

WORKING P A P E R

Decision-Making Modules for the RSS-POD Supply Management Game

A Game-Based Assessment of Crisis Decision Making During Inventory Management and Distribution of Medical Countermeasures

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SUMMARY

In the event of a large-scale public health emergency, mass dispensing of medical countermeasures (e.g., antibiotics, vaccines, and antidotes) could be required to reduce illness and death. In many such instances, the Centers for Disease Control and Prevention (CDC) would send materiel from the Strategic National Stockpile (SNS) – a cache of medical countermeasures maintained at undisclosed locations around the country – to a warehouse (known as the Receipt, Storage, and Staging facility, or RSS) designated by the relevant state or local authority. From there, state and local health departments are responsible for *distributing* the materiel to Points of Dispensing (PODs), at which the countermeasures would be *dispensed* to the public.

EXISTING EXERCISES OFTEN DO NOT ADEQUATELY TEST CRISIS DECISION-MAKING

Poor decision-making has often been cited as a critical failure in emergency response (e.g., after Hurricane Katrina). Yet, public health practitioners often have little experience with crisis decision making and, given the fortunate rarity of large-scale public health emergencies, little opportunity to practice, assess and improve their skills.

To begin to address this gap, we recently developed the Public Health Emergency Response Decision-Making Assessment Tool, which provides a simple, paper-and-pencil assessment of crisis decision-making in the context of exercises or real incidents (Parker et al., 2009). Yet, extensive experience in developing and running exercises, along with discussions with numerous practitioners, suggests that exercises typically do not provide realistic opportunities for practicing and testing crisis decision-making, for a variety of reasons.

In many exercises key decisions are “scripted” in order to set up standardized scenarios for addressing other capabilities (e.g., calling-down staff, dispensing medication). For example, many exercises of SNS-request processes assume that SNS assets will be requested, that shipments will be complete and timely, and that there are enough staff, equipment, and facilities at all levels of the supply chain for the distribution to succeed. This leaves little opportunity for decision-makers to practice weighing tough tradeoffs under realistic time and informational conditions. In other instances decision-making is tested, but players get little feedback on whether their decisions might lead to effective outputs and outcomes. For instance, tabletop exercises that practice decisions to

close schools, issue public messages, or dispense medications rarely provide any specific feedback on the degree to which these measures might actually reduce disease transmission or cause undesirable secondary effects. Moreover, most exercises require a considerable amount of time, effort, and money to plan and execute; this limits the frequency with which they can be conducted, and hence limits the frequency with which crisis decision making can be practiced.

NEW MODULES FOR RSS-POD SUPPLY CHAIN MANAGEMENT GAME FOCUSES ON DECISION-MAKING

In order to provide low-cost and frequent opportunities to test crisis decision-making, we created a Microsoft Excel-based computer game that provides an opportunity for players to practice and test a specific set of crisis decision-making skills in the context of a simulated medical supply chain management operation. The game builds upon the recently-released RSS-POD Supply Chain Management Game. In the game's earlier version, three sequential modules teach players basic principles of medical supply chain management. In this version, two new modules provide practice in making decisions in the face of unexpected contingencies that require allocation of scarce resources. Specifically, in Module 4 players must decide which Points of Dispensing (PODs) to open in the face of a staffing shortage and how to staff them. Players can also choose to play with 25, 50, or 75 percent available staff. In Module 5 they must decide how to allocate and dispense inventory when shipment delays cause a temporary inventory shortage. After dealing with an initial delay in the materiel delivery, players are asked whether they want to alter the standard of care to speed the process of dispensing countermeasures to the backlogs of waiting citizens. Unlike the earlier version, the game is intended to be played by small groups of 2-5 people, although decision makers may wish to preview the modules individually.

In the game, one player (regardless of his or her job in an actual emergency) performs the role of the inventory manager at the RSS, with others representing other individuals involved in key RSS-related decisions. This inventory manager is assumed to have all the decision-making authority necessary to allocate inventory among PODs. The computer provides orders placed by PODs. In many cases, the available RSS inventory is insufficient to meet the perceived needs of the PODs. The RSS inventory manager (player) must allocate his/her available inventory among the PODs, with the goal of distributing countermeasures to as many people as possible.

An assessment tool (derived from a more general public health crisis decision-making tool developed by RAND; Parker et al., 2009) is provided to aid in evaluating decision-making processes and identifying gaps. By the end of the game, players should better understand the strengths and limitations of their current SNS distributions plans when dealing with unexpected contingencies, have an increased appreciation of group decision making during crisis, and have identified information requirements that will support future crisis decision making efforts.

NEXT STEPS

The decision-making add-on to the RSS-POD Supply Chain Management Game should be considered an initial prototype of an experiential learning exercise. It is being released for testing by users in state and local health departments who would have to manage inventory in an actual emergency, as well as by staff of CDC DSNS who provide technical assistance to those health departments.

During this period of testing, we are interested in learning:

- The extent to which the issues dealt with in these game modules mirror real public health crisis decision-making experiences or plans
- Which aspects of the game are confusing and which can be improved
- Whether, in a more general sense, experiential learning games such as these are an effective strategy for teaching technical concepts to health-department users
- How the use of stand-alone games such as this may improve performance in more general exercises, such as warehouse drills and full-scale mass dispensing and distribution exercises.

Ultimately, testing validity and usefulness will require the development of good metrics for the larger exercises, as well as data collection over time.