

## CDC's Countermeasure and Response Administration System for Monitoring H1N1 Vaccine Doses Administered

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The National Strategy for Pandemic Influenza: Implementation Plan, released in November 2005, calls for monitoring the appropriate usage of pandemic influenza vaccine.<sup>1</sup> To accomplish this, Public Health Emergency Preparedness Grantees or Project Areas (which include the 50 states, District of Columbia, New York City, Chicago, Los Angeles County, and 8 US territories and freely associated states) are expected to track pandemic influenza vaccine doses administered at the individual patient level and send a subset of data on a weekly basis to the Centers for Disease Control and Prevention (CDC). CDC has created the Countermeasure and Response Administration (CRA) system, a computer-based informatics application, to help Project Areas track medical and nonmedical countermeasures used during a public health emergency or event, including pandemic influenza.<sup>2</sup>

Although the initial pandemic planning process was centered around the H5N1 virus, the pandemic plan has been applied and adjusted to support response to the H1N1 pandemic. CRA has enabled monitoring of the initial uptake of H1N1 influenza A vaccine in different age groups since the availability of vaccine in the United States in early October 2009.<sup>3</sup> For H1N1 pandemic influenza, CRA was designated as the initial information system for monitoring vaccine doses administered, particularly in the early stages of the campaign when vaccine is expected to be in limited supply.

CRA is a flexible and customizable computer application. Its data fields can be tailored according to the needs of the event or state or local health departments. To accommodate the variation among Project Areas capabilities and resources, CRA provides 3 methods for Project Areas to submit their data to CDC:

- Option 1 (data exchange). For Project Areas collecting data via an existing immunization information system or other similar application, technical specifications were developed for 3 different formats to allow direct data exchange between the state immunization information system and the CRA application: ASCII flat file, extensible markup language file, and Health Level 7. Data exchange then occurs either manually via upload through the CRA application or automatically via the Public Health Information Network Messaging System.

- Option 2 (Web entry aggregate). For Project Areas collecting and reporting data manually, an aggregate reporting screen is provided in the CRA application for direct entry of aggregate data via a Web browser.
- Option 3 (Web entry detail). For Project Areas using the CRA application to directly document and report individual patient level data, the application automatically calculates the aggregate counts for reporting.

The current version of CRA (version 1.10) has taken into account areas identified for improvement following a nationwide pilot test in 2007 and exercise in 2008. These exercises tested the capability of CRA to receive and report data and the capability of Project Areas to collect, aggregate, and send data using seasonal influenza vaccine as a proxy for pandemic. The exercises also validated the functionality of CRA, its technical requirements, and data-collecting process. For participating Project Areas, these exercises identified the necessary enhancements to the data submission process and streamlined and tested the method for reporting aggregate counts to CDC. In addition, health departments that normally do not work with registries became more involved and familiar with them. The exercises also promoted communication and partnerships between local and regional responders. As a result, Project Areas have benefited from these preparation exercises for a pandemic response.<sup>2</sup>

Enhancements to the CRA system were incorporated into version 1.10 as a result of the outcome and feedback gathered from these preparation exercises. CRA is well positioned to receive H1N1 vaccine doses administered data and contribute information on the progress of the vaccine campaign.

Monitoring H1N1 pandemic influenza vaccine is an important component of the US public health response to this newly emerged H1N1 pandemic to track vaccine utilization in different age groups.<sup>4</sup> CRA will monitor the administration of the vaccine in the following age groups: 6 to 23 months, 24 to 49 months, 5 to 18 years, 19 to 24 years, 25 to 49 years, 50 to 64 years, and  $\geq 65$  years old. The narrow age group in the children and young adult population is based on lessons learned from H1N1 epidemiology of 2009.

Although the current preparation and response activities are focused on H1N1, avian influenza A (H5N1) is still present and represents a significant potential threat. In the event of sustained human-to-human transmission of H5N1 and the possibility of an H5N1 pandemic concurrent with the H1N1 pandemic, vaccine will be produced for H5N1 and CRA will need sufficient scalability to accommodate the surge in vaccine utilization monitoring activities expected for separate H5N1 and H1N1 events.

It is understandable that resources at the state and local health department levels will be stretched to achieve proper tracking of the vaccine doses administered, but the benefits of such tracking are many. From the experience of various real events and exercises in which CRA has been used, the benefits of using CRA include assisting in tracking adverse events, assisting state–federal coordination, tracking utilization against distribution, and using automation for public health service.

CRA is a functioning informatics system for monitoring vaccine uptake in different age groups in the early stages of the H1N1 response when vaccine supply is inadequate. Experience from H1N1 doses reporting will be valuable to CRA as a system and to Project Areas as system users in identifying areas of strengths and areas for improvement that could be applied to future public health events.

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Received for publication September 25, 2009; accepted October 12, 2009.

### Authors' Disclosures

The authors report no conflicts of interest.

### Acknowledgments

The authors are grateful to the vaccine tracking coordinators and staff for states, major metropolitan areas, territories, and freely associated states who have been critical partners in the planning and implementation of the 2009 H1N1 vaccine doses administered event, as well as in the pilot test conducted in 2007 and the exercise conducted in 2008. They are also thankful to the following CDC staff and current or former contractors working for CDC who provided valuable suggestions or services, or who reviewed the manuscript: Jerome I. Tokars, John Lindsey, Guy Faler, Cynthia Vinion, and Dianne Wylie.

ISSN: 1935-7893 © 2009 by the American Medical Association and Lippincott Williams & Wilkins.

DOI: 10.1097/DMP.0b013e3181c65fa9

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