emergencies. EDs not only perform triage, provide treatment, and determine the disposition of immediately surviving injured victims, they also provide prehospital medical control, manage medical resources, solve logistical problems, and help calm a terrified public. All of these functions must be based on a clear understanding of the mechanisms, types, frequency, severity, and time course of injuries in terrorist bombings and a familiarity with the many lessons learned from past responses to terrorist bombing disasters.

This presentation reviews the epidemiology of mass-casualty terrorist bombings and discusses the implications for ED response. Although it is prudent to "expect the unexpected," a rational approach to disaster management incorporates what is already known into the basis for planning and preparedness. As long as terrorists continue to use explosions to achieve their goals, terrorist bombings must remain a focus of medical disaster preparedness.

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Keywords: bombing; disaster; emergency department (ED); explosion; mass casualty; terrorism
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Terrorism, *et al.*

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A new medical/public health definition of "terrorism" has been proposed:

> The intentional use of violence—real or threatened— against one or more non-combatants and/or those services essential for or protective of their health, resulting in adverse health effects in those immediately affected and their community, ranging from a loss of well-being or security to injury, illness, or death.

Given this definition, it should be clear that, medically, acts of terrorism are conducted to induce fear and insecurity in the target population. Thus, the impact of an act of terrorism not only produces damage in the form of death and physical injury, but also results in profound psychosocial effects upon the directly affected population and also on the world community in the form of terror, fear, and post-traumatic stress disorders. The acts of 11 September 2001 (9/11), although medically manageable at the time, are now producing a medical disaster, as the ongoing psychosocial effects threaten to overwhelm the medical community and require substantial outside assistance.

Following 9/11, the responses to terrorism at an international level have resulted in the provision of vast amounts of resources supposedly directed toward the prevention of such events and toward the enhancement of our ability to respond if and when they do occur. In the United States, huge sums of money have been granted to the states to enhance their level of preparedness for the next major event. Unfortunately, little vision and guidance have accompanied these resources, and the funds are being spent in an uncoordinated fashion. There is little evidence that expending such funds have created enhanced preparedness.

Another problematic response to 9/11 has been the government's periodic announcements that the threat level of terrorism has been raised or lowered, without providing any more specific information. This creates additional fear, which is unattached and psychologically disturbing. Such activities feed the underlying objectives of creating terror, fear, and insecurity. Over time, they also can induce complacency. Such activities are deleterious rather than helpful.

A positive aspect of this heightened awareness of terrorism is that in the past few years, we have been able to make more progress toward preparedness for all hazards than we have been able to achieve in disaster preparedness during the last half century! We have an unprecedented opportunity to enhance our preparedness and ability to respond to any hazard. After all, is the risk that a terrorist event will produce a massive number of casualties greater than that of any other kind of catastrophic event?

Keywords: 9/11; 11 September 2001; attacks; definition; fear; hazards; impact; insecurity; preparedness; resources; terror; terrorism
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Plenary Sessions

Civilian-Military Cooperation and the Use of Military Assets in Disaster and Humanitarian Relief Operations

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As a relatively new term, civilian-military cooperation (CIMIC) is but a new name for an aspect of the larger scope of civilian-military interrelationships. Such a civilian-military relationship covers a variety of scenarios, ranging from exclusively humanitarian assistance, or provision of peace-support operations, to war and occupation of a country. It's relatively recent in history (within the past 150 years) that these interrelationships have been "regulated" by conventions and international legislation. They now are governed by an increasing number of doctrines: Some are legally binding international conventions, others serve as rules of engagement for military alliances, and others represent ethically binding conventions and declarations.

The historical rationale for maintaining military forces has been for protection (defense) or for aggression (annexation). These may be fully professional armies with paid soldiers or drafted personnel doing compulsory military service. For both types, the core of the military is the combatants. But, except in peace-support operations, the same elements that provide support for the combatants are the assets most often called upon to provide humanitarian assistance, e.g., engineering support, logistics, and medical support. In fact, today the military is the only complete system that has the capacity to manage all manageable disasters. However, history serves as a serious obstacle for the

overall necessary trust required to be able to complete humanitarian missions, especially at the international level: The disasters created by the military far outnumber the ones they have prevented or assisted in.

The term CIMIC could be described as a new, institutionalized approach to developing a permanent strategic and tactical system that will facilitate provision of joint functions in scenarios involving both civilian agencies (local authorities and voluntary organizations) and armed forces. The concept creates both opportunities and threats. The most imminent threat is the absence of an endorsed definition of what CIMIC is or should be. NATO (the largest military alliance) has one definition; the United Nations has another. In addition, some national military forces have chosen to use modified versions of the NATO definition.

This presentation will discuss how these discrepancies may prevent future fruitful collaboration, and how they affect the trustworthiness of the parties involved. NATO may face the biggest challenge, as its definition seems to be unsatisfying to other civilian counterparts in the field of humanitarian assistance (governmental and non-governmental).

Conclusion: Civilians and the military have had many different kinds of relationships. If CIMIC is to be a new, institutionalized, agreed-upon "regulation," all threats and weaknesses of such a collaboration must be revealed and discussed to optimize the benefits that can be achieved from the use of all of the potential strengths and opportunities implied by its definition. An internationally endorsed definition is a minimum requirement.

Keywords: barriers; civilian-military; cooperation; definitions; humanitarian assistance; missions; opportunities; threats
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Advanced Technologies in Support of Military Medicine

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This presentation will address technology advancements applicable to battlefield medical requirements. The introduction of technology to battlefield environments is not always welcome. Acceptance of technological advancements by line and medical commanders is prerequisite to their use and directly related to their effectiveness. It is necessary both to train personnel in the use of advanced technology and to integrate the technology into unit functions. Time and persistence are needed to demonstrate the value of technology advancements and to adapt them to performance of unit missions.

Our current challenge is to identify, explore, and demonstrate key technologies and biomedical principles required to overcome technology barriers that are both medically and militarily unique. Technology developers must apply physiological and medical knowledge, advanced diagnostics, simulations, and effector systems integrated with information and telecommunications for the purposes of enhancing operational and medical decision-making, improving medical training, and delivering medical treatment across all barriers.

The introduction of hardware refinements brings a new set of challenges and requires creative solutions. These include adaptation of platforms, overcoming of power problems, ruggedization and mobility; all subjected to field testing. Similarly, refinements in software will yield a dramatic increase in usable medical data and ease of transmission to the right sources.

Various portfolios of managed research will be described and their role in support of battlefield medicine explained. Specific applications will be made for homeland defense. Some of the topics of collaborative research include 3-D ultrasound, enhanced digital radiography, medical simulation for training, the use of sensors and detectors, the concept of an operating room of the future, robotics and medical informatics. Technology breakthroughs related to enhanced battlefield medicine will be demonstrated.

Keywords: battlefield medicine; military medicine; technology
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Advanced Technology and Medical Care
The Russian System for Disaster Telemedicine

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The national on-line advice-giving support system for disaster telemedicine was developed in Russia in the autumn of 2001. In the first half of 2002, the system was used by personnel from the pediatric field hospital who had worked in the zone of the anti-terror operation in the Chechen Republic for 64 sessions. Advice was given for 54 patients with a wide range of diseases and traumatic injuries who ranged in age from two weeks to 56 years. Due to the counseling received by doctors via the telemedicine system, 46.2% of the difficult cases that required medical actions were carried out directly in the field hospital. The quarterly experience of continual employment of this system in the conditions of the regional public health services network disorganization (typical for natural disasters), local shooting wars, and prolonged anti-terrorist operations has shown its high potency for rapidly dealing with problems of diagnostics, medical tactics selection, and evacuation of the patients and victims in the specialized medical hospitals.

The DVB/RCS channels of the Russian satellite system with combined access to HeliosNet created the communications environment. The high-speed DVB channel used in the direction from the Telemedicine Center in Moscow to the hospital and low-speed simplex, point-to-point reverse satellite channel were able to support on-line advising sessions by means of an asymmetric, duplex IP-connection.

Keywords: advice; Chechen Republic; consultation; diagnostics; disaster; evacuation; field hospital public health; Russian; tactics;