

hospital” in Singapore and its staff are tasked with fronting the national response to an infectious disease outbreak such as the response during the severe acute respiratory syndrome outbreak in Singapore in 2003 and the ongoing global swine influenza outbreak. This report aims to describe the Tan Tock Seng Hospital’s systemic approach of handling any infectious disease outbreak that might be encountered in daily operations.

**Methods:** Early detection is critical. Hospital personnel stay vigilant to patients who may present with similar patterns of disease to conduct epidemiology studies. An updated screening form was devised so that patients and visitors are screened for history and symptoms that may have an implication on the spread of diseases. Screening the horizon for information, information is obtained from various sources such as World Health Organization (WHO) Websites, (US) Centers for Disease Control and Prevention (CDC), and medical and non-medical media to try to stay abreast on the latest outbreaks in order to constantly update the screening mechanism.

Contact tracing also is implemented in the Hospital’s screening mechanism such that the system allows personnel to track down the patients and visitors who might be exposed to an index case via an electronic medical record system.

**Results:** Hospital personnel have experienced the impact of the H1N1 and avian influenza outbreak in Southeast and East Asia, and also experienced, first-hand, dengue, malaria, and chikungunya disease outbreaks. This mechanism of early detection and a constantly updated screening system have allowed Tan Tock Seng Hospital to stay abreast of these disease outbreaks. In addition, contact tracing has been performed effectively so as to identify specific disease hotspots like in the case of outbreaks of dengue, chikungunya, and malaria.

**Conclusions:** Infectious disease outbreaks are constantly evolving issues facing healthcare institutions. It is important to stay vigilant in order to expect the unexpected outbreak in the future.

**Keywords:** detection; infectious disease; management; outbreak; preparedness; screening

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### Large-Scale Public Health Emergencies: How Long Do They Last and How Many Staff Do You Need?

Joseph M. Posid; Julie T. Guarnizo

Division of Bioterrorism Preparedness and Response, Centers for Disease Control and Prevention, Atlanta, Georgia USA

**Introduction:** Multiple large-scale events of public health significance (e.g., natural disasters, pandemics, foodborne outbreaks, acts of bioterrorism) have occurred in recent years. Each required diverting staff from critical public health activities to meet the emergency response at-hand. It is critical that public health leaders be able to estimate: (1) the number (and specialties) of staff that must be diverted from their regular responsibilities to the emergency response; (2) the impact of diverting staff from critical activities; and (3) the duration of these reassignments. **Methods:** We reviewed published and unpublished US Centers for Disease Control and Prevention (CDC) staffing,

deployments, and duration-of-event data from 2001–2009—the time period during which increased resources have been invested in public health preparedness and response activities. The events studied were: (1) intentional release of *Bacillus anthracis* through the US Postal System [2001–2002]; (2) severe acute respiratory syndrome (SARS) [2003]; (3) monkeypox US [2003]; (4) South Asia Tsunami [2004–2005]; (5) Marburg, Angola [2005]; (6) Hurricane Katrina, US, [2005]; and (7) Salmonella Saintpaul, US, [2008]. Initial analyses of Novel H1N1 Influenza worldwide [2009] also were conducted.

**Results:** The mean duration of the “emergency response” phase for each event was 102 days (range 63–143 days.) The mean number of CDC staff deployed to respond to each of these events (to either the field or Emergency Operations Center) was 590 (range 70–1,324).

**Conclusions:** Analyzing workforce needs can be useful to public health managers and leaders for several reasons including: (1) better defining various objectives of the emergency response knowing that increased surge staffing will exist for a limited time; (2) anticipating the implications of reducing or curtailing activities in order to divert resources to the response; and (3) developing specialty-specific strategies to recruit and train staff that will be needed in the public health emergency response.

**Keywords:** emergency response; health staff; preparedness; public health emergencies; resources

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### Assessment of Community Healthcare Services Delivery during Operation Cast Lead—A Cross Sectional Survey

M. Savyon; L.K. Boker; T. Einav; D. Laor; T. Rosentraub; T. Shohat

The Israeli Center for Disease Control, Ministry of Health, Israel

**Background:** On 27 December 2008, the Israeli Defense Forces initiated Operation Cast Lead, aiming to strike the infrastructure of the terrorist organizations in the Gaza Strip. An emergency situation was declared on the home front, allowing the security forces special jurisdiction over the area. The Home Front Command’s Medical Operation Center, in cooperation with the Superior National Health Authority of the Ministry of Health, coordinated the delivery of community health services.

**Objective:** The objective of this study was to evaluate the delivery of community health services to the Israeli civilian population living in proximity to the Gaza Strip.

**Methods:** A telephone survey was conducted during the 20<sup>th</sup>–24<sup>th</sup> days of the operation. The sample was drawn from the Jewish population living within a radius of 40 km from the Gaza Strip. Questions included need and use of healthcare services, satisfaction with healthcare services, and demographic variables.

**Results:** A total of 901 interviews were conducted. A total of 91.3%, 76.0%, and 89.6% of those who needed primary or a specialist health care or drug prescriptions, respectively, received these services during the operation. The reported satisfaction with the healthcare services during the combat period was very high.

**Conclusions:** According to this survey, it appears that the delivery of community healthcare services during Operation Cast Lead efficiently addressed the needs of the citizens in the area.

**Keywords:** community; health care; Operation Cast Lead; public health

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### Logistics of Protecting a Population during Pandemic Influenza Response

*William G. Burel*

Division of Strategic National Stockpile, Coordinating Office for Terrorism Preparedness and Emergency Response United States Department of Health and Human Services, USA

**Introduction:** The Division of Strategic National Stockpile (DSNS), an element of the United States Department of Health and Human Services' Centers for Disease Control and Prevention (CDC), manages the largest stockpile of medical countermeasures (MCMs) in the US, planning for and managing the logistics of a public health emergency response on a national level.

**Methods:** Beginning in 2005, DSNS initiated a planning and exercise cycle to develop and test the capability to respond to pandemic influenza. Given the large scale of such a response, the logistical requirements of transportation, storage, and staffing were too costly to fully exercise. In April 2009, the CDC plan for pandemic influenza response was based on assumptions, projections, and estimates developed through a series of Agency-led pandemic influenza exercises. Only an actual pandemic event would test this capability.

**Results:** During the initial outbreak of pandemic H1N1 2009 influenza, DSNS participated in the federal response, supporting state and local health departments by shipping 11.5 million doses of antiviral drugs, and 44.6 million pieces of personal protective equipment. These assets, representing 25% of the stockpiled pandemic influenza MCMs allocated to the nation, were delivered within seven days, exactly as directed in the CDC plan, and effectively received, staged, and distributed by the states in accordance with their local plans.

**Conclusions:** The planning and exercises conducted by CDC and DSNS staff, in conjunction with state and local public health officials led to an efficient distribution of over 10,000 pallets of supplies in seven days, validating the planning and logistical assumptions for the DSNS's most challenging mission. The lessons learned from this response are reshaping the way DSNS responds to further improve efficiency, and driving the development of new capabilities to view product availability in the commercial marketplace and inform the allocation and distribution of stockpiled assets.

**Keywords:** influenza; pandemic; preparedness; protection; response

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### Assessment of Preparedness

#### Presentation of the World Health Organization Generic Health Systems' Crisis Preparedness Assessment Tool and its Application in Ukraine and Poland

*Corinna Reinicke; Gerald Rockenschaub*

World Health Organization

**Introduction:** The World Health Organization (WHO) Regional Office for Europe, with support from international experts, has developed a generic assessment tool. Adapted versions so far have been tested in five countries of the WHO European Region (most recently in Ukraine and Poland in May and September 2009). The overall aim was to develop and refine a standardized assessment framework to evaluate essential components of the health system crisis preparedness planning process in member states. The applicability, usefulness, and challenges of the current version of the tool (2.1) and the lessons identified during the two recent assessment missions will be presented.

**Methods:** Multi-disciplinary expert teams, in conjunction with national authorities, conducted country assessments in the Ukraine and Poland in 2009 to identify strengths, weaknesses, and gaps of the crisis management arrangements of the health system. The assessments adopted an all-hazard, multi-sectoral approach using a standardized health system crisis preparedness assessment tool. The tool defines components that are considered essential to ensure a functioning health system during crises, using the WHO health systems framework. The four core functions of the health systems' framework are sub-categorized into main components and key elements with essential attributes considered crucial for the health system crisis preparedness planning process. Expert teams conducted semi-structured and/or informal interviews with key stakeholders during on-site visits, and triangulated the information into country reports. Based on the practical experiences from these previous assessments, the assessment tool will be further revised with amendments and adaptations to be incorporated into the final version.

**Results:** The overall health system crisis preparedness capacities of the Ukraine and Poland were evaluated for benchmarks and indicators based on the WHO health systems' crisis preparedness (HSCP) assessment tool. Strengths and weaknesses were identified and technical recommendations focusing on preparing the systems of both countries for health aspects of mass gatherings in view of the Euro 2012 were shared with responsible officials. The applicability of the tool was tested and further modifications introduced after each mission.

**Conclusions:** The practical application of the WHO standardized HSCP assessment tool demonstrated its added value as a practical reference to conduct standardized country assessments to evaluate generic national health systems' preparedness. The tool will be further refined and developed into a self-assessment tool for countries to evaluate their health system's preparedness.

**Keywords:** assessment; health system; evaluation tool; preparedness; World Health Organization

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