Resources for Toxicologic and Radiologic Information and Assistance

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KEYWORDS

• Resources • Chemical • Radiological • Nuclear detonation • Competencies
• Risk assessment

KEY POINTS

- Information management is crucial to effective emergency response during a large-scale chemical or radiologic/nuclear incident.
- The emergency medicine physician should know what potential chemical and radiological/nuclear hazards are present locally and regionally; a basic awareness is paramount.
- Emergency physicians must competently amass information elements most critical to know during a crisis, choosing an appropriate resource to rapidly find reliable information.
- Identifying single point of entry information resources (information leverage points) to many other robust and reliable resources is a helpful strategy for information access during overwhelming large-scale chemical or radiological/nuclear incidents.
- Information needs will vary over time in an emergency response. Early on, situational awareness is paramount. As the event evolves, information needs to be focused, guiding critical decisions about managing mass casualties, protective actions for first receivers, and aligning and mobilizing patient care resources. Rapid-access 24/7 telephone consultation services should be considered first line for attaining human health effects and treatment information about suspected/identified toxicants (chemical or radiological), especially in the early phases of an incident, to provide the best care possible.

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INTRODUCTION

Information management is crucial to effective emergency response during a large-scale chemical or radiation/nuclear (CRN) incident. The ability to rapidly acquire key information, share it with others, and use that information to make critical decisions and take life-saving actions is a core competency for individual responders (especially emergency physicians) and for every response agency within the community's entire emergency response network. However, Auf der Heide[1] identifies information management as one of the most common problems during all types of mass casualty incidents, and it is often cited as a "lesson learned" in after-action reviews.

In a published account of the 1995 Tokyo subway sarin attack, Okumura and colleagues[2] highlighted the hospital's challenges in responding to an incident causing hundreds of people to arrive at the hospital, many carrying residual contamination, exhibiting effects of a toxic exposure and many ill, requiring specific antidotal therapy. Applicable to all types of disasters, Okamura divided the hospital's challenges into 3 categories: (1) hardware problems (structural problems pertaining to the hospital facilities); (2) software problems (preparedness problems pertaining to disaster plans and response capabilities); and (3) transmission problems (information management problems).Those challenges he termed transmission problems included the need for early information about the offending agent, expert medical information, including emergency guidelines for treatment and standardization of care, and surveillance for long-term care.

During a large-scale CRN emergency response, all key decision-makers from the emergency medical technician first responder to first receivers, emergency physician (EP), hospital incident commander, fire chief, and the city's emergency manager will find themselves in an ambiguous, complex, and uncertain situation requiring critical decisions be made rapidly. In these situations, the amount of information flowing to the decision-maker is often not the problem; instead it is the quality of that information. Copious information flowing in, but not reliable or useful for making key decisions, conceals those crucial pieces of information that will lead to decisions resulting in desirable outcomes. For the EP, one of the most useful competencies is to become an expert at managing information, and the EP can best accomplish this by understanding critical information needs, knowing where to quickly access the most reliable information, and separating the information useful for decision-making from the "noise." The authors intend to provide information to increase understanding about information elements most critical to know during a CRN incident and to gain the ability to choose an appropriate resource, rapidly acquiring reliable information. In addition, a helpful strategy for information access during such overwhelming scenarios is identifying (ideally during the preplanning phase) information resources that serve as leverage points. These information leverage points are single points of entry to many other robust and reliable resources, and are highlighted here. The intention of this article is to provide a concise, condensed, and useful collection of resources and assistance for the EP physician from the standpoint of the provider "in the trenches" delivering care and the EP who may be the Director interacting with the Hospital Incident Commander for CRN incidents. Rather than provide an endless list of resources, the authors attempt to compartmentalize the various resources along an acute (up to 12 hours after incident for these purposes) and prolonged timeline (definitive care/recovery). The following are basic competencies in information management for the EM physician when handling a large-scale CRN incident:

1. Planning information (pre-event actions, hazard vulnerability analysis [HVA], education and training, drills and exercises)