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Sandra B Ockers

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COMMUNICATION PREFERENCES OF HEALTH CARE PROVIDERS DURING AN  
EMERGENCY:

Data from four state surveys conducted before and after the H1N1 influenza mass vaccination campaigns

By

Sandra B. Ockers  
Degree to be awarded: Master of Public Health

Global Health

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Data from four state surveys conducted before and after the H1N1 influenza mass vaccination campaigns

By

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B.S., Davidson College, 2006

Thesis Committee Chair: Saad B. Omer, PhD.

An abstract of  
A thesis submitted to the Faculty of the  
Rollins School of Public Health of Emory University  
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Master of Public Health  
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2011

## Abstract

### COMMUNICATION PREFERENCES OF HEALTH CARE PROVIDERS DURING AN EMERGENCY:

Data from four state surveys conducted before and after the H1N1 influenza mass vaccination campaigns

By Sandra B. Ockers

**BACKGROUND:** In emergency response, communication between public health officials and health care providers is essential and can become complex and challenging. Available studies are all single-state surveys that did not delve deeper into trying to determine what worked and did not work regarding communicating effectively during the H1N1 vaccination campaign from the perspective of health care providers. This study describes the most effective communication methods reported by providers and qualitatively identifies the desired improvements in communication between public health officials and health care providers.

**METHODS:** We conducted our research in 4 states across 2 years: in Oregon and Louisiana in 2009 and Washington and California in 2010 and 2011, respectively. The primary objective of our state-based surveys was to assess preparedness-related issues regarding an emergency involving distribution of a vaccine. All data was analyzed using SASv9.3 (SAS Institute, Cary, NC). Descriptive statistics and univariate frequencies were calculated for select survey variables. For the qualitative analyses, thematic review was conducted on the free-text responses.

**RESULTS:** The two most effective methods of communication in all four states were email and blast fax. Face to face conversation was the most frequently chosen method of disseminating information received from public health officials to clinic staff, reported by 75% of respondents. Overall, the majority of respondents reported receiving useful information from the health department. Areas for improvement identified from the qualitative analysis were more information regarding vaccine distribution and availability and help educating the public about the importance of vaccination.

**CONCLUSION:** Public health officials should employ email and fax as the primary distribution method when trying to communicate with health care providers. Public health messages should be formatted in such a way as to promote verbal and hard copy dissemination. Suggestions for improvement revolved around more accurate and timely information regarding vaccine availability and distribution. During an outbreak, public health agencies should continue to work diligently to educate the public about the necessity of vaccination through a variety of media forms. Finally, hosting mass vaccination clinics would help take some of the burden off of private practitioners who may be experiencing vaccine shortages or delays.

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## **Background and Literature Review**

During an emergency situation, the government and local communities depend on health care providers to help prevent excess deaths, treat the injured, and lessen suffering.[3] Components of an effective response include ensuring that health care providers are kept abreast of public health threats and emergencies, receive timely guidelines and updates, and facilitate surveillance. [4] Existing literature regarding communication between public health officials and health care providers during disasters is limited.

Revere et al.'s (2011) literature review focused on addressing issues related to public health emergency preparedness and response (PHEPR).[5] This review found there were 25 different systems used to communicate messages from public health officials to health care providers. The majority of these systems were located at the state-level (40%) followed by city-level (32%), county-level (16%) and regional-level (8%). The majority of systems used email (64%) to deliver PHEPR messages but some also used cellular (36%), fax (36%), pager (28%), SMS text messaging (16%), messaging through an electronic medical record (12%) and social media (4%). A majority of systems used more than one method of communication (60%). Very few of the papers reported any kind of evaluation of the tools currently being used to communicate with health care providers. The review concluded that little is known about the effectiveness of PHEPR communications from public health to health care providers and that more scientifically rigorous research is needed to evaluate effective communications between public health and health care providers.

Only two studies have been conducted that specifically attempt to address the communication practices and preferences of health care providers during an emergency, both of

which were conducted in relation to the 2009 H1N1 outbreak. The first study, conducted by Dearing et al. (2011), examined the effectiveness of communication between public health departments, community physicians and pharmacists during the initial H1N1 outbreak in 2009.[6] The authors employed a cross-sectional survey to gather information regarding information dissemination and receipt during the early H1N1 outbreak from health departments, physicians and pharmacists. A total of 95 out of 518 surveys were completed by physicians resulting in an 18% response rate while the response rate for the health departments was 65%. Ninety-five percent of participating local health departments (LHDs) reported that health care professional notification was a risk reduction strategy initiated in their local jurisdiction and 81% of responding LHDs rated their capacity to disseminate information to health care providers as very good or excellent. Only 52% of surveyed physicians and 16% of surveyed pharmacists, however, reported receiving any information about H1N1 from a LHD. Additionally, 74% of pharmacists were not aware of their LHD's emergency plan in the event of an influenza outbreak. The study concluded that more research is needed that identifies improved methods for members of the public and private health systems to communicate and share information.

The second study conducted by Staes et al. (2011) attempted to describe the communication processes between public health agencies and frontline clinicians during the first wave of the 2009 H1N1 pandemic, assess clinicians' use of and knowledge about public health guidance and, explore clinicians' perceptions and preferences about communication during a public health emergency.[7] The authors performed a process analysis and surveyed 509 office-based primary care providers in Utah. Office based primary care providers were targeted for two major reasons: information flow may vary among different hospital institutions and office based care is the most frequent routine source of care for individuals in the United States. The survey



also targeted clinicians affiliated with the University of Utah, a large healthcare organization (Intermountain Healthcare) and clinicians unaffiliated with any institution or organization. Of the 509 surveys distributed, they received 141 survey responses which showed that providers received information from a variety of sources: 68% received information from the state public health department and almost 100% received information from health care organizations. Only one-third of respondents visited a web site frequently enough (i.e., at least weekly) to obtain updated guidance. Clinicians were knowledgeable about guidance that did not change (high-risk groups, testing and treatment, for example) after the primary outbreak in the spring of 2009; however, correct knowledge regarding reporting requirements was lower after guidance changes. Clinicians stated that they felt overwhelmed by email volume, preferred a single institutional email for clinical guidance and suggested that new information be concise and clearly identified. The Centers for Disease Control and Prevention (CDC) H1N1 website was the most frequently visited website with 53% of respondents reporting visiting the site at least once a week. In contrast, only one third reported visiting the Utah Department of Health website (35%) or their institutional website (38%) at least once a week.

Concerning who and how to test individuals for H1N1, Intermountain and University of Utah clinicians most commonly used their own institutional guidelines (73%) as their primary source of information while other clinicians used institutional (38%), state (33%) and national (24%) sources as their primary source.[7] Regarding treatment guidance, institutional sources (55%) were preferred among all clinicians regardless of employer followed by CDC (28%) and local/state public health (13%). For patient education, the CDC (40%) and institutional resources (32%) were most commonly recommended.

Approximately 60% of providers stated they received information from two to four sources during the outbreak.[7] The majority of affiliated clinicians reported that they received “too much” email while only 35% of non-affiliated clinicians felt similarly. Regardless of employer, those individuals who received email from a single source were more likely to report the information they received as “just right” when compared to individuals who received information from at least three sources ( $P < .02$ ).

Qualitative data analysis led to three important conclusions: limit email to a single credible source, identify new information so the reader does not have to search for it and finally, note when and why local recommendations differ from CDC recommendations.[7] The article concluded that healthcare organizations and institutions played a key role in distributing public health guidance and were the preferred sources of guidance regarding treatment and testing for clinicians employed by a health care system. The authors recommended that future emergency communication plans work to coordinate messages from public health agencies into one communication sent by a health care system to its employees. These messages should identify new information clearly and note differences between CDC and local recommendations when necessary.

While this Utah-based study focused on where health care providers sought information about H1N1, it did not specifically examine communication modalities between public health officials and health care providers. Klein et al. (2010) attempted to query emergency department staff across the US about communication methods and overall attitudes regarding safety and treatment during the H1N1 outbreak in the spring of 2009.[8] While the total number of surveys distributed among health care professionals is unattainable, 298 surveys were completed by ER physicians, nurses, advanced care practitioners, managers and ancillary staff like X-ray

technicians and patient registration personnel. Due to the convenience sample design, the internal validity of the study is questionable and the results may be biased. The majority of responses were from individuals directly involved in patient care (82%). Eighty-eight percent of respondents reported obtaining information regarding H1N1 from multiple sources, including the internet, hospital and other media sources. If the respondents did not use multiple sources, the most commonly cited single source of information was the hospital management (51%) followed by the internet (37%). The CDC was the most commonly accessed website for both direct and indirect patient care providers (~33% for both) followed by local health department websites (11% and 8%, respectively). Indirect patient care providers were much more likely to depend on direct verbal briefings as a source of information (68%) than direct patient care providers ( $P=.0001$ ). Forty percent of respondents felt that they received mixed messages. The paper concluded that information distribution must be tailored, even within an institution, to the communication preferences of those who need to have the information. For example, email may not be an effective way to communicate with ancillary staff; a more direct approach may be necessary.

There are few studies in existing literature on the communication practices and preferences of health care providers during an emergency. Studies which have been conducted have found similar results, including most clinicians receive information regarding emergencies from multiple sources with a health care organization being the most commonly cited source of information.[7, 8]. Three studies found that CDC was the most frequently accessed website.[6-8]. It is also interesting to note that while one study showed that physicians report a lack of information on H1N1 from local health departments, other studies are showing that health care providers believe they are receiving too much information from multiple sources during an

emergency.[6-8] These inconsistencies suggest that more research is needed on how the public health enterprise can most effectively communicate with health care providers during an emergency.

# Manuscript

## **A. Introduction**

On June 11, 2009, the World Health Organization (WHO) declared a worldwide pandemic of a novel strain of H1N1 influenza that eventually led to more than 18,000 deaths worldwide.[9] By September 2009, an influenza vaccine was developed, approved by the Food and Drug Administration, and deployed to help curb the spread of this disease.[10] Public health officials and health care providers faced unique challenges including implementing a vulnerability-based tiered vaccination strategy, educating a nervous public about the vaccine's efficacy and safety, and maintaining an effective risk communication campaign.[7] In an emergency response with these types of challenges, communication is essential and can become complex and challenging.[1, 2]

In the area of emergency-related communications between public health officials and health care providers, most of the research has focused on communication from the health care provider to public health agencies.[11] Information is constantly being submitted from health care providers to public health officials for aggregation, analysis and, in some cases, for early detection of possible public health emergencies.[12]

Few studies, however, have examined how to improve communication between public health agencies and health care providers. Those that have been conducted are all single-state surveys that often took a mechanistic approach to defining the problem of determining effective communication strategies. These studies did not delve deeper into trying to determine, from the perspective of a health care provider, what worked and did not work regarding communicating effectively during the H1N1 vaccination campaign. Few avenues for intervention have been clearly laid out in the literature.

Our study explores the communication preferences of health care practitioners in four states. More specifically, it focuses on communications between public health officials and practitioners during disaster responses. This study describes the most effective communication methods reported by providers and qualitatively identifies the desired improvements in communication between public health officials and health care providers.

## **B. Data and Methods**

We conducted our research in 4 states across 2 years: in Oregon and Louisiana in 2009 and Washington and California in 2010 and 2011, respectively. The primary objective of our state-based surveys was to assess preparedness-related issues regarding an emergency involving distribution of a vaccine or other countermeasure. The timing of the Oregon and Louisiana surveys allowed us to assess how these two states were preparing for the upcoming H1N1 vaccination campaign in 2009, while the California and Washington surveys allowed us to, retrospectively, assess experiences after the 2009 H1N1 vaccination campaign. This study received approval from the Emory Institutional Review Board (IRB) and the IRB at each state health department.

### **Survey Methodology:**

We sampled all Vaccine for Children (VFC) fund providers in both Oregon and Louisiana. Survey questions addressed topics of preferred sources of information regarding public health threats such as federal agencies, state and local health departments, professional societies or news media; preferred communication methods with health departments and patients; barriers to vaccine administration; staff experience with disaster preparedness and response; and use of immunization information systems (IIS).

Prior to launch of the first surveys conducted in 2009, a pilot survey was completed by five sites in Louisiana and seven in Oregon. Both the pilot and final surveys in Oregon and Louisiana were administered using Feedback Server® (Data Illusion, Geneva, Switzerland).

Recruitment for Oregon and Louisiana was conducted through an initial blast fax to all VFC provider sites with a request to participate in an online survey. In both states, this initial fax was followed by a reminder fax two weeks later to non-responder VFC sites. Low participation rates in Louisiana led to a second reminder fax followed by randomized phone calls to non-responders. The final survey was administered between October 9, 2009 and November 16, 2009 in Oregon and between October 12, 2009 and November 25, 2009 in Louisiana.

In Washington a stratified random sample of 800 vaccine providers was drawn out of 2,523 eligible practices, defined as those practices who ordered H1N1 vaccine from the Washington State Department of Health. In California, 800 out of 9,210 eligible providers comprised the stratified random sample. In Washington, women's health facilities and correctional facilities were oversampled while in California, women's health facilities and pharmacies were oversampled for subsequent analysis. In both states, the remaining providers were proportionally sampled by practice type. After eliminating duplicates, undeliverable surveys and non-qualifying practices, 765 surveys were delivered in Washington while 777 were delivered in California.

In Washington and California, identical copies of the survey were available online and in printed form. Sampled providers received a fax on Sep 15, 2010 informing them of the upcoming survey and its defined goals. Two weeks later, the survey was sent via FedEx as a "survey kit" to the person identified by the state's health department as the primary contact for ordering H1N1 vaccine. The kit included a hard copy of survey with the URL to access the online version of the

survey printed on all survey materials. The online survey was administered using Feedback Server v2008.1 (Geneva, Switzerland).

Non-respondents were sent a reminder fax two weeks after first mailing. Three weeks after first mailing, non-responders were contacted via telephone up to a maximum of three times over a period of nine weeks. Nine weeks after initial mailing, the remaining non-responders received a personalized fax reminder. In California an additional fax was sent with the survey close date. The final survey was administered from September 29, 2010 to January 6, 2011 in Washington and from June 10, 2011 to September 30, 2011 in California.

## **Statistical Analysis**

For Oregon and Louisiana, the web-based survey responses were imported into and analyzed in SASv9.3 (SAS Institute, Cary, NC). Descriptive statistics and univariate frequencies were calculated for select survey variables.

For Washington and California, the paper-based survey responses were entered manually into Feedback Server v2008.1 (Geneva, Switzerland). Together with the web-based survey responses, all responses were imported into and analyzed in SASv9.3 (SAS Institute, Cary, NC). Descriptive statistics and univariate frequencies were calculated in a weighted analysis for select survey variables.

For the pooled analysis, data from all four states were combined into one data set. New variables were created from the unique state variables for questions present in all four state surveys. If differences were present, these have been noted in the results section.

For the qualitative analyses, thematic review was conducted on the free-text responses. These broad categories were further refined during the development of a code book for each



question. The data was coded by two independent evaluators and percent agreement was calculated. The coders had greater than 84% agreement for all questions.

## **C. Results**

The response rate was 42% in Oregon and 30% in Louisiana. In California, the overall response rate was 69% while in Washington it was 80.9%.

Overall, nurses were the individuals most commonly reported as being responsible for receiving and disseminating updates regarding influenza vaccine administration from public health officials to clinic staff, with 30% of respondents across all four states choosing them (Table 1). By state, nurses were the most commonly reported individuals in Louisiana and Washington. Nurse managers/directors were the most commonly reported individuals in Oregon. In California, however, nurses at 16% did not place in the top three.

Following nurses in the pooled analysis were office/pharmacy managers with 26% and medical assistants with 25% (Table 1). One interesting difference among the four states is the range for tasking physicians with receiving and disseminating information to clinic staff. Only 10% of providers in Washington report using physicians while this percentage increases to 36% of providers in California. In fact, physicians were the most frequently chosen individuals tasked with receiving and disseminating information to clinic staff in California.

With regards to the most frequently relied upon entities for timely, accurate information regarding outbreaks or other public health threats, state and local health departments were the most frequently relied upon entities in all three states (Table 1). In Washington, further breakdown of state versus local health departments revealed that local health departments were more frequently relied upon as a source of timely accurate information than the state health

department (65% vs. 45%, respectively) State and local health departments were followed by federal government agencies, such as the CDC, in all three states. (This information is not available for California.)

Face to face conversations were the most frequently chosen method of disseminating information received from public health officials to clinic staff, reported by 75% of respondents (Table 1). This was followed by email (54%) and hard copy (46%) in the pooled analysis. Email had the widest range among the states with around 60% of respondents in Oregon and Washington reporting using email but only around 35% of respondents in Louisiana and California doing the same.

Overall, the vast majority of providers in all four states found the information they received from the state health department to be either “Useful” or “Very Useful” (Figure 1). In Washington and California, where data was collected on the usefulness of local health departments, the vast majority of providers in those states rated the information received as “Very Useful” or “Useful” (85% in Washington and 74% in California).

The two most effective methods of communication in all four states were email and blast fax, although which one was first varied, regardless of state and scenario type (Figures 2-5). The least effective methods of communication were text message and twitter alerts in Oregon and Louisiana (Data not available for Washington and California). California was the only state where scenario did seem to influence preference of mode of communication. After email and fax, phone calls were preferred in emergency situations while notifications via postal mail were preferred for routine communication (Figure 5). Newsletters were also more preferred for routine communication than emergent communication.

Regarding what state health departments could have done better in terms of communicating information on influenza vaccination to practices, the major themes identified qualitatively across the four states were: 1) providers requested more accurate and frequent information on vaccine distribution and availability 2) providers preferred communication be sent by email or fax 3) providers requested improved communication to the public (Tables 2-5). There were also some minor themes across the four states regarding the accuracy and timeliness of information received from the health department as well as concern over the cost of vaccination. The cost of vaccination was primarily a concern of providers in California after the 2010 pertussis outbreak (Table 5). In Washington, we found an equal number of comments requesting more information as there were requesting less information (Table 4).

In Washington and California, we asked how the local health department could have done better and the major themes were quite similar to those identified for state health departments (Table 4, 5). In Washington, there was again an equal distribution of requests for more information as for less information (Table 4). Better communication to providers and the public was also requested. In California, the major themes of improvement were very similar to the suggestions made for the state health department except providers were more likely to provide suggestions on methods of distribution to public, for example, mass vaccination clinics (Table 5).

In terms of what recommendations providers had for state and local public health officials to help them plan and manage the upcoming seasonal influenza/H1N1 vaccination campaigns as effectively as possible, we found the following two major themes: 1) Better information regarding vaccine distribution and availability; 2) Improve communication to the public. Providers were also concerned with whether there would be enough vaccine and had opinions on how the vaccine should be distributed to the public, for example, mass vaccination

clinics, health fairs and school vaccinations (Tables 2-5). In California, providers were also concerned with having enough man power for the upcoming season (Table 5).

In California only, we asked what kind of information would be most useful to receive from public health agencies and providers requested the following three types of information: 1) information about vaccines (administration, distribution, side effects); 2) information to give to the public; 3) outbreak information (location, number of cases, guidelines) (Table 5). We also asked providers to state if they were unable to receive communication by any of the methods we provided for the preferred methods of communication question. Providers responded overwhelmingly that they were unable to receive communication via twitter feed and text messages (Table 5).

## **D. Discussion & Conclusion**

In pooled analysis, nurses were the most commonly reported individuals responsible for receiving and disseminating updates from public health officials to clinic staff. Office and pharmacy managers were the next most frequently reported individuals. California was unique, however, in that physicians were the most frequently reported individuals tasked with receiving and communicating public health updates to clinic staff.

State and local health departments were always the number one relied upon source of timely, accurate information regarding outbreaks or public health threats. This is appropriate as state and local health departments should have the most pertinent information for private practitioners regarding public health threats that affect their patient populations.

Face-to-face communication was the most commonly reported method of dissemination of public health updates to clinic staff. Hard copy facsimiles and flyers and email were also reported frequently. Taking these results into consideration, messages sent from public health

departments should be formatted to include “talking points” to facilitate verbal dissemination as well as an attachment that can be used for hard copy or email dissemination.

With regards to the most effective methods of communicating with health care providers, email and fax were the overwhelming choice regardless of the scenario type. This finding is not surprising and supported by the literature.[13] For example, the review conducted by Revere et al. found that the majority of systems employed by public health officials to communicate public health emergency preparedness and response messages used email and fax most commonly.[5] We also identified that providers are not requesting and frequently unable to receive messages via text messages and twitter feeds. It is encouraging, therefore, that Revere et al. found only 16% of systems for communicating PHEPR messages employed text messaging and 4% employed “social media” including Twitter.

Qualitative analysis revealed that providers overwhelmingly expressed a desire for more information regarding vaccine distribution and availability. This information is important during pandemics in which local re-allocation of vaccines may be a critical component of an effective response. In addition, delays in influenza vaccine delivery have been reported to reduce patient satisfaction, decrease the percentage of vaccinated individuals, disrupt scheduling of vaccine clinics, increase referral of patients elsewhere for vaccination, and result in a negative financial impact caused by unused vaccine. [14]

Providers also want help educating the public either through increased public service announcements on television or radio and pamphlets/flyers to handout to patients in their practice. Providers seemed concerned about quelling the concern that surrounded the 2009 H1N1 outbreak and that priority patients were not aware of their status.

There are several limitations to this study. The first is recall bias as the Washington and California state surveys were retrospective, asking questions regarding how public health departments had responded to the 2009 H1N1 vaccination campaign. There may also be some misclassification bias as respondents may not have known exactly who is responsible for receiving and disseminating public health updates to clinic staff, what entity is relied upon the most for timely, accurate information regarding public health threats, and whether staff had been trained in emergency preparedness or actually participated in an event. Although our overall response rates were good, there may still be some significant differences between those individuals/practices that chose to respond versus those that did not. Finally, when asking open-ended questions, it is known that these questions are likely to elicit responses from those who have strongly held opinions and may not reflect the overall provider sentiment.

Public health officials should employ email and fax as the primary distribution method when trying to communicate with health care providers. Public health messages should be formatted in such a way as to promote verbal and hard copy dissemination. Overall providers found the information received from state and local health departments useful. Suggestions for improvement revolved around more accurate and timely information regarding vaccine availability and distribution. During an outbreak, public health agencies should continue to work diligently to educate the public about the necessity of vaccination through a variety of media forms. Finally, hosting mass vaccination clinics would help take some of the burden off of private practitioners who may be experiencing vaccine shortages or delays.

## **Public Health Implications**

The policy implications of this study are several. The first is that all communication sent to health care providers during an emergency should be sent via email or fax. These messages should be drafted in such a way as to promote both verbal and hard copy dissemination. Secondly, more funds should be targeted towards educating the public during disasters. These educational efforts should focus on quelling fears and hysteria while still providing accurate information regarding the outbreak and high risk patient groups. Finally, more research needs to be conducted regarding how best to distribute and track vaccines during outbreaks. As many providers experience shortages and delays of vaccine during regular seasonal influenza, there is clearly a need for more efficiency. Solving this problem will require novel approaches from the basic sciences through to public health agencies. Public health agencies must continue to encourage the use of immunization information systems by private providers possibly through the use of incentives. IIS systems are incredibly important to help prevent the duplication of efforts regarding vaccination. In addition, public health agencies need to develop vaccine tracking systems that require the non-primary care providers of vaccines (grocery stores, pharmacies, walk in clinics, public health departments) to enter their vaccine supply status weekly so that a better picture of where individuals could receive vaccine is available to the public as well as private health care providers.

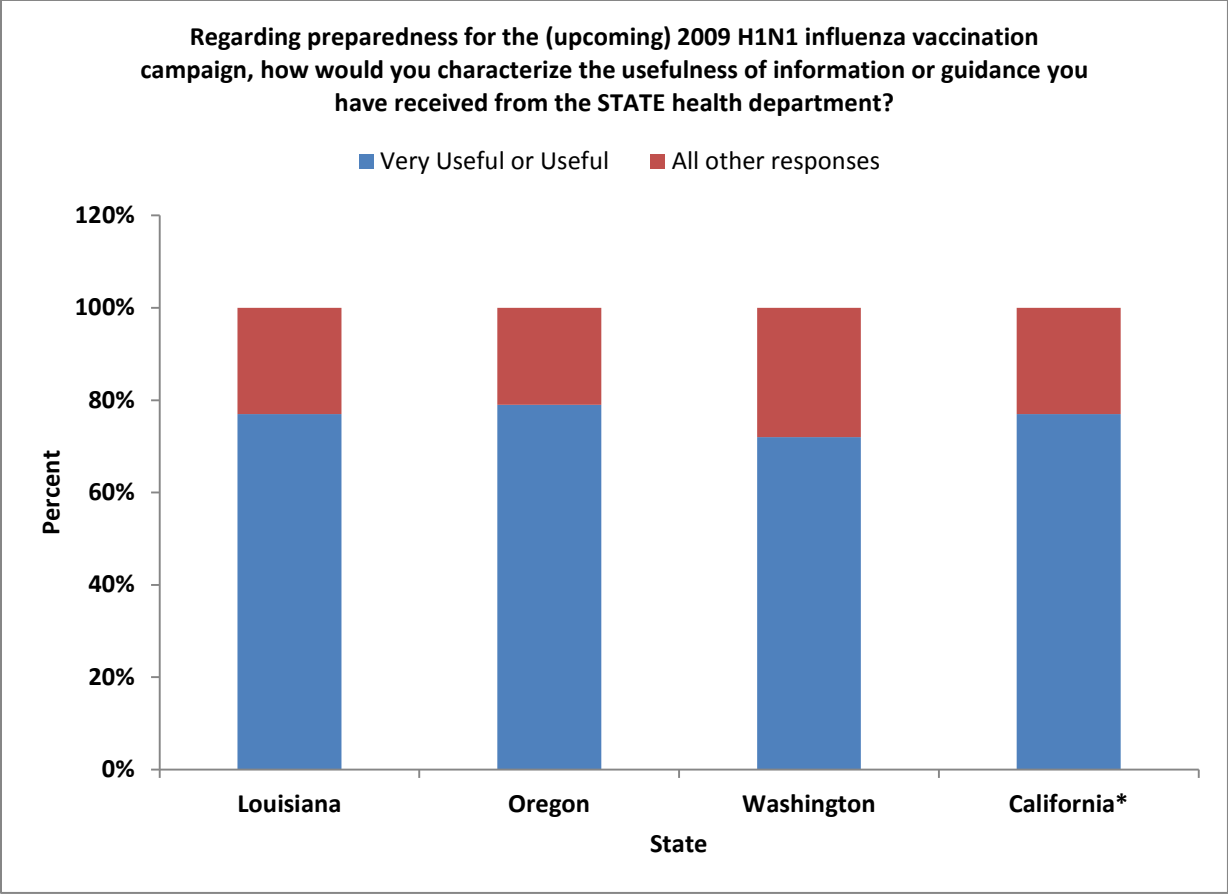
**Table 1:** Univariate Results showing Top Three Responses for each Question and State

<b>Who receives and disseminates updates from public health officials regarding vaccine administration? (May chose more than one response)</b>					
	<b>POOLED n=961</b>	<b>LOUISIANA n=181</b>	<b>OREGON n=186</b>	<b>WASHINGTON n=765</b>	<b>CALIFORNIA n=777</b>
Nurse	30%	40%	31%	27%	16%
Nurse Manager/Director	23%	27%	33%	21%	19%
Office/Pharmacy Manager	26%	24%	25%	27%	35%
VFC-Point of Contact	20%	14%	26%	NA	NA
Medical Assistant	25%	NA	NA	21%	28%
Physician	14%	23%	22%	10%	36%
<b>Entity relied upon for accurate, timely information regarding outbreaks or public health threats?</b>					
State/Local HD	78%**	61%	75%	66% (Local HD) 45% (State HD)	NA
Federal Agencies	14%	32%	19%	40%	NA
Professional Societies	1%	3%	3%	7%	NA
News Media	2%	1%	1%	8%	NA
<b>How was information received from public health officials disseminated to clinic staff? (May chose more than one response)</b>					
Face to Face	75%	87%	81%	70%	64%
Routine Staff Meeting	35%	32%	48%	33%	48%
Hard Copy Facsimile or Flyer	46%	51%	52%	44%	48%
Email	54%	35%	63%	56%	36%
Posting in Common Area	35%	22%	28%	40%	44%

\*VFC-POC option only available on Oregon and Louisiana surveys; Medical Assistant option only available on Washington and California surveys.

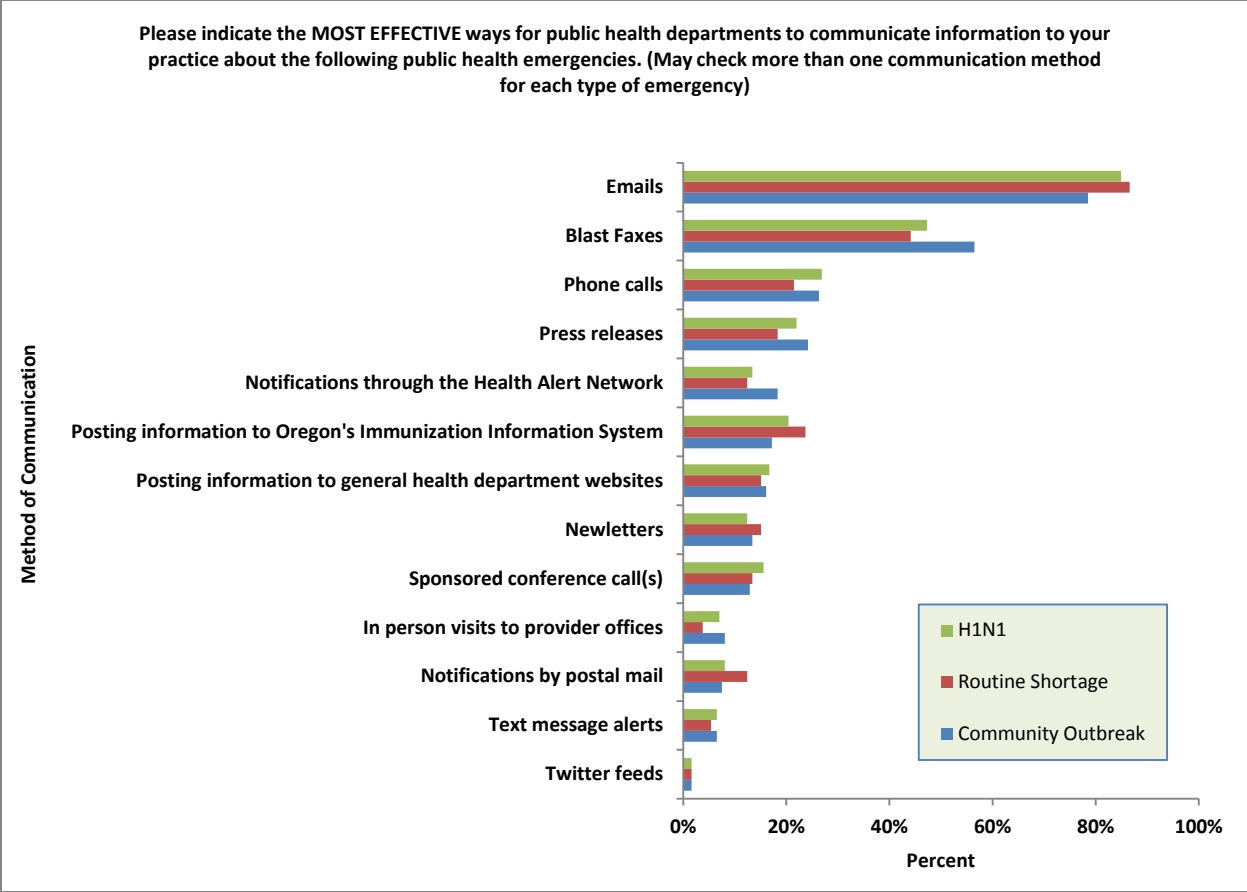
\*\*Washington survey separated state and local health departments; condensed into one category for pooled analysis.



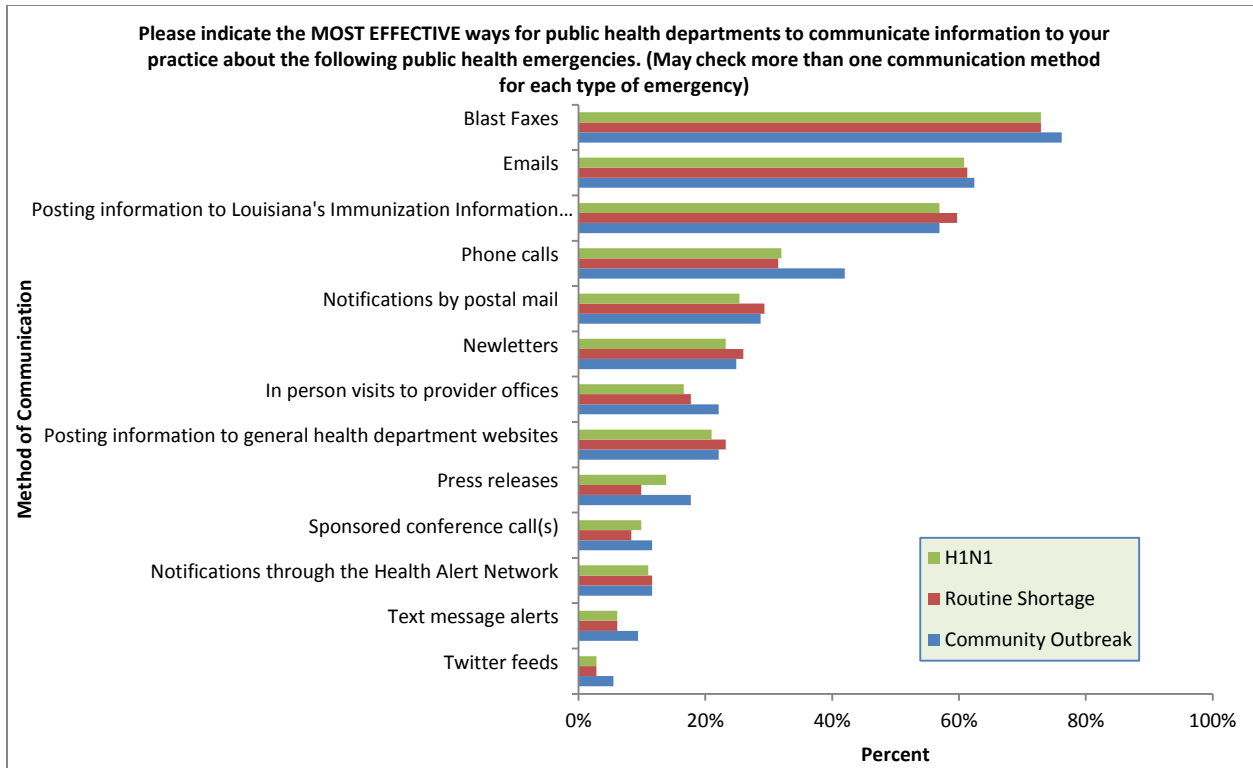


**Figure 1:** Percent of Respondents who reported receiving “Very Useful” or “Useful” Information from their State Health Department.

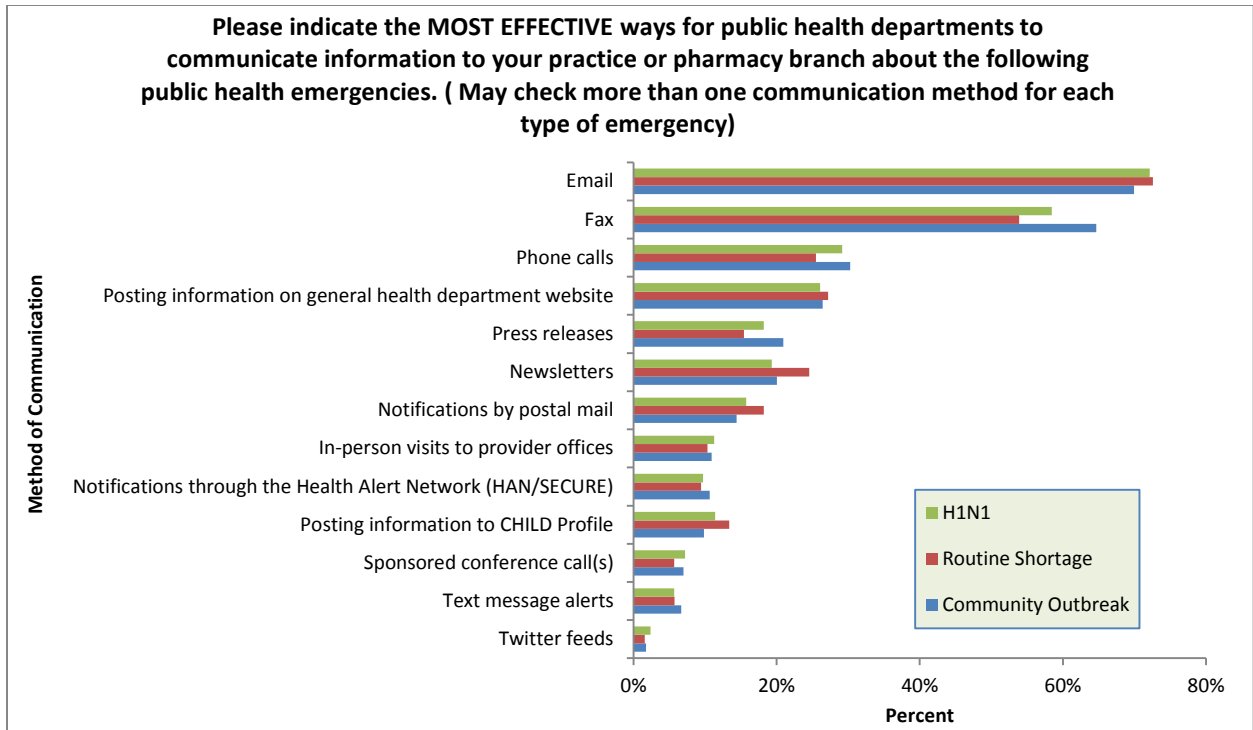
\* This question on the California survey asked: “In the recent 2010 pertussis outbreak in California, how useful the information or guidance you received from the STATE health department?”



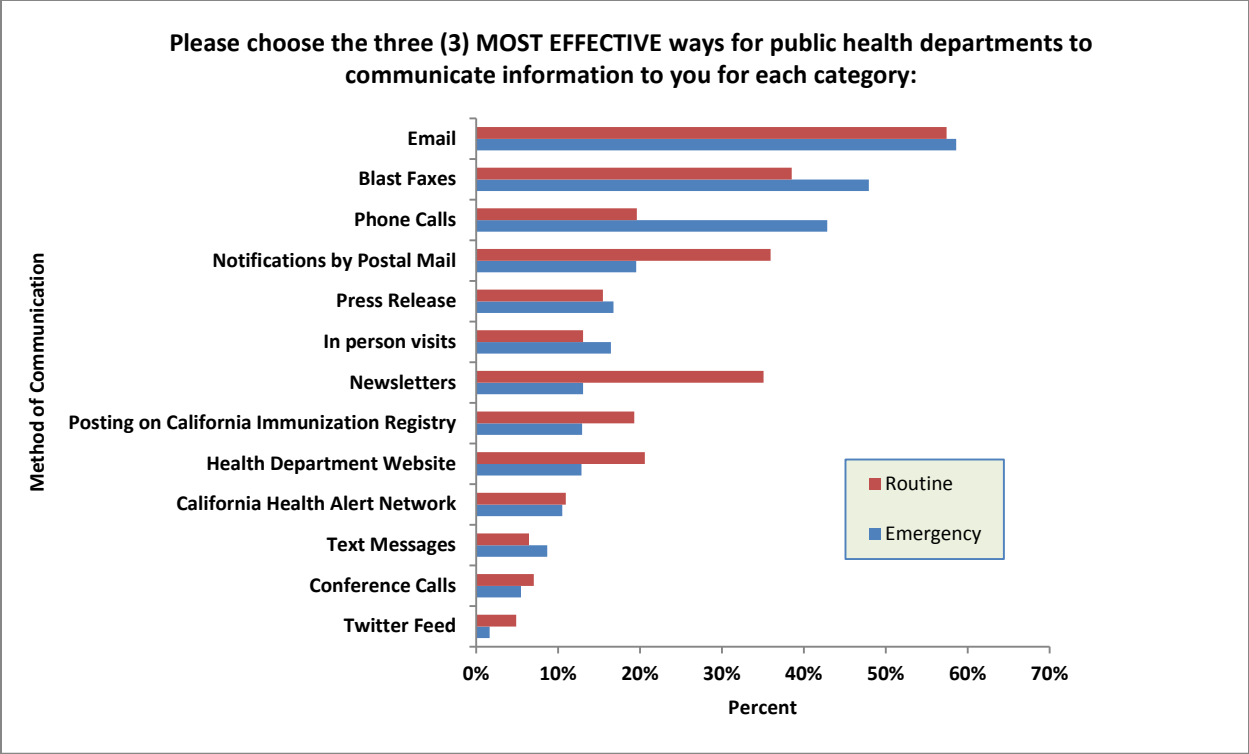
**Figure 2:** The most effective methods of communication to use to communicate with practices in Oregon by scenario type.



**Figure 3:** The most effective methods of communication to use to communicate with practices in Louisiana by scenario type.



**Figure 4:** The most effective methods of communication to use to communication with practices or pharmacies in Washington by scenario type.



**Figure 5:** The most effective methods of communication to use to communicate with practices or pharmacies in California by situation type.

**Table 2:** Analysis of Qualitative Data Regarding Communication from Oregon

	<b>MAJOR Theme</b>		<b>Minor Theme 1</b>	<b>Minor Theme 2</b>
<b>Q1.</b> In terms of communicating information on influenza vaccination to your practice, what could your state health department be doing better for your practice?	Requesting specific means of communication, most commonly		Improve communication on vaccines, specifically vaccine distribution and availability	Improve general communication to providers, specifically
<b>Q2.</b> What recommendations would you have for state and local public health officials to help you plan and manage the upcoming seasonal influenza/H1N1 vaccination campaigns as effectively as possible?	<b>COMMUNICATION IMPROVEMENTS:</b>	Improve communication on vaccines, specifically	Improve communication to the public	Improve general communication to providers, specifically
	<b>RESOURCE MANAGEMENT IMPROVEMENTS:</b>	Increase vaccine supply	Concerns over appropriateness of vaccine distribution	Suggestions on method of vaccine distribution to public

**Table 3:** Analysis of Qualitative Data Regarding Communication from Louisiana

	<b>Major Theme</b>		<b>Minor Theme 1</b>	<b>Minor Theme 2</b>
<b>Q1.</b> In terms of communicating information on influenza vaccination to your practice, what could your state health department be doing better for your practice?	Improve communication on vaccines, specifically on vaccine distribution and availability		Requesting specific means of communication, specifically email and fax.	Improve general communication to providers, specifically improving accuracy and timeliness of information
<b>Q2.</b> What recommendations would you have for state and local public health officials to help you plan and manage the upcoming seasonal influenza/H1N1 vaccination campaigns as effectively as possible?	COMMUNICATION IMPROVEMENTS:	Improve communication to the public	Improve communication to providers	Improve communication about vaccine
	RESOURCE MANAGEMENT IMPROVEMENTS:	Increase vaccine supply	Provide additional man power	Concerns about appropriateness of vaccine distribution

**Table 4:** Analysis of Qualitative Data Regarding Communication from Washington

	<b>MAJOR Theme</b>	<b>Minor Theme 1</b>	<b>Minor Theme 2</b>
<b>Q1.</b> In terms of communicating information on seasonal or H1N1 influenza vaccination to your practice or pharmacy branch: What could your STATE health department have done better?	Nothing (satisfied)	Improving communication, specifically there was a tie between requests for more information and for less information followed by improving communication to public	Better Resource Management, specifically improving distribution times for vaccines.
<b>Q2.</b> In terms of communicating information on seasonal or H1N1 influenza vaccination to your practice or pharmacy branch: What could your LOCAL health department have done better?	Improve communication, specifically there were slightly more requests for less information although still a considerable number of requests for more information. This was followed by better communication to providers.	Nothing (satisfied)	Better Resource Management, specifically improving distribution times for vaccines.



**Table 5:** Analysis of Qualitative Data Regarding Communication from California

	<b>MAJOR Theme</b>		<b>Minor Theme 1</b>	<b>Minor Theme 2</b>
<b>Q1.</b> In terms of partnering with public health agencies on the pertussis outbreak and vaccination campaign: What could your STATE health department have done better?	COMMUNICATION IMPROVEMENTS:	Improve communication to public	Improve communication to providers, specifically improving timeliness of information received from HD	Improve communication on vaccines, specifically on distribution and availability.
	RESOURCE MANAGEMENT IMPROVEMENTS:	Reduce cost of vaccine	Increase vaccine supply	Suggestions on method of vaccine distribution to public
<b>Q2.</b> In terms of partnering with public health agencies on the pertussis outbreak and vaccination campaign: What could your LOCAL health department have done better?	COMMUNICATION IMPROVEMENTS:	Improve communication to public	Improve general communication to providers, specifically improving timeliness of information received from HD	Requesting MORE information
	RESOURCE MANAGEMENT IMPROVEMENTS:	Reduce cost of vaccine	Suggestions on method of vaccine distribution to public	Increase vaccine supply
<b>Q3.</b> In terms of partnering with public health agencies on the pertussis outbreak and vaccination campaign: What kind of information would be most useful to receive from public health agencies?	Information about Vaccines (administration, distribution, side effects)		Information to provide to the public (brochures, pamphlets)	Outbreak information (location, number of cases, diagnosis and treatment guidelines)
<b>Q4.</b> If your office or location is unable to receive communication by any of the above methods, please list the ways you cannot get communication?	Twitter feed		Text Message	Phone call

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