

Symposium: *Disaster medicine – are we ready?*

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A symposium '*Disaster medicine – are we ready*', organized by the Croatian Medical Association – Karlovac branch, Croatian Medical Chamber – Karlovac, Croatian Society of Anesthesiology, Reanimatology and Intensive Medicine, Croatian Society for Emergency Medicine and the Karlovac General Hospital was held in Karlovac, on 25 November 2022. The sponsors of the symposium were Karlovac County and the city of Karlovac.

The aim of this multidisciplinary symposium, lectured by scientists of the Ruđer Bošković Institute, doctors of the Ministry of Defense and the Croatian Army, experts from the Ministry of the Interior and the Crisis Committee of Ministry of Health, a mathematician and international instructors in emergency and medical fields in the context of disasters, professors of medical faculties and general hospital doctors involved in the treatment of the wounded and the injured during the Homeland War, earthquakes in Banovina and those affected by COVID-19 pandemic, was to gain a better insight into the health care problems in disaster situations, with a particular focus on the situation in Croatia. The symposium works are printed in the supplement of *Lijecnicki vjesnik*.

The issues raised by the presenters considered the readiness of healthcare system in the circumstances of the occurrence of traumatic, biological, chemical, radiological, nuclear and combined disasters; the organization of military health, the knowledge of which is necessary for coordinated actions in these circumstances; mathematical modeling necessary in resource planning related to the care of the population during the occurrence of certain threats, analysis of the organization of care for the wounded and injured during the Homeland War and the sick during the COVID-19 pandemic, as well as the education and readiness of health workers.

The symposium followed the continuity and certain specific models of care in disaster situations, starting with the biblical account of the universal flood – the first recorded disaster – and its resolution, the determinants of which indicated the basic starting points and elements that are valid in these circumstances to this day. Data on natural disasters in Croatia (earthquakes, storm winds, waves and tsunamis, floods, landslides, fires, volcanoes, meteors and others), pandemics and epidemics in history and their impact on the course and development of the economy and civilization in general were presented. The causes of chemical disasters can be the





result of natural events (volcanoes, deflation, fires, etc.), damage to industrial facilities due to floods, fires and other natural processes, or their damage due to human errors. Sudden industrialization, the increase of new potentially harmful compounds and the desire for profit lead to the neglect of monitoring devices and technological processes with tragic consequences (Seveso, Italy; Bhopal, India). Nuclear accidents are the result of a sudden breakdown in nuclear plants caused by human error (Chernobyl) or a combination of circumstances (Fukushima) that cannot be influenced and are followed by a large release of radioactive substances into the environment over a wide area. All the mentioned threats warn of the necessity of providing help with a high level of safety, developing awareness of risks, possible victims and costs, and accident prevention. The Republic of Croatia adopted *the Guidelines for the treatment of outpatient and hospital emergency medical services in the event of chemical accidents, the Preparedness and State Response Plan for an extraordinary nuclear (and radiological) event*.

Doctors working in the civilian sector are not familiar with the organization of military health and its role in cases of mass casualties during nuclear, radiological, biological and chemical threats (CBRN-NCBO). Therefore, the doctrinal principles, organization of military health, characteristics and levels of health support with the time sequence of care during conventional and asymmetric conflicts were presented at the symposium. In the event of disasters, the Government of the Republic of Croatia may decide on the use of the Armed Protection and Rescue Force, and in the event of major accidents the Minister of Defense shall take a decision. In these circumstances, the means of communication, planning, coordination, cooperation and resources are extremely important. The World Health Organization has developed the concept of civil-military health cooperation to strengthen preparedness and rapid emergency response. The NCBO battalion has the task of dealing with NBO incidents and/or attacks on the population, territories or military forces. During the COVID-19

pandemic, the concept of civil-military health cooperation was applied by employing the Croatian army's medical staff with infrastructure support and the supply of healthcare facilities.

The mathematical modelling session provided examples related to the COVID-19 pandemic as well as the opportunity to assess the destructive nature of the pandemic in order to estimate the necessary resources for treatments. In a crisis situation, planning and optimizing resources for a major disaster is an important response factor and the most crucial resource to reduce mortality and morbidity is trained and skilled personnel.

The treatment issues during the Homeland War and the COVID-19 pandemic were analyzed. Common problems were technical (gas installations), shortages of specialists, doctors, nurses, heterogeneity of staff, the lack of knowledge and skills, staff fatigue and burnout syndrome, increased incidence of hospital infections. The lack of nurses specializing in intensive medicine, anesthesiology and respiratory therapists was highlighted. Doctors and other healthcare professionals need to be trained during their studies on medical problems during disasters and military medicine. The problem of setting up a team decision-making, which reduces stress for individuals has been noted. The existence of common problems is a warning that they must be dealt with as a matter of urgency through the primary training of health professionals. The lecture also showed positive impetus and action in times of disasters, which is reflected in the development of medicines, medical devices, and the technology of specific segments of the economy and food production.

The symposium was also an opportunity to better familiarize and bring together different professionals and to highlight the need to create a unified national medical approach in dealing with disasters, whatever their cause. This should also be an incentive to educate and actively involve all socio-political, civilian, and military health structures in earlier and more comprehensive disaster preparedness.