

Analysis of Emergency Situations in the Russian Federation

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Introduction: Emergency situations (ES) are situations within a certain territory, which have arisen because of an accident, a dangerous natural phenomenon, natural disaster, or other that may cause or have caused human casualties, damage to human health or the environment, significant material losses, and unbalance of living conditions of people. Important characteristics of ES are suddenness and involvement of a significant number of victims who need first aid and emergency medical care. These characteristics determined the organization of the Unified State System for Emergency Prevention and Elimination of the Russian Federation.

Aim: To study the structure of ES in Russia. By the scale of spread and damage caused, ES can be local, municipal, inter-municipal, regional, interregional, or federal, by the source of origin – technogenic, natural, biological, or social. The terrorist acts are usually allocated in a separate group of ES. The structure of ES, according to the EMERCOM of Russia in 2005–2017, is as follows:

1. Technogenic (59.61%)
2. Natural (29.42%)
3. Biological and social (9.91%)
4. Major terrorist acts (1.06%)

Methods: Statistical analysis was conducted. According to the EMERCOM of Russia, every year in 2005–2017 there were 422.5 ± 46.5 ES, resulting in the death of 796 ± 56 people. Polynomial trends in the number of ES and deaths, according to the EMERCOM of Russia, (with significant coefficients of determination $R^2 = 0.85$ and $R^2 = 0.64$, respectively) show a decrease in the number of ES and deaths.

Discussion: The resulting analysis of the structure and number of ES, the number of deaths, the risk of being in an emergency, and the individual risk of death in an emergency can predict the forces and means necessary for the elimination of the consequences of ES.

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Application of Game-Based Learning in the Teaching Process of Disaster Medicine for Medical Students

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Introduction: Classroom instruction of disaster medicine for medical students is complicated and lacks attraction. Nowadays a novel method, which is named Game-Based Learning (GBL), has been used in other fields and received good feedback.

Aim: To apply GBL to the teaching process of disaster medicine and discuss the effect of its application.

Methods: A computer game was devised based on a syllabus of disaster medicine and employed it in classes of disaster medicine for medical students. Then a questionnaire about the

application of GBL in education was used inquiring the demands of medical students for the designing of GBL in disaster medicine, including their platform and game mode preferences. Feedback was collected and data was analyzed after the class.

Results: 201 questionnaires were issued, and the valid rate was 100%. From the responses, 77% of medical students considered the application of GBL in education on disaster medicine was necessary, and 73% of the respondents thought it was practical. Furthermore, over 90% of medical students expressed their expectation for the adoption of GBL. According to another survey of 51 medical students we conducted, after attending a class about knowledge of injury classification with one board game adopted, most of the students believed GBL was better than traditional methods of teaching.

Discussion: There is a high approbation degree among medical students to the adoption of GBL in the teaching process of disaster medicine, which suggests a great possibility for the application of GBL in medical education. It is concluded that GBL can be used in the teaching process of disaster medicine.

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Are Australian Pharmacists Willing to Work in a Disaster?

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Introduction: Current literature suggests that a large percentage of the health workforce may be unwilling to work during a disaster. The willingness of pharmacists to work during a disaster is under-researched internationally and non-existent in Australia.

Aim: To determine if Australian pharmacists are willing to work in a disaster and the factors that affect the willingness to work.

Methods: A 13-question survey was developed from the current literature and released nationally through professional organizations and social media.

Results: Sixty Australian pharmacists completed the survey. Most participants believed their pharmacy was an essential service for their community. Pharmacists reported they would be likely to report to work during a pandemic or biological disaster (73%) or natural disaster (78%). The two major factors likely to prevent pharmacists from working in a disaster are family and safety concerns. Pharmacists perceived that their duty of care to their patients would make them likely to work during a disaster. Most pharmacists noted they would work even if they were expected to work outside their scope of practice, or if their place of work lacked electricity or was damaged.

Discussion: Depending on the disaster, up to 27% of the pharmacy workforce may be unwilling to work in a disaster. Family and safety concerns were the primary barriers to pharmacists reporting to work in the aftermath of a disaster. Providing guidelines on how pharmacists can prepare their family for a disaster may assist in ensuring pharmacists are willing to work. The pharmacists surveyed demonstrated a strong commitment to their duty of care with the majority stating they would be

likely to work in austere work environments. This research raises questions of the safety of pharmacists working outside their scope and in austere environments and whether it is safe for them, their patients, and the broader community.

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Are They Qualified and Trained to Manage Disasters?

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Introduction: In the South African environment, the possibility of lack in the disaster response education and training fraternity was attempted to be mitigated with legislation. The National Disaster Management Framework (2005:162–169) states that national, provincial, and municipal organs of state need to plan, organize, and implement training programs relevant to their respective areas of responsibility. The South African Disaster Management Act (South Africa, 2002:19) encourages a broad-based culture of risk avoidance and the promotion of disaster management education and training throughout South Africa.

Aim: As an organ of the state and a role-player in disaster management the Free State Emergency Medical Services (FS EMS) is responsible for making strategic decisions. Managers and supervisors are obliged to be trained and educated in disaster management. The study ascertained whether managers and supervisors are being trained and educated in disaster management as required by legislation.

Methods: The project made use of quantitative data whereby fifty EMS managers and supervisors in the Free State Provincial Government (FSPG) were assessed by using a questionnaire.

Results: The study found that 66% of the respondents did not receive training to equip them to fulfill their disaster management functions. The remaining 34% indicated that they did receive aspects of disaster management training.

Discussion: Based on the quantitative scores for the different indicators, the research found that there are shortcomings in disaster management qualifications and training among the EMS supervisors and managers in the FSPG EMS. However, the findings make it clear that there are several positive aspects in the already established practice of disaster management education and training in the FS EMS. The results indicated that there is an opportunity for revision and improvement that will contribute and empower the FS EMS managers and supervisors to meet legislative requirements towards disaster management training and education.

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Are We Ready for Bioterrorism? Health Personnel were Affected by Contaminated Meat Cooked at a Daily Routine Hospital Kitchen

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Introduction: Salmonellae are gram-negative motile bacilli. The transmission of salmonellae to a susceptible host usually occurs from the consumption of contaminated foods. Most persons infected with *Salmonella* develop diarrhea, fever, and abdominal cramps 12 to 72 hours after infection. The illness usually lasts four to seven days, but can be severe enough to require hospitalization.

Aim: Describe a hospital kitchen based mass foodborne infection.

Methods: Descriptive analysis of the foodborne infection event.

Results: 310 health personnel were contaminated from lunch that was cooked at our hospital kitchen. On that day 70 patients came to the emergency department for complaints of vomiting, fever, and diarrhea. During the next two days, we canceled all planned surgical operations. At the second day, we followed 80 patients and third day 150 patients came to our emergency services. Our emergency services and intensive care units were blocked because of personnel illness. We examined all patients, got blood tests and stool stains and cultures. Because of this mass casualty contamination, our infection control committee gave formal information that suspicious of Salmonellosis. 13 of 310 infected health personnel were hospitalized. They got intravenous saline and electrolytes support like calcium and potassium. After two days we got Results of stool cultures, there was inoculation of *Salmonella* types. None of them died.

Discussion: We realized that we are not ready for mass casualty incidents like this contamination. Because our patient flow was really blocked. We had to call in new doctors and nurses from different hospital staffs. The event was similar to bioterrorism conditions and we suddenly have to put in place hospital disaster plans at the beginning of decontamination. This situation made us to recognize bioterrorism agents like *Salmonella* types. We have to raise awareness of the community about chemical, biological, radiological and nuclear agents attacks.

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Assessing the Efficacy of a One-day Structured Induction Program in Orienting Clinical Staff to a Novel Prehospital Medical Deployment Model

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Introduction: St. John Ambulance Victoria provides first aid and medical services at a variety of mass gathering events (MGEs) throughout Victoria. Volunteer healthcare professionals and students (termed “volunteers”) form Medical Assistance Teams (MAT) at these MGEs. MAT deployments manage a variety of patient presentations which include critically ill patients. This reduces high acuity patient transfers to the hospital and, where possible, avoid ambulance and hospital utilization.