The study of the experience of liquidating medical and sanitary consequences of terrorist attacks showed that in order

to provide medical assistance to victims outside medical center (in the prehospital period), various medical teams and formations had to be involved — mobile ambulance teams, emergency response teams of the Disaster Medicine Service, Field Multidisciplinary Hospital and others. When looking for ways to optimize organizational and management activities, concerning, first of all, planning the organization of medical assistance to victims of terrorist attacks, creation and equipment of these teams and formations, organization of professional training of medical specialists and other issues, it is necessary to determine the rank value of each brigade and formation taking part in the elimination of medical and sanitary consequences of terrorist attacks.

This task was also solved with the help of experts. Analysing expert opinions, it was found that the greatest role in the elimination of medical and sanitary consequences of terrorist attacks is played by mobile ambulance teams (24.02%), specialized ambulance teams (18.83%) and emergency response teams of territorial disaster medicine centers (17.65%). According to experts, teams of specialized medical care for the surgical profile of the Disaster Medicine Service (15.4%) and mobile medical teams of the Disaster Medicine Service (11.55%) play a less significant role. According to the experts' conclusions, the penultimate place in this row was given to the Field Multidisciplinary Hospital of the Disaster Medicine Service (8.2%), the last — to the mobile paramedic brigade of the Emergency Medical Service (4.35%).

When considering the data obtained, one may think that the role of mobile medical units and of the field multidisciplinary hospital of the Disaster Medicine Service in providing medical assistance to victims of terrorist attacks may be unjustified. But here attention should be paid to the fact that the results of the experts' assessment on the issue under study have the following objective prerequisites:

1. In the total number of emergencies caused by terrorist acts committed during the study period, the share of local and municipal emergencies was, according to the data of the territorial disaster medicine centers, about 75.0% [8]. In the prehospital period, medical and sanitary consequences of such emergencies were mainly eliminated by medical specialists of ambulance teams.

2. When determining the rank value of one or another medical structural unit — of a brigade or formation that provides medical assistance to victims in the prehospital period — the experts took into account mainly the practical experience of eliminating medical and sanitary consequences of terrorist attacks.

3. The experience of eliminating medical and sanitary consequences of terrorist attacks convincingly testifies that the Field Multidisciplinary Hospital and the mobile medical unit of the Disaster Medicine Service of the Ministry of Health of Russia were used to provide medical assistance to victims of terrorist attacks in isolated cases. For example, during elimination of medical and sanitary consequences of a large-scale terrorist attack in the city of Beslan (2004), the Field Multiprofile Hospital was promptly delivered from Moscow by air and deployed to provide assistance to the injured children.

The results of the study highlighted the need to consider in more detail the issues of the readiness of medical specialists of the governing bodies and, first of all, of the Regional Centers for emergency and disaster medicine and of Terri Centers for disaster medicine, as well as of the providers of

⁴ Regulations on the Unified State System for the Prevention and Response to Emergency Situations: Resolution of the Government of the Russian Federation dated December 30, 2003 No. 794.

⁵ On the creation of a commission of the Ministry of Health of the Russian Federation for the prevention and elimination of emergencies and for fire safety: order of the Ministry of Health of Russia dated March 15, 2013 No. 140.

medical care and medical evacuation in the prehospital period — specialists of ambulance teams and of emergency response teams — to work in the conditions of liquidation of the consequences of terrorist acts, as well as the issues of improving their specialized and targeted professional training.

It is known that one of the fundamental organizational and managerial measures, the high-quality implementation of which makes it possible to significantly increase the readiness of health care to respond to and to act in emergencies, including those caused by terrorist attacks, is the advance planning of the organization of medical assistance to victims, carried out in each region, as a rule, by the specialists of regional centers for emergency and disaster medicine and of territorial disaster medicine centers. The result of this activity is the emergency medical plan for the population of the region — the key management document.

Given this circumstance, it became necessary to study the state of the quality of methodological support for predicting medical and sanitary consequences of terrorist attacks and for planning the organization of medical assistance to victims of terrorist attacks. So, the question of whether methodological support currently allows forecasting and planning, 12.2% of experts answered — “fully allows”; 76.5% of experts — “partially allows”. 11.3% of experts found it difficult to answer the question. Consequently, the results of expert assessments indicate that the relevant health authorities and the Disaster Medicine Service do not have developed recommendations (methods) for planning the organization of medical care and of medical evacuation of victims of terrorist attacks in compliance with the routing principles.

In addition, scientific publications devoted to topical issues of medical support to victims of terrorist attacks, as well as other works that consider some areas of improving management activities in the Disaster Medicine Service, do not contain comprehensive data on the procedure for planning the organization of medical care for victims of terrorist attacks [6, 7].

Apparently, this testifies to the imperfection of planning the organization of treatment and medical evacuation in the elimination of the medical and sanitary consequences of terrorist attacks.

The study showed that for an early identification and development of adequate measures to organize the provision of medical care and medical evacuation of victims of terrorist attacks, there is often not enough initial specific information, i.e. data on the predicted medico-tactical situation in places of possible terrorist attacks. Therefore, the task of predicting the locations of terrorist acts is difficult to solve, and in some cases, impossible. We paid attention to this in the previous article [9].

The article noted that with regard to specific objects (hydroelectric power plants, railway stations, airports, hospitals, schools, universities, shopping centers, stadiums, etc.), the degree of probability of terrorist attacks on which is the highest, there is a need and certain opportunities to plan in advance the measures to organize the provision of medical care and medical evacuation of victims. 81.3% of experts agreed with this conclusion; 8.1 — considered that it was inappropriate to do this; 10.6% of experts could not assess this proposal.

It should be noted that these recommendations have already been implemented, in particular, during the Winter Olympic Games (Sochi, 2014), the FIFA World Cup (Russia, 2018) and are currently being implemented in many public events.

During the study, it was found that there is no need to develop in advance a separate management document — a plan for organizing medical care and medical evacuation of victims of terrorist attacks on the territory of a particular region. In order to improve planning and to create conditions for increasing the preparedness of the region's health care to respond and to take actions in the elimination of medical and sanitary consequences of terrorist attacks, it is recommended to additionally include in the structure of medical support for the population of the region in emergencies a separate section containing appropriate measures to counter terrorism. It allows to maintain the officially adopted general structure of the plan.

This approach to planning was approved by the majority (87.5%) of experts, a small number (6.3%) of experts did not agree with the proposed option, but did not give their recommendations on this issue either. In addition, 7.2% of the experts experienced difficulties in assessing the specified organizational solution.

Taking into account the above, this section of the plan should contain measures to organize the provision of medical care and medical evacuation from the emergency center to the appointed medical facilities. And it should include interaction procedures of the regional health management body, regional center for emergency and disaster medicine medical services and territorial disaster medicine center with territorial governing bodies and organizations*, while counteracting terrorism in case of predicted terrorist attacks throughout the region, in individual cities and at potentially dangerous facilities.

The algorithm for the development of planned measures to counter terrorism should be the same as in the development of the plan of medical support for the population of the region in emergencies of natural and man-made character [4, 5].

When planning the organization of medical assistance to victims and their medical evacuation in the context of terrorist attacks, it is necessary to envisage not only average, but also most severe medical and sanitary consequences.

In accordance with the opinions of experts, it was determined that in the text part of the first section of the model plan of medical provision of the population of the region in an emergency (brief geographical, socio-economic and medico-tactical characteristics of the region, assessment of possible medical and sanitary situation arising in an emergency on its territory) it is advisable to include the following information: a list of objects on which terrorist attacks are most likely to occur entailing numerous sanitary losses (a large number of victims); data on probable number of victims and on their medical and evacuation characteristics (in the form of tables); need for mobile medical teams and for medical units involved in the prehospital period, as well as for ambulance vehicles for medical evacuation of victims; need for hospital beds, taking into account their profile for the provision of medical care and treatment of victims in the conditions of hospitals; routes of medical evacuation of victims from the emergency site to the pre-assigned medical organizations — in the form of tables.

* In accordance with the legislation of the Russian Federation, the subjects directly involved in countering terrorism are: Federal Security Service, Ministry of Internal Affairs of Russia, Foreign Intelligence Service, Federal Security Service, Federal Border Service, Federal Service of National Guard, Ministry of Defense of Russia — On countering terrorism: Federal Law of the Russian Federation dated March 6, 2006 No. 35-FZ.

In the second section of the textual part of the plan, in the subsection "In the event of a threat of major emergencies" (high alert mode), standard measures should be supplemented with the procedure for interaction and information exchange with relevant territorial bodies and structures of the FSB, of the Federal Service of the National Guard and — if necessary — with other subjects of countering terrorism.

In the subsection "In the event of major emergencies", in addition to the outlined typical measures, it is required to present possible schemes for organizing provision of medical care and medical evacuation routing of victims of terrorist attacks in relation to the most likely targets of a terrorist attack.

When developing a subsection of the Plan "Management of medical provision of the population in an emergency", it is necessary to pay special attention to the organization of communication in the emergency zone, since during terrorist attacks in the emergency zone, cellular communication and open radio communication channels usually do not function. In view of this, specialists of medical operational group, who manage and coordinate the activities of medical forces and means involved in eliminating the consequences of a terrorist attack, as well as specialists of mobile medical teams and units, must be equipped with radio communications and should establish a procedure for their use.

As for a map of possible medical and sanitary situation, attached to the Plan, it is necessary to additionally draw on it: the most probable targets of a terrorist attack; medical units, hospitals and, if necessary, other medical facilities that can be involved in the elimination of medical and sanitary consequences of terrorist attacks; a reserve of forces and means of health care, including the emergency medical service and the Disaster Medicine Service.

On the map, other data reflecting the characteristics of the terrorist attack, the Disaster Medicine Service and health care in general, as well as reference and calculation tables can be put as well.

The results of the study made it possible to formulate the main methodological approaches that should be taken into account when planning the organization of medical care and medical evacuation of victims of terrorist attacks in each constituent entity of the Russian Federation. These include: development of planned medical and evacuation measures — carried out in accordance with the competence of health authorities; determination of the goal and objectives of the planned medical and evacuation measures — linked to the periods of liquidation of medical and sanitary consequences of the terrorist attack, taking into account the grouping of forces and means of health care being created — resources necessary for carrying out medical and evacuation measures are allocated respectively; when planning medical care and evacuation, taking into account the strengths and weaknesses of the existing system of organizing the provision of medical care and medical evacuation in the terrorist attack zone, on the territory of municipal administrative formations and in the region as a whole, taking into account the presence of medical districts, intermunicipal medical centers, trauma centers, etc.

The development and implementation of a complex of medical and evacuation measures in the elimination of medical and sanitary consequences of terrorist attacks is a complex and diverse process of management activities. Consequently, if we proceed from this provision, then it is quite natural that in the activities of countering terrorism by health authorities, by medical organizations and formations, and, above all, by the Emergency Medicine Service and by the Disaster Medicine Service, there should be key standard measures to be implemented by both the governing bodies and by relevant medical organizations. The implementation of such measures contributes to a more effective response of the health care system, mainly at the regional level, to terrorist attacks and to an effective minimization of their health consequences.

Taking this into account, using the method of expert assessments, a study was carried out, during which 2 tasks were solved: the first was to identify a list of the most effective measures that would increase the readiness of health authorities, medical units and organizations to work to save lives and to preserve health of victims during terrorist attacks; the second was to determine the significance (rank value) of a particular event in their general list.

It turned out that the number of such events is, as a rule, no more than 10 (Table).

As can be seen from the table, the third, seventh and eighth activities have the highest significance coefficient. For each of these activities, it is equal to 0.1272, 0.1237 and 0.1228, respectively, and the overall coefficient of their significance is 0.3737. Attention is drawn to the fact that the difference in the coefficients of significance of the typical activities indicated in the table is not very large.

Consequently, on the basis of these results of the study, it can be argued that in order to increase the readiness of health care of the region, for a prompt response and adequate actions in case of terrorist attacks, all measures must be implemented in a comprehensive manner.

Conclusion

1. The results of the research testify to the multifaceted management activities carried out in the preparation of the health care system, including medical organizations and the Disaster Medicine Service units, to work in the conditions of terrorist attacks and in the course of eliminating their health consequences.

2. Analysis of the data obtained using expert assessments indicates the need to increase the level of methodological support for forecasting, planning and organizing of the provision of medical care and medical evacuation of victims of terrorist attacks, which confirms the importance of scientific research on management activities in the system of the All-Russian Service for Disaster Medicine.

3. When implementing the proposed approaches to planning the organization of medical assistance to victims of terrorist attacks at the regional level, specific conditions can be created for a more rapid response and for adequate actions in the elimination of medical and sanitary consequences of terrorist attacks.

Основные мероприятия, реализация которых обеспечивает повышение готовности здравоохранения к реагированию на теракты и к работе по ликвидации их медико-санитарных последствий
Main measures, implementation of which ensures an increase in the preparedness of health care for terrorist attack response and for work to eliminate their medical and sanitary consequences

№ пп No.	Мероприятие Measure	Коэффициент значимости дан- ного мероприятия (ранговое значение мероприятия) Coefficient of significance of the measure (rank value of the measure)
1.	Повышение качества прогнозирования и планирования медицинского обеспечения населения при терактах Improving quality of forecasting and planning of medical support during terrorist attacks	0,1185 (4)
2.	Улучшение межведомственного взаимодействия между структурами, в т.ч. здравоохранения, предназначенными (привлекаемыми) для ликвидации последствий терактов Improving interagency interaction between structures, including health care institutions, intended (involved) to eliminate the consequences of terrorist attacks	0,1115 (5)
3.	Повышение квалификации медицинских кадров по медицине катастроф Advanced training of medical personnel in disaster medicine	0,1272 (1)
4.	Теоретическая разработка основ медицинского обеспечения населения при терактах Theoretical development of foundations of population medical support during terrorist attacks	0,0897 (8)
5.	Создание и совершенствования нормативной и методической базы по вопросам медицинского обеспечения населения при терактах Creation and improvement of regulatory and methodological base of population medical support during terrorist attacks	0,0958 (7)
6.	Повышение уровня технического оснащения здравоохранения, в т.ч. санитарным транспортом Raising the level of technical equipment of health care, including its equipment with ambulance cars	0,1054 (6)
7.	Повышение уровня оснащения медицинских формирований, предназначенных (привлекаемых) для ликвидации медико-санитарных последствий терактов Improving the level of equipment of medical units intended (involved) to eliminate medical and sanitary consequences of terrorist attacks	0,1237 (2)
8.	Проведение с органами управления здравоохранением, медицинскими формированиями и учреждениями специальных учений и тренировок по тематике противодействия терроризму Organization of special exercises and trainings on countering terrorism with health authorities, medical units, institutions	0,1228 (3)
9.	Повышение требовательности к руководящему составу (руководителям) органов управления здравоохранением, медицинских учреждений и формирований по их подготовке к работе по ликвидации последствий терактов Raising requirements for management staff (heads) of healthcare management bodies, medical institutions and formations for their preparation for work on eliminating the consequences of terrorist attacks	0,1054 (6)

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