

National System for Preparedness and Response to Public Health Emergencies

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Abstract

In this article the risks and hazards, and their possible impact on Moldova's territory and population are briefly described. The need to merge the preparedness and response measures to potential public health emergencies in an integrated system involving both the health system components, as well as other relevant bodies is argued. The concept of a National System for Disaster Preparedness and Response to Public Health Emergencies is defined. Also the role, structure and main tasks of the system as a whole, as well as its components are described. An overview of all medical response forces to emergencies is being made. Some visions and proposals for the coordination of health care institutions' activities at the local level for triggering the hazard or public health emergencies are expressed.

Key words: system, preparedness, response, public health emergencies

Национальная система готовности и реагирования на неотложные ситуации в общественном здоровье

В данной статье в сжатой форме представлены потенциальные риски и опасности для населения и территории Республики Молдова, а также их возможное пагубное воздействие. Дана аргументация необходимости объединения мер по подготовке и реагированию на неотложные ситуации в общественном здоровье в единую интегрированную систему, включающую как компоненты системы здравоохранения, так и другие соответствующие структуры. Дано определение Единой Национальной Системы подготовки и реагирования на неотложные ситуации в общественном здоровье, изложены роль, структура и основные задачи как Системы в целом, так и её отдельных компонентов. Представлен обзор сил и средств медицинского реагирования на чрезвычайные ситуации. Изложены некоторые видения и предложения по координации действий учреждений здравоохранения на территориальном уровне в случае опасности или возникновения неотложных ситуаций в общественном здоровье.

Ключевые слова: система, подготовка, реагирование, неотложные ситуации в общественном здоровье.

I. General overview

The Republic of Moldova's territory is at risk of impact of a series of hazards, be those natural, manmade or biosocial, which may lead to emergencies or even disasters. The geographical proximity of Moldova to the seismic region of the Carpathian Mountains poses a threat of earthquakes of up to a magnitude of 7-9 on the Richter scale. More than 200 locations and extensive lands are vulnerable to flooding caused by water overflows, hydrotechnical node accidents or by damages to the protective dams located on the Dniester and Prut rivers. About 40% of the country's communities are at risk of landslides. Moldova is situated at the crossroads of several paths for the transportation of up to 400-450 thousand tons of highly flammable and/or harmful substances per year. A current threat is posed by potential epidemics and imported highly pathogenic conditions caused by high population migration rates. Nuclear power plants and chemical processing companies in the neighboring countries may pose a threat of radioactive or chemical pollution of the country in case of possible breakdowns occurring at such structures. A major threat to the country's population and economy is posed by heavy snow falls, frost, hailstorms, hurricanes, fires, droughts and other natural adverse phenomena.

Along with the high density of the population and limited economic resources of the country, these factors maintain a

high level of risk to human life and health and represent the main cause which could lead to eventual public health emergencies, which, under article 2 of Law No.10 from 03.02.2010 regarding the state surveillance of public health, represent "the occurrence or imminent risk of spreading a disease or health event that causes the high probability of a large number of deaths and/or a large number of disabilities among the affected population or determine the broad exposure to the action of a biological, chemical or physical agent which can cause significant risks in the future for a substantial number of persons affected among the population".

As a result of these risks, one of the essential tasks of the country's Health System is to ensure a high degree of readiness to respond promptly and appropriately to eventual emergency situations with consequences resulting in public health emergencies.

Obviously, in case of hazards or public health emergencies the Ministry of Health's institutions organize and carry out a complex of response measures, but they could be successful only in case they are coherent, well coordinated and directed, integrated into a unique system involving both the health system forces and means, as well as other relevant bodies (Civil Protection and Emergency Situations Service, local and central government, law enforcement bodies, army forces, etc.).

At the same time, the Health System in the Republic of Moldova does not currently have a framework document that would formally establish an integrated national system of preparedness and medical response to extraordinary situations, disasters and public health emergencies, and would establish clear and unambiguous role, tasks, structure, activities, responsibilities and interaction between its components. Partially this gap is offset by some legislative and regulatory acts governing the activity of various structures involved in the health care response and liquidation of consequences of eventual extraordinary situations, disasters and public health emergencies, as well as by the Plan for the delivery of health care to the population of the Republic of Moldova in case of Emergency Situations. However, despite of this, the problem of coordination and integration of response activities of the health system components remain important for the time being.

In the analysis below the current institutional framework predesigned to accomplish the preparedness and response activities to emergency situations are reflected and some views and proposals regarding the integration of the existing structures in a National System for Preparedness and Response to Public Health Emergencies are exposed. Also the role, tasks, structure and activities are stipulated.

II. The definition, role and basic tasks of the National System for Preparedness and Response to Public Health Emergencies

The National System for Preparedness and Response to Public Health Emergencies (further **System**) is a complex of structures, forces, mechanisms and relationships, integrated into a single system and destined for organizing and carrying out measures to ensure preparedness, prevention, mitigation, response and recovery from the consequences of extraordinary situations and public health emergencies.

The basic tasks of the System are as follows:

- Multisectoral mobilization in order to ensure a proper preparedness degree of leadership bodies, medical facilities, services and formations, medical transport, material resources, warning and communication systems, etc. for a prompt response to extraordinary situations and public health emergencies, disasters and public health emergencies (further - public health emergencies);
- Ensuring an all-hazards approach and assessment of their risks for public health;
- Development of national preparedness and response plans for public health emergencies;
- Assessment of health system components and health facilities preparedness level for response to public health emergencies;
- Accumulation, generalization and analysis the information regarding population protection from factors that may generate public health emergencies, predict their possible consequences for the human health;
- Development and implementation of measures aimed to reduce vulnerabilities and mitigate hazards which could provoke public health emergencies;

- Planning, organization, coordination and implementation of preparedness and response measures, and liquidation of public health emergencies consequences;
- Estimating the damage caused to population health and medical facilities by the impact of public health emergencies;
- Needs assessment, planning, creation, maintenance and continuous renewal of the stocks of medicines, supplies, disinfectants, medical equipment, medical and sanitary means and sanitary-household means needed for the response to public health emergencies;
- Developing and implementing modern methods and procedures of medical assistance to the population in emergencies;
- Training of leadership bodies, medical facilities, medical personnel and population on preventive and response actions to public health emergencies;
- Drafting legislation and regulations on the preparation, prevention and response to public health emergencies;
- Collaboration in the field of emergency preparedness and response with public health structures of central and local authorities, and other relevant bodies in the country and abroad.

III. System's Structure

The System's Structure (fig. 1) consists of:

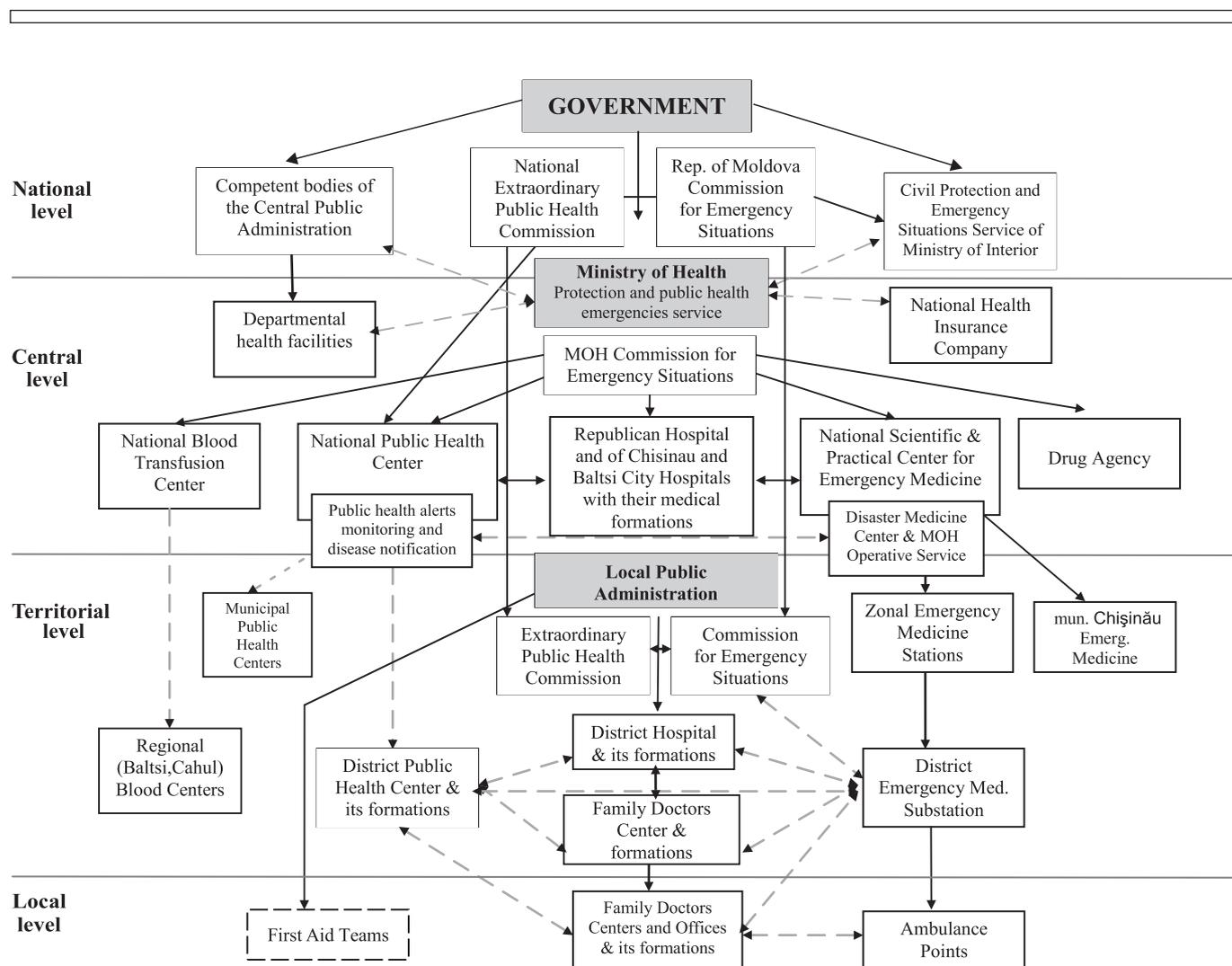
- directing and coordinating bodies;
- medical response forces (health services, institutions and formations);
- the warning and communication system;
- the training system.

Conventionally the system is structured in four levels - national, central, territorial and local.

Directing and coordinating bodies

At national level the overall coordination of activities related to emergency preparedness and response to public health emergencies is done by the Government of the Republic of Moldova and its two specialized commissions: the Commission for Emergency Situations of the Republic of Moldova and the National Extraordinary Public Health Commission. The direct coordination is carried out by the Ministry of Health.

The Commission for Emergency Situations of the Republic of Moldova has been established under Article 17 of Law No. 271 from 09.11.1994 regarding Civil Protection for the purpose of performing directing and executive functions for the prevention and acting in emergency situations generated by natural disasters, large-scale damages, fires, epidemics, epizootics, epiphytotic diseases and other dangerous phenomena. The Commission's activity is regulated by the Government's Decision of 04.12.2001 nr. 1340 on the Commission for Emergency Situations of the Republic of Moldova. The Commission is chaired by the Prime Minister. The Deputy-Prime Ministers, the Minister of Internal Affairs and the Head of Civil Protection and Emergency Situations Service of the MIA are Vice-Chairmen. The Commission's composition includes the heads of relevant Central Public Authorities. The



working body of the Commission is the Civil Protection and Emergency Situations Service of the MIA.

The National Extraordinary Public Health Commission has been established under Article 55 of Law no. 10 from 03.02.2009 on the State Surveillance of Public Health for the purpose of ensuring an adequate degree of preparedness for public health emergencies and their management. The Commission's activity is regulated by The Government's Decision nr.820 from 14.12.2009 on the National Extraordinary Public Health Commission. One of the Deputy-Prime Ministers is appointed as Commission's Chairman and Minister of Health is appointed as Vice-Chairman. The Commission's composition includes heads (or deputies) of relevant Central Public Authorities, as well the chiefs of central level health structures. In accordance with Articles 58 and 59 of the Law on the State Surveillance of Public Health, the National Extraordinary Public Health Commission has the right to declare/cancel, through its decision, the State of emergency in Public Health. The working body of the National Extraordinary Public Health Commission is the National Center of Public Health.

The Ministry of Health is the central body of public administration in the field of health. One of its tasks is to develop policies and coordinate the preparation and response

activities in case of public health emergencies. For this purpose in the central office of the Ministry of Health a special service is established – the Service for Protection and public health emergencies. The Ministry of Health, like other central public authorities, has its own Commission for Emergency Situations. For non-stop communication a subdivision of the Republican Disaster Medicine Centre – the Operative Service of the Ministry of Health is located in the Ministry of Health. The Service is operational 24 hours a day and plays the role of “focal point” for the exchange of information in case of emergency situations between the Ministry of Health and other central and local public authorities, as well as all health institutions from the country.

The Ministry of Health's Commission for Emergency Situations is a coordinating body created to ensure an adequate degree of the Health System preparedness for any extraordinary situations and public health emergencies, as well as to fulfill the general management of actions on prevention, mitigation, response and recovery in case of their occurrence.

The Commission is chaired by the Minister of Health. The Commission consists of vice-chairmen, secretary and members (the heads of key departments of the Ministry of Health and the relevant central level medical institutions). One of

the vice-chairmen is designated as prime vice-chairman. At the Commission's meetings, other persons may be also invited through the decision of its chairman, given the specific situation or problem discussed. The Commission's activity is regulated by law, decisions of the Commission for Emergency Situations of the Republic of Moldova and the National Extraordinary Public Health Commission, the Regulation of the Commission, the orders, disposals and indications of the Minister of Health.

The main tasks of the Commission for Emergency Situations of the Ministry of Health are as follows:

- Mobilization and coordination of measures undertaken within the country health system activities in order to ensure an adequate degree of preparedness for eventual exceptional situations and public health emergencies;
- Performance of general management and joint efforts of all components of the health system aimed at prevention, reduction, prompt and effective response, recovery and subsequent liquidation of consequences of public health emergencies;
- Providing public information about the causes and dimensions of public health emergencies, and measures undertaken to prevent and liquidate their consequences, familiarization of people with the rules of behavior in exceptional situations and public health emergencies.

To fulfill its tasks the Commission is entitled with the right:

- To adopt decisions within its competences and to issue them as minutes or directives that is mandatory for the chiefs of all health institutions and formations from the country system;
- To take decisions on the use of financial and material means for overcoming the consequences of public health emergencies and providing the necessary medical care to the affected population;
- To control the activity of health institutions' commissions for emergency situations and to examine their chairmen reports;
- To carry out checks and surveys, involving institutions and specialists in the field, in order to prevent and/or decrease the impact of accidents, catastrophes, disasters, outbreaks of infectious disease, mass poisoning of the population, to detect their causes and consequences, increase the level of protection of population and environment, as well as to ensure the operational stability of health facilities;
- To involve the necessary health system's forces and means in order to liquidate the medical consequences of emergencies;

Organization of the Commission's activity:

The Commission's working meetings are convened whenever necessary, but at least once per semester. In special cases, at the discretion of its Chairman, the Commission's meetings may take place out of the capital city, in territories. Issues discussed at meetings and its decisions have to be recorded in minutes signed by the chairmen and the secretary.

In the event of a threat or outbreak of major emergency situations, at the Commission's decision, an Operative Command Center is deployed in the Ministry of Health. The Center's main tasks are: to organize the implementation of the plans for medical care to the population in emergency situations; to ensure continuous and operative management of health services, formations and institutions involved in medical response measures and liquidation of consequences of extraordinary situations and public health emergencies; to control implementation of hierarchically superior bodies' decisions and of carried out measures; to accumulate information from outbreaks, analyze it and assess the effectiveness of activities undertaken; to put forward proposals aimed at rapid improvement of the situation; to permanently keep informed the Ministry of Health's leadership on the progress of work.

An important role in the coordination and management of the process of preparedness and response measures to public health emergencies plays the National Health Insurance Company.

At the central level the role of coordinating and directing bodies are performed by some health institutions of different destination, directly subordinated to the Ministry of Health, which simultaneously carry out the executive functions, thus being part of System's Forces and Means. The number of such institutions includes the following: the National Scientific and Practical Centre of Emergency Medicine, the Emergency Medicine Zonal Stations, the National Centre of Public Health, the National Blood Transfusion Center and the Drug Agency.

National Scientific and Practical Centre of Emergency Medicine (NSPCEM) is a tertiary level public medical institution, providing emergency and planned medical care to the population of the country, as well as methodological support in organizing and performing emergency medical care, including mass casualty incidents. NSPCEM is a coordinating body of the Medical Emergency Service and Disaster Medicine Service. A specialized subdivision activates within NSPCEM – the Republican Centre for Disaster Medicine (RCDM) responsible for directing organizational-methodical and coordinating work of all components of the Republican Disaster Medicine Service. During the daily work RCDM accumulates, generalizes and analyzes information on possible risks triggering emergency situations, plans the organization of medical care to the population in cases of mass casualty incidents, takes part in the training of medical personnel of the health institutions in the preparation and response to exceptional situations and public health emergencies, assess the level of preparedness of medical institutions to work in crisis situations, etc. According to the decision of the Commission for Emergency Situations of the Ministry of Health, in case of threat or outbreak of large-scale emergency situations RCDM is deployed to the MoH and provides operational guidance to the Commission's Operative Command Center.

Emergency Medicine Zonal Stations are functional and structural components of the Medical Emergency Service at the pre-hospital stage. They are accountable to the Ministry of Health and provide emergency medical care to the population

in the served territory (zone), in exceptional circumstances and beyond. In the composition of Emergency Medicine Zonal Stations are included district Emergency Medicine Substations and Emergency Medicine Points, located in the served area. Territories of service boundaries are determined by the Ministry of Health. Currently there are 4 Emergency Medicine Zonal Stations in the country: North, Central, South and Autonomous Territory Gagauzia.

National Centre of Public Health (NCPH) is a scientific, practical, methodological and coordinating institution of the Service of State Surveillance over Public Health. NCPH provides substantiation for public health policies and strategies, develops drafts for sanitary regulations, methodologies and other acts on public health, ensures research and development of highly specialized expertise, provides methodological and practical support in the field of public health and perform other activities on State Surveillance over Public Health. Among the NCPH's directions of activity is included also the ensuring of the emergency preparedness and public health interventions in public health emergencies, in collaboration with the relevant services of other ministries and central administrative authorities. NCPH is designated as National Focal Point for the implementation of International Health Regulations (IHR) and is responsible for notifying the World Health Organization on events that may constitute a public health emergency of international importance. For this purpose within NCPH a special subdivision is established - the section of public health alerts monitoring and disease notification, which monitors on 24 - hours basis the situation in the country and is permanently ready to receive and provide information to both the Ministry of Health's leadership, and to WHO.

The National Blood Transfusion Centre is the coordinating institution responsible for planning, monitoring, evaluation and coordination of the Blood Service's activity in Moldova; for labile and stable blood preparations and diagnostics production for the purpose of satisfying the real needs of medical institutions; for blood transfusion assistance in emergency situations; for monitoring of opportunity, feasibility and correctness of blood therapy in medical institutions; for the promotion of voluntary and non-remunerated blood donation; and for the training of personnel in transfusion medicine.

Drug Agency is a public institution subordinated the Ministry of Health and responsible for carrying out state policy on drug and pharmaceutical activities; authorization (expertise, certification and registration) of medicinal products and their quality monitoring; supervision and control of pharmaceutical activities; monitoring and coordinating the supply medicines and pharmaceutical assistance at national level; regulation in the field of drug and pharmaceutical activities; methodological, organizational and consulting activity in the pharmaceutical companies and health care providers.

At the territorial and local level (district, locality) the general management of response to public health emergencies is carried out by organs of local government (district councils, municipal councils, municipalities, mayor's office)

through local commissions for emergency situations, which are established in each administrative-territorial unit and territorial extraordinary public health commissions, which are established in each municipality and each level II administrative-territorial unit.

The direct coordination of the medical components of the response to health emergencies system in municipalities Chisinau and Balti, and Autonomous Territory Gagauzia is carried out by local bodies governing the health sector, namely: the Department of Health of Chisinau Municipal Councils, the Medical Section of City Hall Balti and Department of Health and Social Protection of the Autonomous Territory Gagauzia.

In regard to the coordination at the district level, this is complicated by the fact that basic institutions providing health services in the district (District Hospital, Medical Center of Family Doctors, District Public Health Center and District Emergency medicine Substation) have different administrative subordination, legal form and type of ownership and their coordination is not institutionalized - in districts currently there are not health sector coordination bodies. In order to solve the problem and taking into account that the principle of unified leadership is one of the key principles underlying the implementation of measures in response to crisis situations, the Ministry of Health, through its order No 454 from 10.12.2007 "On planning the medical care to the population in emergency situations", designated the district hospital director as responsible for directing and coordinating the response to the emergency situations of all district health system's components. However, checks and tactical exercises took place in several districts, and the experience of liquidating the consequences of emergency situations, such as for example the recent floods, have demonstrated that in exceptional circumstances, especially if they are causing a large number of victims, the volume of work which goes to the hospital director in part concerning hospital care is very large, which inevitably complicates his/her work as medical response actions' coordinator on the entire district. In this context and taking into account the new role, tasks and responsibilities that are put by legislation on the Service of State Surveillance over Public Health, we consider it advisably to study the possibility of designating the District Public Health Center as a medical coordinator of all components of the health system at district level. Obviously, to successfully accomplish the tasks attributed to the Centre, it should be vested with respective authority and strengthened with medical personnel trained in crisis management and material-technical base (transport, transmission equipment, computers, etc.).

Health Response Forces are represented by health care institutions (public, departmental and private) and formations created and maintained by them for the purpose of providing medical assistance to population in emergency situations. More or less these activities are shared by all health care institutions within the country, each being awarded certain tasks depending on the activity and specificity. However, a

particularly important role plays the institutions of the Medical Emergency Service, Service of State Surveillance over Public Health and the Hospital Sector.

Emergency Medical Assistance Service is part of the Health System that provides emergency medical assistance to population in the pre-hospital stage (including in cases of mass casualty events) and assisted medical transportation of patients from the accident or illness area till respective health facilities. Structurally the Service consists of NSPCEM, which is both a specialized hospital and organizational and methodical coordination body of the Service, 4 Emergency Medicine Zonal Stations with 41 Emergency Medicine Substations and 88 Emergency Medicine Points. Daily in the country there are about 250 ambulance team on duty, which will be involved first for emergency medical assistance of population in case of mass casualty events.

Among the State Surveillance over Public Health Service's institutions are included the National Center for Public Health, Public Health Centers of Chisinau and Balti municipalities and 34 public health centers at district level. In case of emergency situations outbreaks all levels of public health, centers organize and carry out anti-epidemic and sanitary-hygienic measures such as: epidemiological intelligence in the disaster area, increased sanitary monitoring over objectives with major importance, measures aimed to detect, localize and liquidate the outbreaks of infectious diseases, permanent control of the environment in the outbreak area, informing people about the dangers of infection/contamination, preventive and precautionary measures to be done, etc. Public health centers are part of the National Network of laboratory observation and prevent environment contamination (pollution) with radioactive substances, poisonous, highly toxic and biological agents.

In addition to their basic functions, most medical institutions are required to create and maintain formations of different healthcare profiles in state of readiness for action in emergency situations. According to the Plan of the Republic of Moldova's population health care in the event of Emergency Situations health care institutions in the country are responsible to maintain the following number of formations:

- Paramedical teams – 620.
- Medical teams – 488.
- Specialized medical teams – 90.
- Preventive medicine teams – 42.
- Medical detachments – 3.

Paramedical and medical teams are created by family doctors' centers and offices, health centers, district and municipal hospitals for the purpose to provide in emergency situations, conjunctively with ambulance teams, pre-hospital medical and emergency care (as a rule at the borders of the outbreak and in the places where casualties evacuated from disaster area are concentrated).

Specialized medical teams are usually created by republican and municipal hospitals in order to strengthen the capacity of medical institutions, directly involved in providing medical assistance in emergency situations, by organizing and providing specialized medical care. Specialized medical

teams include the following profiles: trauma, combustingologic, neurosurgical, surgical, radio-therapeutic, pediatric, infectious diseases, psychotherapeutic, toxicology and obstetrics and gynecologic.

Medical detachments are created by general profile hospitals (republican and municipal) in order to provide emergency medical care with elements of qualified and specialized medical care in case of emergency situations with a significant number of injured. One of the medical detachments tasks is to substitute a district hospital when it becomes out of function.

Among the Health Response Forces are also included the Civil Protection's first aid teams, which represent formations created on voluntary principle by the economic units, enterprises, educational institutions, local authorities, etc. for the purpose of providing first aid to injured in places of emergency situations, their evacuations outside the outbreak zone and their concentration in maximum protected of danger and accessible for the transport places (points for casualty concentration).

The responsibility for the health formations preparedness for actions according their destinations lies on the directors of facilities which form them. In the event of threat or emergency outbreak the formations are passed under the directing body responsible for organizing medical assistance to the population in emergency situation in accordance with the decision of the Minister of Health or the respective emergency situation's commission. Formations are working in the disaster area until the completion of the rescue, treatment and rehabilitation of injured following the task to health care institutions in which they were evacuated.

Warning and communication system

The warning and communication system is based on the Emergency Medical Assistance Service dispatch services and transmission networks, through which information regarding the danger or the occurred emergencies is sent and medical care activities for the population are conducted and coordinated. To achieve this task in all Emergency Medical Assistance substations, special points for the reception and distribution of urgent information have been created by the order of the minister of health nr.382 from 11.08.2009 "On the mode of reception of emergency information by medical and medical education institutions, located in the level II administrative-territorial units".

Training System

Training system is represented by the Chairs of the Nicolae Testemitanu State Medical and Pharmaceutical University (Medical Emergencies, Military and Extreme Medicine, Traumatology, Orthopedics and Military Surgery), medical colleges and emergency medicine training centers (republican and regional), where students and medical personnel potentially involved in population medical care in emergency situations are trained.

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Aspectele epidemiologice și manageriale actuale ale leucemiei mieloide cronice

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Updated Epidemiologic and Management Aspects of Chronic Myeloid Leukemia

Chronic myeloid leukemia is a clonal myeloproliferative disorder resulting from the stem cell neoplastic transformation caused by translocation between the long arms of chromosomes 22 and 9. Chronic myeloid leukemia accounts 15–20% of leukemias in adults. This myeloproliferative malignancy occurs mostly in workable population with the age of 25–50 years old. Male: female ratio may reach 1.4:1. A higher incidence of chronic myeloid leukemia is registered among persons heavily exposed to radiation, including survivors of the atomic bomb blasts in Japan and patients undergoing radiotherapy. The contemporary management of CML diversifies the diagnostic and treatment options in regard with the level of medical assistance. Glivec® International Patient Assistance Program (GIPAP) is one of the most generous and far-reaching patient assistance programs ever developed for cancer therapy, axed on the insurance of treatment with Imatinib mesylate of different malignant neoplasms.

Key words: chronic myeloid leukemia, epidemiology, management, level of medical assistance.

Актуальные аспекты эпидемиологии и мэнэджмента хронического миелолейкоза

Хронический миелолейкоз представляет собой клональный опухолевый процесс системы гематопозеза, развивающийся в результате злокачественной трансформации стволовых клеток как следствие транслокации между длинными плечами хромосом 22 и 9. Хронический миелолейкоз составляет 15–20% всех лейкозов у взрослых. Эта злокачественная миелолиферативная опухоль возникает преимущественно у трудоспособного населения в возрасте 25–50 лет. Соотношение мужчин и женщин достигает 1,4:1. Более высокая частота хронического миелолейкоза регистрируется среди лиц подвергавшихся ионизирующему облучению, включая выживших после ядерных взрывов в Японии и пациентов, которым проводилась радиотерапия. Современный мэнэджмент хронического миелолейкоза диверсифицирует диагностические и лечебные мероприятия в зависимости от уровня медицинской помощи. Glivec® International Patient Assistance Program (GIPAP) является одной из наиболее благородных и далеко идущих программ помощи больным, разработанной для противоопухолевой терапии и направленной на обеспечение Иматиниб мезилатом при лечении различных злокачественных опухолей.

Ключевые слова: хронический миелолейкоз, эпидемиология, мэнэджмент, уровень медицинской помощи.