Electronic Mass Casualty Assessment and Planning Scenarios

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Few tools exist that are sufficiently robust to allow manipulation of key input variables to produce casualty estimates resulting from high-consequence events reflecting local or specific regions of concern. A computerized modeling simulation tool,

Electronic Mass Casualty Assessment and Planning Scenarios (EMCAPS), has been developed to have broad application across emergency management and public health fields as part of a catastrophic events preparedness planning process (Fig. 1). Our approach was as follows:

- Develop a tool that works for users with a wide range of training and education and that works reliably on a variety of PCs.
- Provide user-scalable scenarios to realistically represent local risks and threats.
- Ensure that the project is consistent with state and national guidelines and requirements:
  - Department of Homeland Security capability-based planning methodology
  - National Planning Scenarios
- Set up an expert panel to advise the EMCAPS team.
- Freely offer the EMCAPS tool to others.

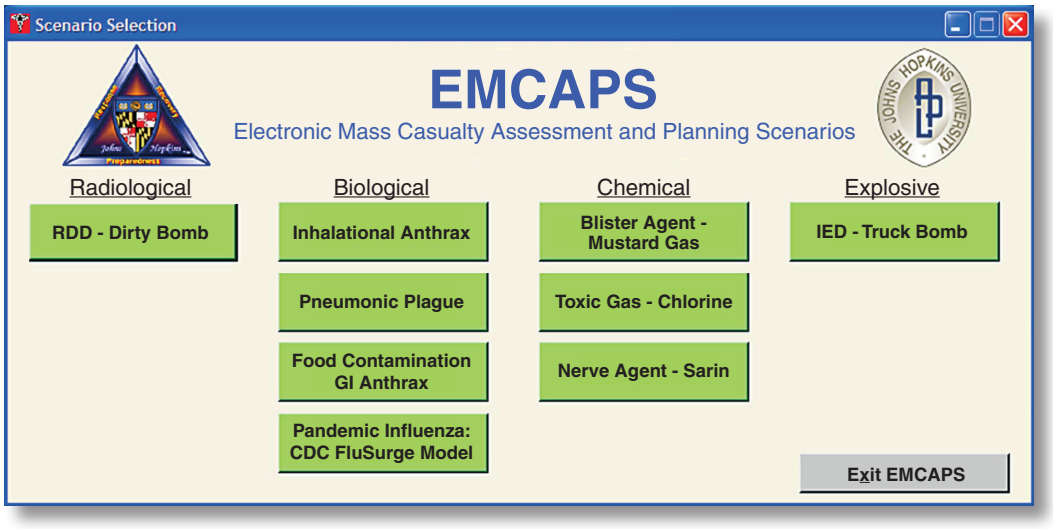

Figure 1. Scenarios available in EMCAPS.

Figure 2. EMCAPS helps state and local emergency preparedness planners measure resources and response systems against the emergency scenarios most likely to occur locally.

As a scalable, flexible tool, EMCAPS is intended to support emergency preparedness planning efforts at multiple levels, ranging from local health systems to regional and state public health departments to Metropolitan Medical Response System jurisdictions (Fig. 2). Designed around the subset of the National Planning Scenarios with health effects, advanced by the U.S. Department of Homeland Security, the tool's platform is supported by the detailed descriptions and readily retrievable evidence-based assumptions of each scenario.

The EMCAPS program allows the user to manipulate key scenario-based input variables that would best reflect the region or locale of interest. Inputs include population density, vulnerabilities, event size, and potency, as applicable. Using these inputs, EMCAPS generates the anticipated population-based health surge influence of the hazard scenario. Casualty estimates are stratified by injury severity/types where appropriate. Outputs are graph and table tabulations of surge estimates. The data then can be used to assess and tailor response capabilities for specific jurisdictions, organizations, and health care systems.

Our results to date include the following:

- We have delivered a PC-based tool and a technical report.
- EMCAPS shareware now is available through the Johns Hopkins Office of Critical Event Preparedness and Response (CEPAR) and the National Center for the Study of Preparedness and Catastrophic Event Response (PACER).
- EMCAPS has been used in preparedness planning by the following groups:
  - Johns Hopkins Medical Institutions
  - Other Maryland state and local health care organizations
  - Emergency planners in other states
- EMCAPS has supported curricula, books, and research worldwide.

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For further information on the work reported here, see the reference below or contact chris.latimer@jhuapl.edu.

[1]Scheulen, J. J., Thanner, M. H., Hsu, E. B., Latimer, C. K., Brown, J., and Kelen, G. D., "Electronic Mass Casualty Assessment and Planning Scenarios (EMCAPS): Development and Application of Computer Modeling to Selected National Planning Scenarios for High-Consequence Events," *Ann. Emerg. Med.* 53(2), 226–232.e2, 10.1016/j.annemergmed.2008.09.014 (Feb 2009).