

Disaster Medicine in Korea

Taeho Lim

Department of Emergency Medicine, Hanyang University College of Medicine, Seoul, Korea

Disaster medicine is a system of study and medical practice associated primarily with the disciplines of emergency medicine and public health [1]. Disasters have been around since the beginning of mankind. The concept of public health dates back to medieval time, when the plague such as Black Death spread throughout Europe [2]. Since medieval time, the development and improvement of disaster medicine has correlated with the development of other historical organizations. One of most recognized example of these organizations such as Red Cross was founded in year 1863, and in the year 1919, it was reorganized and it has expanded to the international Federation of Red Cross and Red Crescent Societies (IFRC) [3]. Other groups such as the British Ambulance association was founded in 1877, where they have provided "First aid" to the United Kingdom and continental Europe through out that period of time [4]. In addition to the development and improvement of disaster medicine, one of the most important advances in emergency medicine was to train a trained first responder system. This was the initiative of the Emergency Management System (EMS). In which, the trained responder can react immediately in case of emergency. "Vienna Voluntary Rescue Society" was the first reported EMS, which was organized after the big fire accident that happened in the Vienna Theater in the year 1881 [5]. Throughout the First and the Second World War, the Military EMS had been developed, whereas a civil society emergency management system did not.

In 1950, the first aid training program was started in the Chicago fire department. Soon thereafter, the "Accidental death and Disability: The Neglected Disease of Modern Society" was published on the National Academy of science report in 1966. In order to resolve this kind of problem, The United States Department of Transportation was created. In turn, during that period of time,

the modern sense of the trauma system and emergency management systems had actually started [6].

Incident Command System (ICS) is regarded as one of the modern medical disaster response systems. It was created on the base of forest fires that had occurred in the state of Southern California during 1970's. In that period of time, state, county, and city officials have gathered to adjust to a number of problems, as well as creating a consortium to dealing with these kinds of natural disasters. Since then, the ICS has been widely adopted by many other emergency response organizations [7]. While, the EMS has developed and improving throughout the time, transportation of patients during crisis has been improving as well. Improvement has been seen from ground ambulance to air-ambulance and Medicopter [8,9]. Development of a disaster response system in the United States has also been conducted in stages. In 1978, to response to the federal disaster situation, the Federal Emergency Management Agency (FEMA) was created under the Department of Homeland Security. In 1984, the National Disaster Medical System (NDMS) was created under the Department of Health and Human Services (HHS) to be in charge of mass casualty during the disaster [10,11].

In the United States, despite the historical development of these response systems, disaster medicine was unable to become recognized as an independent specialized field of medicine and as a professional qualification in the American Board of Physician Specialties (ABPS). After suffering a large scale disaster situation that was caused by Hurricane Katrina in 2005, President George W. Bush called for the establishment of Disaster Medicine as an independent medical specialty on October 18, 2007 [12]. American Board of Disaster Medicine (ABODM) certified physicians demonstrate expertise in the core competencies related to disaster

Correspondence to: Taeho Lim

Department of Emergency Medicine, Hanyang University College of Medicine, 222 Wangsimni-ro, Seongdong-gu, Seoul 04763, Korea
Tel: +82-2-2290-9281, Fax: +82-2-2290-9280, E-mail: erthim@hanyang.ac.kr

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planning and response, including, but not limited to: A basic knowledge of the National Incident Management System and the Incident Command System, the importance of safety in disaster responses, including protective equipment, decontamination, and site security. ABODM certified physicians also demonstrate expertise in the principles of triage in a disaster setting, the clinical competence to provide effective care with extremely limited resources, and understanding of psychological first aid and caring for responders [13].

After the 1988 Seoul Olympics, disaster medicine as well as, emergency medicine was established in Korea. In the 1990s, with human-made disasters such as the collapsing of a department store, a derailed train, and plane crash have created the need for disaster medicine in the country. However, Improvement and development of the disaster management program in Korea has not been successful. The partial reason for this is that, instead of strengthening actual emergency disaster care, they worked on improving the administrative and legal issues in dealing with the disaster situation. In other aspects regarding failure of improvement and development of these systems, small number of trained emergency medicine specialists as well as, the lack of understanding of disaster medicine might have been the setback cause of failure of successful disaster management systems during that time.

In 2008, to respond better with emergency preparedness, the Korean government established the National Emergency Management Agency (NEMA) model after FEMA of the United States. However, NEMA and the Korean Coast Guard have failed to perform their function during disaster after reviewing the result of disaster control during 2014, such as the Mauna Ocean Resort auditorium collapse disaster in Gyeongju and the Sinking of the ferry named SEWOL. After recognizing the problem in management of national disaster, in 2014, the government has gathered and integrated the NEMA, Korean Coast Guard and other various other government agencies into the Ministry of Public Safety and Security to solve the problem. Even with these efforts, the Korean disaster management system could not respond appropriately to the MERS outbreak that has happen in May of 2015. In Korea, disaster medicine is considered as a detailed field of emergency medicine. Yet, it is not separated into specialist areas of expertise. However, after reviews from the failure in management of past and recent disaster situation, the development of a more professional training and specialization studies are deemed necessary.

Herein, we review the Emergency Medicine in Disasters, Disas-

ter Basic Physics and Disaster Paradigm, Emergency Medical Services in Disasters and Communication Technology Tools for Disaster Response, Prevention and Decontamination CBRN Ambulance and Disaster Medical Assistance Team. We also discuss Disaster planning in Korea and Education & training in disaster medicine [14-21]. We expect that this review will be important information for physicians, paramedics, healthcare providers and administrators in charge of disaster response to understand disaster medicine in Korea.

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