Abstracts of Scientific and Invited Papers 6th Nordic Congress on Disaster Medicine

Oslo, Norway 02–05 June 2004

Risk and Vulnerability in a Global Perspective—Challenges and Opportunities

Rashid Khalikov
Deputy Director, Office for Coordination of Humanitarian Affairs, United Nations, Sveits

Risk is the probability of a dangerous event occurring. Vulnerability is the degree to which society can manage dangerous events. Both of these factors increase in the context of natural disasters and complex emergencies, and must be addressed urgently.

For natural disasters, the triggers and hazards may be natural, but the disasters mainly are the result of risks and vulnerabilities created by societal and human forces (e.g., unplanned urban growth). Hazards are expected to increase globally due to climate changes. Risks and vulnerabilities also are increasing in some areas (e.g., HIV/AIDS-affected communities or flood-prone cities with fragile infrastructure); and each disaster increases vulnerability by increasing destitution.

In the last decade, conflict has resulted in increased numbers and severity of complex emergencies. Civilians are targets for violence more than ever before. In addition to increased vulnerability from displacement and economic disruption, the lasting consequences of this violence are reflected in the disability-adjusted life year, measured by the World Health Organization, which shows health-related impacts of conflict (e.g., spread of HIV/AIDS, trauma).

These increased risks and vulnerabilities require action. For natural disasters: (1) preparedness must improve; (2) national capacities must improve; (3) early warning and contingency planning systems must be strengthened; (4) development plans should reflect an understanding of vulnerability; and (5) emergency responses must be more timely, effective, and better coordinated. These efforts can be supported by the use of international development frameworks, that prioritize risk reduction. For complex emergencies: (1) systems for protecting civilians under International Humanitarian Law must be strengthened; (2) responses to crises of displacement must improve; and (3) access to affected populations must improve. All such initiatives should support communities' efforts to address these challenges. The World Conference on Disaster Reduction (January 2005) will be a key opportunity for moving these ideas forward.

Keywords: complex emergencies; disasters; hazards; international humanitarian law; preparedness; responses; risk; vulnerability

Khalikov R: Risk and vulnerability in a global perspective—Challenges and opportunities. *Prehosp Disast Med* **2004;19(S1):s1.**

Risks, Threats, Vulnerability and Myths, Paradigms, and Truths

Knut Ole Sundnes, MD
Head, Office for War Surgery and Emergency Medicine, Norwegian Defence Forces; President, World Association for Disaster and Emergency Medicine

Universally endorsed terms and definitions are necesssary to enable and promote professional communication. For international research, as well as for international operations and cross-professional activities, definitions are even more crucial. Unless a common language is endorsed, research and evaluation of disasters will suffer extensively. This is one reason that necessary data: (1) have not been collected; (2) if collected, have not been converted into information; and (3) if converted into information, this information has validity only within the context for which these data were collected.

Such terms and definitions determine the understanding of what leads to disasters and how they are managed. Until recently, most have focused on management. Fortunately, efforts now are beginning to be directed towards explaining what causes disasters, and how they can be prevented and mitigated. There has been a shift of paradigm from post-event action to pre-event mitigation.

Three key terms are crucial in this process: risks, hazards, and vulnerability. Unfortunately, inaccurate uses of these terms have led to a host of definitions, of which many are expressed as mathematical equations. A minimum of 13 such formulas using 18 words to define risk can be found on the Internet, of which many are in use by renowned organizations like PAHO, UNESCO, the Civil Defence of Norway, etc. Practically all of these formulas seem to violate the linguistic properties of some terms, and certainly this is true of the term "risk". Risk is a mathematical entity exclusively indicating the probability that a negative event will happen, and must not be confused with damage. So far, only the Utstein template seems to acknowledge this. Since all of the others are different, at least 12 of them must be wrong. Nevertheless, they represent the current paradigm for that group or organization within which they are used. This prevents universal application and discussion. Analyses conducted using these diffuse definitions have no external validity, as they cannot be compared.

This should explain partially why disaster management and disaster research have failed to reach the standards that evidence-based science demands, and which has been reached within other sciences. Consequently, disaster medicine and disaster management still are struggling with myths and paradigms that are difficult to eradicate if wrong, and hard to confirm if right. Unfortunately, even renowned persons propagate statements, unaware that they are confusing axioms with myths and paradigms with evidence-based truth. This

applies to the cause:effect relationship about what causes disasters, as well as cause:effect relationships of different actions taken after the disaster has happened.

One of the many objectives of WADEM is to establish solid, well-conceived, and conceptualized terminology, that, together with proper and newly developed research methods, will guide us in our efforts to separate myths from axioms and paradigms from truths.

References

1. de Ville de Goyet C: Stop propagating disaster myths. *Prehosp Disast Med* 1999;14(4):213–214.

Keywords: definitions; disasters; hazards; international; management; pathophysiology; research; risks; times; vulnerability; WADEM

Sundnes KO: Risks, threats, vulnerability and myths, paradigms, and truths. *Prehosp Disast Med* 2004;19(S1):s1–s2.

Gas Accident in Lillestrøm Town in 2000

Jorgen L. Hoidahl
Chief of Police, Romerike Police District, Norway

On Wednesday, 05 April 2000, at four minutes past 01:00 hours (h), the police emergency dispatcher received a message that two goods trains had collided at Lillestrøm station 20 km north of Oslo. Two of the wagons were burning and contained a total of 90 tons of liquid propane. No one was injured, but the local hospitals and ambulance service activated their contingency plans. The evacuation zone was expanded several times during the situation. It started with an area of 200 meters (m) around the scene and later was expanded to approximately 1,000 m. About 2,000 people were evacuated from their homes early in the morning on 05 April 2000. There were problems with cooling the scene, as the hoses and pumps froze due to the cold weather. The water pumps also would stop if they were not continuously refuelled. Fire engines with water cannons took over the cooling process until someone could get the pumps working again. To increase the speed of combustion, it was decided to attach technical aids onto the tanks to create a "torch or flare." Both tanks were emptied on Sunday, 09 April 2000. The media received up-to-date information in interviews, press conferences, and press reports. The public also could call an information telephone, and leaflets with information on developments were distributed. The local rescue service used a total of 1,000 servicemen, and several consultants were used. This incident cost the police 4.4 million NOK. Compensation claims were paid to individuals by their own insurance companies. A government appointed commission investigated the accident.

Keywords: cold; collision; combustion; costs; evacuation; information; propane; trains

Høidahl JL: The gas accident in Lillestrøm town in 2000. *Prehosp Disast Med* 2004;19(S1):s2.

1-1-2 Reform in Finland

Jukka Jalasvuori
Director, Emergency Response Center of Central Finland

Finland is implementing a nationwide Emergency Response Center (ERC) reform. From 2001 to 2006, the rescue services' municipal emergency response centers (fire services and ambulance services) and the police force's emergency call centers will be combined into a single new structure, providing the services of several public authorities. Simultaneously, the number of ERCs will be reduced from 80 to 15. The new ERCs will operate mostly within an area covering one province, with a population varying from 150,000 to 800,000.

The ERCs operate in specially-designed, protected facilities enabling them to continue operating even during states of emergency and catastrophes. The ERCs work under the direct governance of the Emergency Response Center Agency, the central government agency. The Emergency Response Center Administration is an independent body financed directly from the budget of the Ministry of the Interior.

The ERC staff consists of operators, who previously worked at the rescue services' municipal emergency response centers, law enforcement officers from the police forces' Emergency Call Centers (both will receive five weeks of further training for the new duties), and newly-qualified ERC operators trained specifically for the new ERCs (graduates from an 18-month training program in the Emergency Services College). In ERC operator training, particular attention will be paid to performing an incident and risk assessment in connection with various kinds of emergencies and accidents.

The ERCs also employ the necessary number of administrative personnel and technical experts depending on the size of the area and its population. The total number of staff at one ERC, therefore, can vary from 30 to 100 persons. Annually, the ERCs receive approximately four million calls to the 1-1-2 emergency call number nationwide. The goal is for the ERCs to answer emergency calls within an average of 10 seconds. The ERCs also operate as the communications and support center for various authorities, relaying information to police units from the police data register, to which the ERCs have access.

The ERCs are equipped with state of the art information systems and communications technology. Plans relating to preparedness for emergency conditions, compiled by various authorities, are recorded on these systems so that the ERC operators can access them as the incident and area requires. The plans are of particular significance when major accidents occur, and require the assistance of several authorities to rescue people and property.

The ERC reform aims to: (1) ensure that citizens can access all alarm services by dialing 1-1-2; (2) quickly inform and alert several authorities simultaneously; (3) allow personnel and investments to serve several authorities; (4) use specially trained staff for ERC operations and risk assessment; and (5) enhance cooperation between authorities and advance planning for preparedness for various kinds of accidents and emergencies.

Within the coverage area of the ERC of Central Finland, Finland's most disastrous road traffic accident occurred in Äänekoski on 19 March 2004, when the collision of a coach and truck on a highway at 02:00 hours, killing 23 people and severely injuring 15. The swiftly launched rescue operations saved the lives of several severely injured people, as emergency medical care was initiated at the scene. In addition to the rescue plans, the Central Finland