

2009-10 H1N1 Influenza and Antiviral Drugs: Experiences of Local Health Departments in California

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Introduction

Prior to the 2009-2010 influenza season, public health professionals at local, state, and federal agencies had taken considerable efforts to plan for an influenza pandemic in the United States. Among these efforts were the large-scale purchase of antiviral drugs (antivirals) and the development of plans to utilize these medications to treat influenza illness and to slow the spread of a pandemic. While antiviral management was not the central concern for Local Health Departments (LHDs) during the 2009-10 H1N1 influenza response, LHDs nevertheless drew on their previous work and engaged in a number of antiviral activities, including: acquiring, allocating, distributing, dispensing, tracking, and communicating to the public and clinical community about these publicly purchased antiviral drugs.

The purpose of this study was to describe the range of methods used by LHDs in California to manage these antiviral activities, and to gain a better understanding of the related challenges experienced by health departments and their community partners.

Methods

Data for this study were collected in two phases: a focus group and a web-based survey. Both phases of this research examined the role of LHDs in managing antiviral activities during the 2009 H1N1 influenza response, with a specific focus on publicly purchased antivirals. Primary research areas included:

- Acquiring, distributing, and allocating antivirals
- Antiviral dispensing, use, and shortages
- Antiviral tracking and monitoring
- Antiviral communication/guidance
- Antiviral challenges
- Usefulness of antiviral pre-pandemic plans

Focus Group – July 2010

- **Purpose.** The purpose of the focus group was to identify key antiviral issues experienced by medical and health agencies during the 2009-10 H1N1 response and to inform the antiviral survey questions and implementation methodology.
- **Participants.** Members of the Pandemic Influenza Vaccine and Antiviral (PIVA) Advisory Group were invited to participate in the 2-hour teleconference-based focus group. This statewide advisory group consists of pandemic planners and experts in California was convened prior to the 2009 H1N1 pandemic, for the purpose of providing the California Department of Public Health with recommendations regarding vaccine and antiviral implementation during an influenza pandemic.
- **Topic Areas.** The focus group topics included questions about acquisition, dispensing and use of antivirals as well as information on how decisions were made during the response period and any challenges that were faced in these areas.

Statewide Survey of Local Health Departments – August/September 2010

- **Overview.** The second phase of this project consisted of a web-based survey that included the same topics covered in the focus group. The initial survey was based on literature reviews and experiences of study personnel. Upon review of the focus group notes, the survey was adapted to incorporate the experiences expressed during the focus group. The survey was uploaded into Qualtrics (Qualtrics Labs, Inc., Provo, UT) for ease of administration.
- **Recruitment.** The survey link was distributed via email to both the Health Officers and Strategic National Stockpile (SNS) Coordinators for each of the 61 local health departments in the state of California. The recipients were instructed to forward the survey invitation to the person within their department who was most informed about the health department's 2009 H1N1 antiviral response.
- **Survey Period.** Survey data collection took place over the course of three weeks in August and September 2010. Two reminders were sent to invited participants via email in order to increase response rates.
- **Analysis.** Survey data were downloaded from the web survey provider and merged with county demographic data. Demographic data for the LHD catchment areas were collected from publicly available sources in order to classify LHDs by population, income, urbanity, rates of uninsured and others. Data were analyzed in MS Excel and Stata 11 (StataCorp LP, College Station, TX).

The protocol for this study was approved by the Committee for Protection of Human Subjects at the University of California, Berkeley.

Research Sample

- Forty-four of 61 LHDs completed the survey (72% response rate)
- Respondents identified themselves as:
 - 55% SNS Coordinators
 - 25% Emergency Preparedness Coordinator/Director
 - 27% Health Officer/Deputy Health Officer
- 98% of respondents stated that they knew "A lot" about their LHD's antiviral response.

Findings

Acquiring, distributing, and allocating antivirals. All LHDs received antivirals from state or federal stockpiles, with a few LHDs also receiving antivirals from a local cache or purchasing antivirals directly from the commercial or retail market. Twenty-eight LHDs reported distributing publicly stockpiled antivirals to other organizations to dispense to the public, which accounts for 66% of respondents (see Table 1).

Antiviral dispensing, use, and shortages. LHDs were asked how many individual courses of antivirals were dispensed for patient use in their jurisdiction. Thirty percent of LHDs reported that no antivirals were dispensed in their jurisdiction. Of those LHDs who dispensed any antivirals, almost 90% dispensed fewer than 250 doses of antivirals (range less than 100 doses to more than 10,000 doses). Allowable uses and target for these publicly stockpiled antivirals are described in Table 2.

Most LHDs indicated that shortages of at least one type of antiviral had been reported to them. Shortages were primarily of pediatric formulation of oseltamivir followed by adult formulation of oseltamivir (reported by 57% and 23% of LHDs, respectively).

Antiviral tracking and monitoring. Twenty-four LHDs received antiviral utilization data from dispensing sites with varying degrees of frequency. Almost half of these LHDs were receiving weekly antiviral utilization reports. Some health departments received basic utilization data, such as number of courses dispensed and/or lot numbers, while others received more specific data, including demographic information, intended use of antivirals (treatment, PEP), and/or reason that public stockpiles were utilized (e.g. shortages, uninsured recipient). These data were primarily used for making allocation decisions, surveillance, future antiviral planning, reaching target populations, and providing data to other agencies.

Antiviral challenges. LHDs reported various antiviral challenges. Among the most widely cited issues were the changes in antiviral guidance and multiple sources of information. These issues presented a serious challenge to LHDs both early and late in the response effort. Staffing and shortages of pediatric antivirals also remained significant challenges for LHDs throughout this period (see Figure 1).

Usefulness of antiviral pre-pandemic plans. Twenty-nine LHDs reported having a written plan that addressed how publicly purchased antivirals would be used during a pandemic prior to the 2009 H1N1 response. Nearly 80% of these LHDs found this plan to be useful or very useful. LHDs with more detailed plans were more likely to find their plans to be "Very Useful" (See Figure 2). One respondent noted, "The plan was not as helpful as the thought and time to create the plan. We had thought about the issues surrounding antiviral medication dispensing so when we had to do it, it was easier. The plan provided the foundation for the decisions that had to be made."

Table 1. Number and proportion of LHDs distributing publicly stockpiled antivirals to other organizations for dispensing to the public (n=28)

Organization	% of LHDs, (N)
Public clinics / Health centers	71% (20)
Private hospitals	64% (18)
Retail pharmacies	54% (15)
Public hospitals	46% (13)
Private clinicians	32% (9)
Tribal health clinic/hospitals	29% (8)
College/Universities	18% (5)
Direct to patient (e.g. household delivery, pick-up at health department)	18% (5)
Other	18% (5)
Prisons	18% (5)
Skilled nursing facilities / Long term care facilities	14% (4)
Airports	0% (0)
Military bases	0% (0)

Table 2. Factors determining allocation of antiviral to dispensing sites (n=28)

Factor	% of LHDs, (N)
Based on the characteristics of patient population served (e.g. uninsured).	41% (11)
Based on requests from medical and treatment facilities	37% (10)
Based on the estimated number of persons served by a medical or treatment facility	33% (9)
Based on epidemiological data and patient volume	26% (7)

Table 3. Allowable uses for publicly stockpiled antivirals (n=32)

Allowable Use	% of LHDs
Treatment of ill persons	90% (28)
Post-Exposure Prophylaxis (PEP)	77% (24)
Pre-Exposure Prophylaxis (PrEP)	23% (7)
Determined by the dispensing site	26% (8)
Other	6% (2)

Figure 1. Antiviral Challenges Reported by LHDs, by Time Period (n=44)

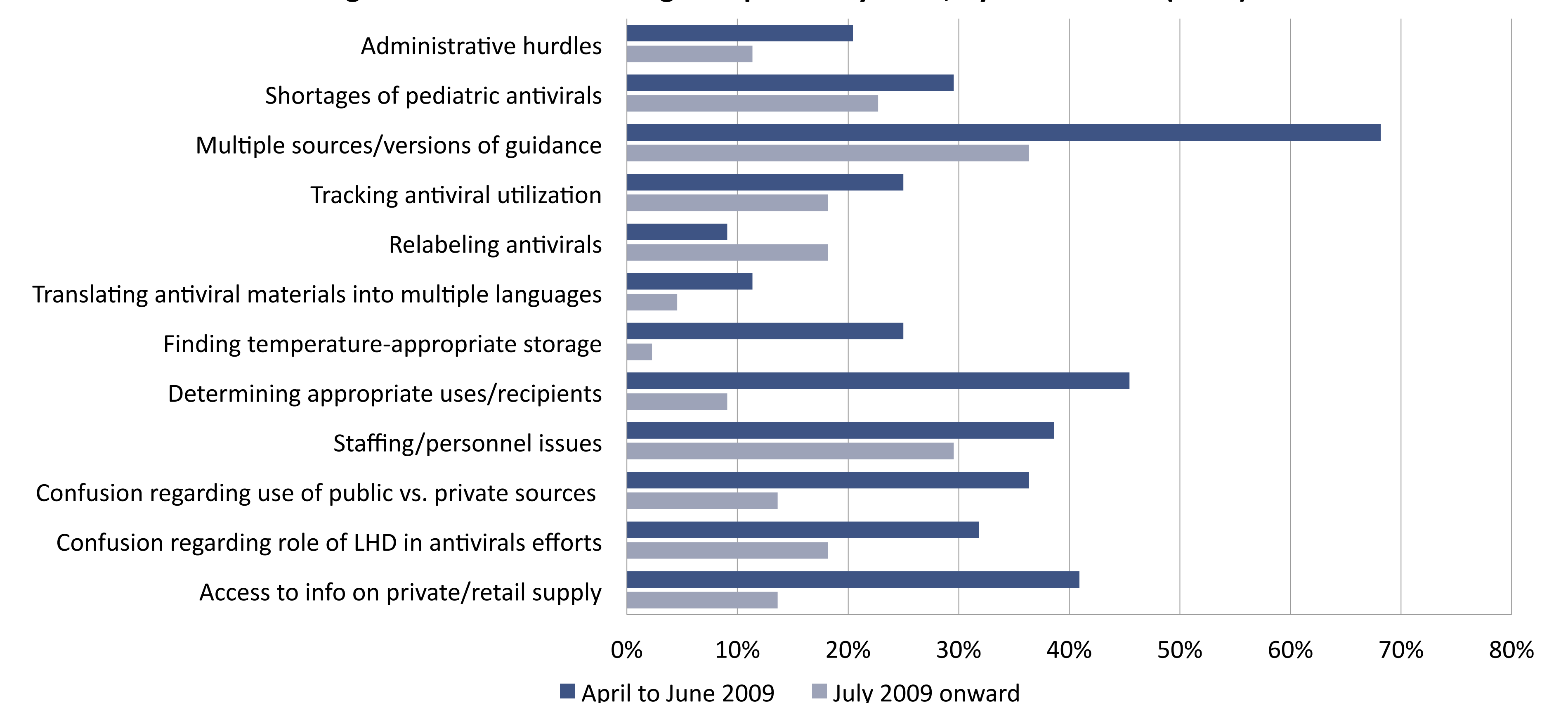
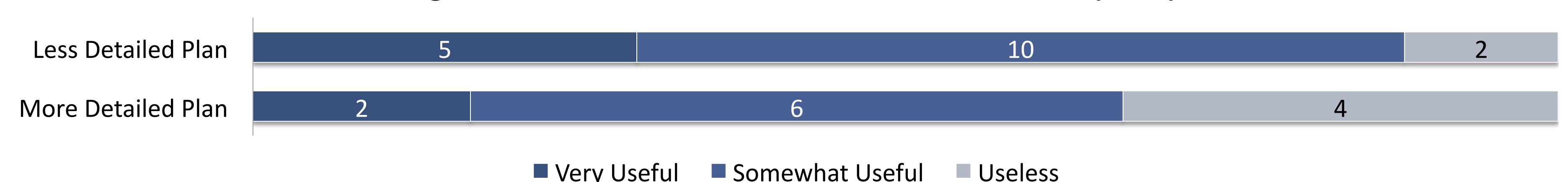


Figure 2. Usefulness of Pre-Pandemic Antiviral Plan (n=29)



Discussion

LHDs engaged in a range of activities to support and direct the use of publicly purchased antivirals during the 2009-10 H1N1 response. This report is among the first to systematically characterize the experiences of LHDs across a state, providing us with insight regarding the approaches used and the challenges faced by LHDs. A more detailed report of this investigation will be released in the near future.

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