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Role of Occupational and Environmental Medicine Physicians in Emergency Preparedness and Response

The American College of Occupational and Environmental Medicine (ACOEM) identifies disaster preparedness and emergency management as one of 10 core competencies of an occupational and environmental medicine (OEM) practitioner.¹ As both clinicians and public health officers for employed populations, OEM physicians have long played a critical and dual role in emergency preparedness and response. Today's OEM physician's responsibilities have evolved from providing direct clinical care for victims of occupational disasters to a longstanding involvement in disaster planning and workforce protection from disease and injury. The role includes integration with community-, state-, and federal-based emergency preparedness and response systems, not only for the sake of particular workplaces, but for the community at large, and for both the welfare of workers and the importance to the community of the workplace's role in society's functions.

From the origins of the modern field in the Industrial Revolution, practitioners of occupational medicine have had to treat victims of mass casualties and industrial crises.² The "industrial surgeon" was called upon to manage the consequences of injuries on a mass scale. This expanded the scope of occupational medicine practice and led to a role of the physician in "accident prevention," which at the time did not carefully distinguish between prevention of individual injuries and mass casualties.³ Later, particularly as corporate medical departments were established and expanded in the early 20th Century, occupational physicians became valuable and effective resources for disaster planning and emergency response.⁴ During World War II, occupational physicians helped ensure safe and on-going operation of critical industries. This interest in disaster planning and emergency response continued for after the War, but became obscured by the increasing involvement of occupational physicians in injury/disease prevention and health promotion, although it remained important in critical and hazardous industries.⁵ OEM physicians' responsibility in disaster planning and emergency management abruptly returned to its historic centrality since the tragic events of 9-11 and its aftermath, the SARS outbreak, several highly visible plant incidents, the series of natural disasters in 2005 (including Hurricanes Katrina and Rita and mid-continent tornadoes), and most recently, pandemic flu. The public and business now call upon occupational physicians to respond to threats from intentional assaults (including terrorism),⁶ unintentional incidents that may result in mass casualties, and natural disasters.⁵ For many practicing OEM physicians this is a new function, but for most it is a logical extension of their current duties and training.⁷

With the advent of the Incident Command System (ICS) as a universal approach mandated by the National Incident Management System (NIMS), OEM physicians employed by organizations typically serve as technical consultants to the organization's ICS to assist it in protecting and restoring the health and productivity of the workforce. Although the functions of the OEM physician vary with each practice setting, in all cases the emergency preparedness and response role is best carried out as a member of a multidisciplinary team, integrated with the established emergency preparedness business and community infrastructure.

The OEM role in disaster preparedness is distinct from those of safety engineering, risk managers, emergency physicians, infection control specialists, and emergency management personnel. These different professions' roles are complementary and sometimes overlapping, but the unique role of OEM

physicians is predicated on their value as physicians who have special dual knowledge of the workplace as well as the necessary clinical issues. A critical dimension of this role is to support the continuity of business during emergencies, especially in enterprises that provide essential products and services that maintain the economic life of the affected community. The workforce of any enterprise forms the basis of its ability to continue functioning. Workforce protection, in addition to the protection of individual workers, is therefore an essential part of critical infrastructure protection and business continuity.

Core knowledge and skills, which occupational physicians incorporate into daily practice, relevant to many aspects of disaster planning and emergency management, include^{1,7}:

- knowledge of occupational and environmental threats, including a broad range of chemical, biological, nuclear, radiological, and physical hazards with special, detailed knowledge of the hazards specific to those industries included in the physician's practice;
- knowledge of personal protection and other applied approaches to health protection and the skills to evaluate the adequacy of protection at the individual level;
- a systematic approach to monitoring and protecting the health of populations;
- a systematic approach to monitoring and protecting the health of individual workers and other persons at risk;
- skills in managing behavioral factors associated with the workplace and stressful events;
- detailed knowledge of individual plants, working populations, communities, and resources within their areas of responsibility;
- managerial skills and the skills to effect change through policies and management of information;
- clinical skills and an understanding of appropriate utilization;
- working knowledge of regulations, regulatory compliance, and the structure of government agencies responsible for health protection at most relevant levels;
- experience in evaluating individuals for fitness to work, which may be applied in emergency situations;
- experience in evaluating workplaces for safety and health protection; and
- expertise in risk management, including risk communication in an emergency.

The occupational physician is well prepared and organizationally placed to work with management and technical personnel at the plant, enterprise or corporate level to prepare for plausible incidents, plan for an effective response, identify resources that will be required, and advise on their deployment. In this role, occupational physicians can add value to the management of catastrophic consequences in many ways, including but not limited to:

- workforce survival;
- continuity of business;
- connectivity to site and community based resources for assistance in a health-related emergency;
- surveillance of the workforce and the early detection of an outbreak;
- integration of emergency response with public health and other relevant agencies;
- surge capacity in the event of a local event requiring mobilization of all available medical resources;
- population vaccination and chemoprophylaxis programs and other protective measures;
- assessing fitness of individuals to stay at or return to work; and
- determining when it is safe to reenter a contaminated site.

Adaptation of the existing occupational health service, whether worksite or community based, makes sense for many employers, especially those in critical or hazardous industries. Expanding the mission of occupational health services builds new efficiencies into the emergency response system. The same resources used for tracking employees' health can be used for surveillance to detect potential disease outbreaks due to bioterrorism. The technology of hazard identification and measurement can be applied to detect chemical or radiation threats. Occupational medical staff on duty primarily to monitor health and to provide timely clinical care can also provide surge capacity in time of crisis. Clinical health services can be applied to keep key personnel on the job and safe, especially when they are moved to new locations or are operating under conditions of stress and extreme risk.

OEM physicians play a critical and unique role in emergency preparedness and response. This role builds on a long history of OEM physician involvement as both clinicians and public health officers engaged in protecting employed individuals, the national workforce, and the broader community from health and economic consequences of disasters.

Acknowledgements

The statement was authored by Robert K. McLellan, MD, and Tee L Guidotti, MD. This statement updates and expands upon the 2006 statement *Disaster Preparedness and Emergency Management as a Core Competency in OEM Medicine*.

References

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2. Clarke A. A code of instructions for the treatment of sufferers from railroad and steamboat accidents, sudden attacks of illness, and suspended animation from various causes, until medical aid can be procured. Dublin, privately published, 1849.
3. Bibliographic research on this topic is difficult because the terms “disaster” and “emergency management” were not commonly used until recently. Prior to 1936, most citations in the Index-Catalogue of the Library of the Surgeon General’s Office, U.S. Army (Army Medical Library) are catalogued under type of disaster (e.g., “Explosions” or “Fires”). In the 4th edition (1936) the citations are mostly under “Accident Prevention.” The early Index Medicus series usually categorizes such citations under “Industry and Occupation, Hygiene,” not “Accident, Prevention.” In the 1960s, most Index Medicus citations can be found under “Accidents, Industrial; prevention and control.” Little distinction is made between topics of preventing mass casualty events and of injury prevention.
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