the Democratic People's Republic of Korea. Two train cars loaded with ammonium nitrate exploded during a shunting operation. The blast obliterated the station and caused immediate damage within a radius of 4 km, killing 161 people and injuring approximately 1,300. The blast also destroyed approximately 1,850 homes, and >27,000 people experienced a lack of water supply as a result of the explosion.

Methods: The accident report and related content were investigated through a website search. Also, in the case of South Korean assistance, preparation material was reviewed, including reports and press releases. Although it is difficult to obtain accurate information during a disaster situation, efforts were made to evaluate the overall disaster situation and medical assistance.

Results: The Korean International Foundation for Health and Development developed an emergency medical assistance team, the Yongcheon Emergency Medical Assistance Team (YEMAT), composed of 10 health-related organizations. YEMAT prepared medical personnel resources, drugs, equipments, and others. These materials (worth >3 million dollars) were sent to North Korea via airplane; however, the medical team could not enter North Korea. More than 15 governments and non-governmental organizations from about 15 countries supported North Korea during the acute phase of the event.

Conclusions: In the case of a large technological event in a confined area, the impact is strong and public health is of utmost importance. Early international cooperation and coordination are required for health assistance and the optimal method of evaluating the situation should be developed despite a lack of complete information.

Keywords: disaster; explosion; information; medical assistance; North Korea; response; train
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Injuries on the Farm: Fertile Ground for Injury Prevention

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Agriculture remains among the most dangerous occupations in North America. Despite modest gains in survival during recent years, at 21 deaths per 100,000 workers, agricultural injuries are second only to mining injuries as an occupational cause of death. The causes of both fatal and non-fatal farm-related injuries are multi-factorial, but can be grouped arbitrarily into three general areas: (1) environmental; (2) equipment-related; and/or (3) human factors. In addition, there are significant differences in injury patterns and injury risk related to age, gender, farm type, and location. Environmental issues include animals, toxic chemicals, silos, polymicrobial wound contamination, and delays in provision of definitive care. Equipment dangers exist on virtually all farms and include tractors, the leading cause of death, as well as power take-offs (PTOs), augers, balers, cutters, and moving chains, belts, and other devices. Safety equipment designed to protect the user is effective, but may break and not be replaced. Human factors include long hours, fatigue, risk exposure at the extremes of age, alcohol use, falls, and failure to wear protective garments, and eyewear.

Farm workers and those who live on farms, including children, are exposed to a highly hazardous environment, and most farms, because they employ <10 workers, do not fall under the [US] Occupational Safety and Health Act (OSHA) regulations. Therefore, farm safety is not mandated, but must be promulgated through safer equipment design, incentive programs, and education. Examples of safer equipment design include protective shields and cages for PTOs and augers, roll-over protection devices for tractors, and improved ergonomics. Incentive programs link reductions in insurance premiums or workman's compensation costs with participation in safety and training programs directed at farm-specific activities and/or equipment use. Education is most effective when defined within the context of the Health Belief Model (HBM), originally described by Rosenstock (1974). The HBM defines costs and benefits, emphasizing the consequences of failing to change behavior. Because the costs are so high in terms of loss of life, injury severity and the impact on farm productivity, several studies have demonstrated that the use of the HBM is a valid approach to improving farm safety. Safety checklists, farm "walkabouts" to identify potential hazards, and farm safety health fairs all raise awareness of the risks unique to farm life. In this report, specific reference is made to the type of hazard, the risk to the farmer/farmworker, and the injury sustained therefrom. Emphasis is placed on hazard reduction and how best to implement an appropriate injury prevention program.

In summary, the lethality of farm injuries and the impact of disabling injuries on the farm, farmer, and farm family warrant continued emphasis on farm-specific injury prevention.

Keywords: deaths; education; equipment; farm; hazard reduction; Health Belief Model (HBM); incentives; injuries; insurance; prevention; safety
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Theme 17: Landmines

Chairs: Berndt Schneider; Ron Stewart

What More Is to Be Done after the Nairobi Review Conference in December 2004: Inventing the Wheel Twice?

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Introduction: During the anniversary Congress of the World Association for Disaster and Emergency Medicine (WADEM) in the late 1990s; WADEM's Declaration on Landmines was approved by its General Assembly in Mainz.

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Methods: Focusing on the current problems and hazards, WADEM implemented a Task Force on Landmines so that people can be made aware of this existing problem and keep in mind that much work still must be done. Starting from experiences within the former demilitarized zones of Kuwait/Iraq, the injury patterns of the victims and the averages of their ages as well as the known outcome for a sample of >85 mine-injury victims are discussed as a sample of the global problem. In addition, lessons learned from the ongoing Nairobi Summit will be included in the presentation.

Results: The mean value for the ages of the sample of mine-injury victims was 15.5 years. The injury pattern, as well as the resulting injury severity score (ISS) and trauma and injury severity score (TRISS) values from different samples are discussed. According to the summaries expected from the Nairobi Summit, an estimation will be done for the needed medical infrastructure to serve all of the patients involved. Who will establish this infrastructure? Who is responsible for the harm done to these mostly uninvolved young people? What is the legal situation for the victims after the Nairobi Summit 2004?

Conclusions: Updating the WADEM's Landmine resolution from Mainz to the needs of the new decade is only one step needed. Networking with other governmental and non-governmental organizations active in this field is necessary to establish the required infrastructure worldwide and to give some of the victims the deserved chance to survive in spite of all the narrow circumstances usually found around the mine-fields worldwide. A summarizing report is planned to be available at the 2007 World Congress on Emergency and Disaster Medicine (WCEDM2007) in Amsterdam.

Keywords: injury severity score; landmines; task force; trauma and injury severity score (TRISS); WADEM
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Landmines in Croatia

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During the war in Croatia (1991–1995), many landmines were planted. The total area of Croatia is 56,542 km^2, and it is suspected that minefields cover 1,350 km^2, of which 10% is believed to be mined. By July 2004, 560 km^2 had been demined, and about 870 km^2 has yet to be demined. Fourteen of Croatia's 21 counties have landmine problems.

The demining process is planned to end by 2010. Croatian and foreign companies are taking part in the process. Demining the coast is 6.7 Hrk/m^2 (0.88 Euro not including VAT). With the basic task of planning and conducting mine actions in the Republic of Croatia, the government in February 1998 established The Croatian Mine Action Centre (CROMAC). The Croatian Red Cross also was involved in the education of citizens, especially children, about mine risks. According to the CROMAC database, there have been 1,178 incidents with 1,759 mine victims within the mine suspected areas of Croatia since 1991. After the war ended in 1995, the civilians returned home, and were injured in minefields. Older people, farmers, employers of public companies, and deminers are the most endangered groups.

Medical rehabilitation of the persons with physical disability is organized in special hospitals all over Croatia. In 1999, at the initiative of the Croatian Mine Action Centre, the Croatian Union of the Associations of Disabled established a Mine Victims Association (MVA) that became Croatian Mine Victims Association in October 2001.

Croatia has a special school for the education and training of deminers—Mine Action Academy in Velika Gorica. Now, there are many humanitarian actions being undertaken to collect money for demining activities and for mine victims.

Keywords: Croatia; Croatian Red Cross; demining; education; mines; risks; susceptibility; training
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Free Papers—Theme 23: Disaster Planning-2

Hospital Disaster Management: An Overview

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A medical disaster occurs when the ability of a given area to meet the demand for health care is overwhelmed. Therefore, the objectives of medical disaster management are two-fold: (1) to provide as rapidly as possible the greatest benefit for the largest number of casualties; and (2) to achieve a critical reduction in morbidity and mortality.

The hospital plays the key role in the medical assistance chain. This chain consists of three components: (1) the medical rescue capacity (MRC), i.e., medical care at site; (2) the medical transport capacity (MTC), i.e., the number of patients who can be transported from the site to the hospital; and (3) the hospital treatment capacity (HTC).

The hospital is the last link in the chain, where mass medicine gives way to individual, patient-focused care. Admission and management of a large number of victims can be a very daunting task requiring the mobilization of huge amounts of resources within a short time. Therefore, every hospital should have a written disaster plan, and this plan must be exercised and evaluated regularly. Current recommendations call for some components of the plan to be tested every three months, and for the whole plan to be tested every two years. Such testing ideally will involve the participation of the local police, fire brigade, and ambulance services.

Using mathematical models, it is possible to predict the performance of components of the medical assistance chain, giving an estimate of how many victims could be evacuated and treated within a time frame in the event of a disaster. Emphasis should be on optimizing available resources. Those resources include not only human power, supplies, and equipment, but also available space and time.

Keywords: assessment; disaster management; hospital; preparedness; allocation of resources
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