A new computer modeling program can help hospitals prepare for the worst

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A new and novel computer modeling platform developed through intensive, multidisciplinary collaboration at New York University can help hospitals and cities to be more prepared for catastrophic public health scenarios, according to an article published in the American Medical Association's *Disaster Medicine and Public Health Preparedness* journal.

The article, "A Novel Approach to Multihazard Modeling and Simulation," is based on the authors' test of the NYU computerized disaster simulation framework known as "Plan C" with a hypothetical malicious sarin release in several Manhattan locations. With the input of city demographic information, hospital resource and public transit data, the results showed that under certain circumstances, up to 22,000 individuals might become exposed, leading to 178 intensive care unit admissions.

The article's lead author is Dr. Silas Smith of New York University's School of Medicine, who prepared it with Ian Portelli, PhDc, MSc CRA, Giuseppe Narzisi, PhDc, Lewis S. Nelson, MD, Fabian Menges, Cand.Ing., E. Dianne Rekow, DDS, PhD, Joshua S. Mincer, MD, PhD, Bhubaneswar Mishra, PhD, MS. and Lewis R. Goldfrank, MD - all of New York University.

Plan C is an innovative tool for emergency managers, urban planners, and public health officials to prepare and evaluate optimal plans for response to an array of hypothetical urban catastrophic situations. It was

developed as part of the Large Scale Emergency Readiness (LaSER) Project at NYU's Center for Catastrophe Preparedness and Response (CCPR).

Plan C uses a powerful, large-scale computational, multi-agent based disaster simulation framework involving as many as thousands of variables or agents - from existing hospital beds and emergency department services to hospital surge capacity and behavioral and psychosocial characteristics to anticipate public response to an attack. It has been able to simulate the complex dynamics of emergency responses in such scenarios as a chemical release, food poisoning, and smallpox.

According to the article, implementing disaster plans within 30 minutes compared to two hours of an incident diminished mortality and waiting times and reduced the number of patients who were severely affected. GIS portability to other urban locations was demonstrated.

"An agent-based modeling approach," the authors write, "provides a mechanism to assess complex individual and system wide effects in rare events."

Currently, the model is being adapted to model pandemic influenza and the authors aim to continue expanding this model in their efforts to further preparedness efforts.

Source: New York University (news : web)