

Local health departments tweeting about Ebola: characteristics and messaging

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ABSTRACT

Context: The first imported U.S. Ebola Hemorrhagic Fever case during the 2014 West Africa Ebola outbreak triggered an increase in online activity through various social media platforms, including Twitter.

Objectives: The purpose of our study was to examine characteristics of local health departments (LHDs) tweeting about Ebola, in addition to how and when LHDs were communicating Ebola-related messages.

Design: All tweets sent by 287 LHDs known to be using Twitter were collected from September 3 to November 2, 2014. Twitter data were merged with the 2013 National Association of County and City Health Officials (NACCHO) Profile study to assess LHD characteristics associated with sending Ebola-related tweets. To examine the content of Ebola tweets, we reviewed all such tweets and developed a codebook including four major message categories: information-giving, news update, event promotion, and preparedness. A timeline tracking the trends in Ebola tweets was created by aligning daily tweets with major Ebola news events posted on the Centers for Disease Control and Prevention (CDC) Ebola website.

Results: Approximately 60% (n=174) of all LHDs using Twitter sent a total of 1 648 Ebola-related tweets during the study period. Sending more tweets in general (OR: 2.42; 95% CI: 1.00-5.84) and employing at least one Public Information Specialist (OR: 2.61; 95% CI: 1.14-5.95) significantly increased the odds that an LHD tweeted about Ebola. Of all the Ebola tweets collected, 78.6% were information-giving, 22.5% were on preparedness, 20.8% were news

updates, and 10.3% were event promotion tweets. A temporal analysis of Ebola tweets indicated five distinct waves, each corresponding with major Ebola news events.

Conclusions: Twitter has become a communication tool frequently used by many LHDs to respond to novel outbreaks, but messaging strategies vary widely across LHDs. We present several recommendations for LHDs using this novel communication channel during outbreaks and other emergent events.

Keywords: Ebola; disease outbreak; local health department; social media; Twitter

BACKGROUND

Outbreaks of the Ebola Hemorrhagic Fever virus have occurred numerous times throughout history, reaching countries in Asia, Europe, and particularly Africa. The most recent 2014 West Africa Ebola outbreak was considered the largest Ebola epidemic in history,¹ resulting in more than 21 000 Ebola cases in West Africa as of January 2015, with approximately 8 400 deaths attributed to the virus.²

On September 30, 2014, the Centers for Disease Control and Prevention (CDC) confirmed the first U.S. Ebola case in a man who travelled to Dallas, Texas from Liberia.³ Due to the communicability and novelty of the disease within the U.S., the Dallas hospital where this patient presented was not prepared to safely and effectively care for the patient and prevent disease transmission to healthcare workers. As a result, two healthcare workers tested positive for Ebola after providing treatment for the index patient.³ On October 24, 2014, another medical aid worker was confirmed to have the Ebola virus in New York City after returning from Guinea, where he was providing Ebola medical care.³

The news media have the capacity to influence the salience of topics on the public agenda⁴ and may amplify risk, generating public concern for particular threats.⁵ As a result of heavy coverage in traditional media, discussion of topics increases online,⁶ including on Twitter.⁷ For example, the reappearance of the 1994 plague in India created widespread public concern after news of the disease quickly spread through mass media and social networks.⁸ Consistent with the response to the plague, the first U.S. Ebola case contributed to a rapid increase in online activity related to Ebola on Twitter and Google.⁹ Within 24 hours of the first U.S. Ebola case, there was a surge of

news media coverage and an 11-fold increase in Ebola-related tweets across the U.S.¹⁰ Similar findings demonstrated that major electronic news media were the top influencers of worldwide Ebola tweets.¹¹ Numerous studies, however, have indicated that Ebola messages communicated through tweets¹² and other forms of social media¹³⁻¹⁵ are often inaccurate and stir concern among the public. Consequently, the spread of misinformation through social media¹²⁻¹⁵ and surges in news media coverage and social media exchanges¹¹ about Ebola likely contributed to rapidly rising public fear toward Ebola.⁵

Social media has been utilized numerous times in the past during emergency events, such as disease outbreaks and natural disasters. For instance, during the 2009 H1N1 outbreak, Twitter was an important source of public opinions and experiences.¹⁶ Examination of tweets sent during the outbreak allowed health authorities to promptly identify and respond to public concerns. Similarly, social media has been used by emergency response organizations for monitoring and responding during natural disaster events, such as earthquakes¹⁷ and wildfires.¹⁸

Local health departments (LHDs) play a pivotal role in providing information and reassuring the public during disease outbreaks and emergencies. One of the ten essential public health services provided by LHDs is to “inform, educate, and empower people about health issues.”¹⁹ To provide this service, LHDs can use social media, which gives them the capacity to disseminate up-to-date information that can be spread quickly through social networks. Despite widespread utilization of social media during emergency events¹⁶⁻¹⁸ and the adoption of social media by LHDs,²⁰ to our knowledge, there have been no studies examining social media use specifically by LHDs during disease outbreaks, including the 2014 West Africa Ebola epidemic. To better

understand how LHDs use social media during an outbreak, this study answers three primary research questions: (1) What are the characteristics of LHDs tweeting about Ebola? (2) What types of messages were LHDs tweeting? and (3) When were LHDs tweeting about Ebola?

METHODS

Data collection

Between September 3 and November 2, 2014, we collected all tweets sent by 287 LHDs known to be using Twitter (<http://bit.ly/1FrqEZe>). The list of LHDs on Twitter was current as of July 2012, when a web search was conducted in a previous study²⁰ for each LHD included in the National Association of County and City Health Officials (NACCHO) directory (<http://bit.ly/1JWG7Oh>). We used the NCapture feature of NVivo 10 software (QSR International, Doncaster, Victoria, Australia) to collect the data and SPSS version 22.0 for statistical analyses. During the study period, 226 of the 287 LHDs (78.7%) sent at least one tweet on any topic. For each LHD, we identified whether they sent any tweets about Ebola by searching for the term “Ebola” in the tweets collected. We then merged the Twitter data with the 2013 NACCHO Profile study data for the 226 LHDs that had tweeted during the data collection period.²¹

Data analysis

We used descriptive and bivariate inferential statistics to explore LHD characteristics, services, and Ebola-related tweeting. Based on our previous research,²² we hypothesized that tweeting about Ebola would be higher in LHDs that served larger populations, employed at least one epidemiologist, employed at least one Public Information Specialist (PIS), were located in close

proximity to a confirmed U.S. Ebola case, and were led by a top executive who had earned a Master of Public Health (MPH) degree. Jurisdiction population, epidemiologist and PIS employment, and leader education information were obtained from the Profile study. Distance to confirmed Ebola case was measured by using Google Maps to calculate the distance between each LHD and Dallas or New York City, using whichever distance was shortest. We used t-tests and chi-squared to determine whether jurisdiction population, employing at least one epidemiologist, employing at least one PIS, miles to closest confirmed U.S. Ebola case, number of total tweets, and top LHD executive had an MPH degree were associated with tweeting about Ebola at least once. We entered all variables found to be significantly associated with Ebola tweeting into a single multivariate logistic regression model to determine which characteristics worked together to increase the probability of an LHD tweeting about Ebola.

Content analysis

Following methods based on our previous research,²³ we reviewed all Ebola tweets collected (n=1 648) and identified emergent themes. Based on these themes, we developed a codebook including four major categories of tweets: information-giving, news update, event promotion, and preparedness (Table 2). Tweets were coded into the information-giving category if general information were provided on Ebola. Tweets were coded as a news update if new information was provided on the progress or actions taken against Ebola. Event promotion tweets described physical or virtual platforms that deliver information on Ebola, with a date, time, or location of the event. Finally, tweets were coded as preparedness if risk reduction or preventive measures were described. Within each major category were several sub-categories (Table 2). Other information was collected such as whether the tweet mentioned evidence from research, included

a phone number, a physical address, or an email address. Tweets were coded into as many of the major categories and sub-categories as were appropriate. The 2014 West Africa Ebola outbreak also coincided with an upcoming flu season; tweets were coded as “flu” if they mentioned flu.

To ensure reliable use of the codebook, two of the authors coded a 5% sample of all Ebola tweets and clarified categories that were found not reliable. After two rounds of reliability coding, the intraclass correlation coefficients (ICC) for each sub-category were in the excellent range of ICC=.75-1.00 with the exception of two codes, Preparedness – federal government and dispelling myths/providing facts, which both had acceptable ICCs of .57 and .74 respectively. Given that all codes were at least acceptable and nearly all were excellent, we divided all Ebola tweets and coded each half independently.

Finally, we analyzed the hashtags used in Ebola tweets and classified whether tweets were original or retweets. Hashtags are used by placing a “#” symbol before a keyword in a tweet to form trending topics around a certain issue (e.g. #Ebola). Retweets occur when a tweet is reposted and shared to followers by adding “RT” within the message. Tweets were categorized as retweets by searching for “RT” in all tweets.

Temporal analysis

The NCapture feature of the NVivo 10 software also obtained a timestamp for all collected tweets during the data collection period. This enabled us to develop a timeline tracking trends in Ebola tweets overall and for each major category. Daily trends in Ebola tweets were then

matched with major Ebola events posted by the CDC on their Ebola news timeline (<http://1.usa.gov/1rqaitf>).

RESULTS

During the data collection period, 174 of the 226 LHDs (77.0%) tweeted at least once about Ebola, for a total of 1 648 Ebola-related tweets. For those LHDs that use Twitter, there was an average of 75 total tweets (s.d.=111.44) and 7 Ebola tweets (s.d.=15.88).

Which LHDs were tweeting about Ebola?

Compared to LHDs not tweeting about Ebola, the LHDs tweeting about Ebola had a significantly larger average jurisdiction population size, tweeted more overall, and were more likely to employ at least one PIS and at least one epidemiologist (Table 1). LHDs tweeting about Ebola were not significantly different from those not tweeting about Ebola for proximity to an Ebola case and having an executive with an MPH degree.

-Table 1-

Prior to entering the four characteristics significantly associated with Ebola tweeting from the bivariate analysis into a logistic regression model, we calculated correlations among the four variables to ensure that they were not too highly correlated. The highest correlation was .51 between population size and employment of an epidemiologist. Since this value was lower than the .70 threshold that would indicate problems with multicollinearity, we included all four variables into the regression model. The resulting multivariate model identified two significant variables associated with LHDs tweeting about Ebola: number of tweets overall during the data

collection period and employment of a PIS. Specifically, for every 100 tweets sent during the data collection period, an LHD was 2.42 times more likely to have sent at least one Ebola tweet (OR: 2.42; 95% CI: 1.00-5.84). LHDs employing at least one PIS were 2.61 times more likely to tweet about Ebola than those not employing a PIS (OR: 2.61; 95% CI: 1.14-5.95). Jurisdiction population and employment of an epidemiologist were not significantly associated with tweeting about Ebola in the full model. The model was significant ($\chi^2(4)=21.16$; $p<.001$) and correctly classified 81.2% of the cases.

What were LHDs tweeting?

Of the 1 648 Ebola tweets, 78.6% of all tweets were information-giving, 22.5% of all tweets were on preparedness, 20.8% of all tweets were news updates, and 10.3% of all tweets were event promotion tweets (Table 2). Within the information-giving category, tweets that provided resources through websites or infographics were the most common tweets, accounting for 68% of all Ebola tweets. Tweets that included information on dispelling myths/providing Ebola facts (17.8%) and Ebola transmission (11.7%) were the next most common subcategories within information-giving. Tweets that provided information on Ebola risks/symptoms (8.6%), reducing Ebola fear (5.9%), and Ebola prevention (2.2%) were the least common tweets.

-Table 2-

The majority of the preparedness tweets described efforts within the local government (12.1%), such as LHDs and community health centers. Tweets that described preparedness in the federal government (6.6%) and hospitals (6.7%) were also fairly common. On the other hand, tweets

concerning preparedness in the state government (3.7%), for-profit, non-medical organizations (0.3%), educational institutions (0.2%), and foreign countries (0.1%) were the least common tweets.

Within the news update category, tweets that provided updates on current U.S. Ebola cases were the most common tweets, accounting for 12.1% of all Ebola tweets. Most often, these tweets provided a news update on the current status (9.8%) of Ebola cases within an area (e.g. *“There are no other suspected cases of Ebola virus in Texas at this time”*). Meanwhile, all other updates concerning new confirmed Ebola cases (3.1%), U.S. support to international countries (2.8%), and air travel (2.8%) were the least common tweets among news updates.

Although tweets were least likely to be coded as event promotion out of the four major categories, approximately 5.5% of all Ebola tweets mentioned televised speeches or public forums where the Ebola outbreak was discussed. Other event promotion tweets included webchats (2.9%), hotlines (1.1%), and the radio (0.7%).

A small number of the Ebola tweets (n=58; 3.5%) attempted to put the low risk of contracting Ebola into perspective by comparing it to the risk of contracting influenza. These Ebola-flu tweets often encouraged residents to get a flu shot (e.g. *“Ebola’s big right now, but you know what’s on the horizon? Flu. Which kills up to 36,000 ppl a year. Get your #flushot”*).

Approximately 56.4% (n=930) of Ebola tweets contained one or more hashtags. There were 185 unique hashtags, with the ten most common being: #Ebola (n=815), #FactsNotFear (n=51),

#LACounty (n=43), #CDCchat (n=42), #publichealth (n=40), #flu (n=28), #EbolaFact (n=26), #Enterovirus (n=13), #EbolaFacts (n=12), and #getafluvax (n=9). About 40.6% (n=683) of all Ebola tweets were messages LHDs had retweeted from other Twitter users. All Ebola retweets mentioned the original Twitter user by retweeting with the “@” symbol.

When were LHDs tweeting about Ebola?

Trends in Ebola tweets were aligned with major public and news events that took place throughout the 2014 West Africa Ebola outbreak (Figure). From September 3, 2014 to September 29, 2014, there was an overall daily average of 2.22 (s.d.=2.19) Ebola tweets from all LHDs tweeting about Ebola. An initial wave of Twitter activity for all categories of Ebola tweets was triggered after the first U.S. Ebola case was confirmed on September 30, 2014, increasing the overall number of Ebola tweets from 1 to 55 within 24 hours.

Subsequently, there were four additional waves of Ebola Twitter activity from LHDs. The second wave was triggered by the first Ebola case transmitted to a human outside of West Africa on October 6, 2014 and was sustained by the death of the U.S. index patient on October 8, 2014. This finding is consistent with a previous study noting major Ebola Twitter activity worldwide on these two particular days.¹¹ The third wave started approximately on October 13, 2014 when two Texas healthcare workers tested positive for Ebola after providing treatment for the index patient. The fourth wave consisted of numerous incidents, most notably the announcement of the second imported U.S. Ebola case in New York City, NY on October 23, 2014. The final wave was triggered on October 27, 2014 after the CDC issued a series of new protocols for individuals potentially exposed to the Ebola virus.

Overall Ebola tweets and nearly all tweet categories (information-giving, event promotion, and preparedness) reached the highest number of tweets on October 16, 2014. This finding is consistent with a previous study noting October 16 as the highest number of correlated activity between Twitter and electronic news media due to President Obama authorizing the use of the National Guard to address Ebola.¹¹ The only exception was tweets coded into the news update category, which reached its highest peak on October 15, 2014, when the second healthcare worker was confirmed positive for Ebola. The number of Ebola tweets then stabilized to the initial September levels toward the beginning of November.

Out of the four confirmed U.S. Ebola cases, the last three cases showed a delay in Twitter activity from LHDs. A previous study noted that worldwide Ebola tweets reached a major peak when Ebola was transmitted to two Texas healthcare workers,¹¹ however, our findings indicate Ebola tweets from LHDs did not peak until the day after. Similarly, Ebola tweets peaked one day late after the second imported U.S. Ebola case was reported in New York City.

Approximately 63.5% (n=1046) of all Ebola tweets were sent by LHDs during standard business hours between 8:00am and 5:00pm. Out of the 36.5% (n=602) of Ebola tweets sent outside of these standard hours, most (n=458) were sent during the early morning (n=346) or late night (n=112). About 8.7% (n=144) of all Ebola tweets were sent during the weekend.

-Figure-

DISCUSSION

We examined LHD use of Twitter to disseminate information about Ebola during the U.S. outbreak in 2014. LHDs used Twitter most often to provide general Ebola information and resources through links to websites or visuals such as infographics. In addition, more than half of LHD Ebola tweets contained at least one hashtag. Tweets that include web links and hashtags are strongly associated with messages being retweeted, which enables information to be disseminated more rapidly since the original tweet is propagated to followers of the retweeting user.²⁴

Many tweets were intended to reduce fear, either indirectly or directly, by describing the minimal risk in contracting Ebola (e.g. *“What are your chances of catching Ebola in US? Better chance you'll die in a plane crash”*) and the readiness of the health system (e.g. *“Yes, Ebola has been confirmed in the US, but the CDC is confident it is contained”*). Tweets directly addressing Ebola fear often contained words like “fear,” “panic,” “worried,” or “freaking out” (e.g. *“There’s no need to panic. DC residents have nothing to panic about. If there’s a case of Ebola, we will contain the threat”*). The goal of reducing fear was also demonstrated by the #FactsNotFear hashtag being the second most common hashtag after the #Ebola hashtag. Tweets that indirectly or directly address Ebola fear are important to counteract inaccurate Ebola information spread extensively through social media¹²⁻¹⁵ that contradicted expert opinion¹⁵ and contributed to concern and fear.¹³

Just 3.1% (51 tweets) of all Ebola tweets were alerts for a new Ebola case within the U.S. and there were several instances in which there were delays in Ebola tweet activity until after the

event had occurred. Considering the novelty of the virus and how messages were changing rapidly, it is possible that LHDs were waiting to make sure information was accurate before communicating with their constituents. Nonetheless, these findings have important implications given the rapid transmission of the Ebola virus, its severe consequences on human health, and limited treatment options.¹ Social media platforms have the potential to match this rapid transmission time by disseminating information quickly to a large audience. We recommend that LHDs increase tweet frequency during outbreaks and other emergencies in order to ensure timely dissemination of critical information.

Our findings were consistent with a previous study in which the presence of a PIS significantly increased the likelihood of LHDs tweeting about specific health conditions.²² In addition, LHDs with a PIS were more likely to adopt social media earlier²⁰ and have more local followers,²⁵ which may enable the LHD to reach a large local audience quickly. Numerous LHDs have reported that limited staff capacity and funding are major barriers preventing them from adopting social media for emergency events.²⁶ For LHDs that do not have the resources to employ a PIS or maintain an active social media presence, we recommend retweeting information sent by the closest large LHD during outbreaks and natural disasters. One possible strategy is to set up automatic retweeting of other nearby health departments or the CDC for the duration of an outbreak.

The U.S. has a long history of often mobilizing efforts episodically in response to immediate public health threats, such as yellow fever, cholera, and tuberculosis.²⁷ Once these crises have passed, however, interest and support wane until the same threat resurfaces. A similar set of

events took place during the 2014 West Africa Ebola outbreak. This crisis-focused response to Ebola and other public health threats is costly and jeopardizes the lives of many people across the U.S.^{26,27} With the swift rise in the incidence of Ebola and other infectious diseases worldwide due to factors such as climate change^{28,29} and population growth,²⁹ it is becoming increasingly important for LHDs to regularly tweet best practices for reducing the risk of contracting infectious diseases, especially during active disease outbreaks.

There were several limitations to this study including the large number of tweets that were truncated when retweeted due to limits in the number of characters allowed in tweets. These incomplete tweets may have prevented us from accurately categorizing tweets according to their themes. In general, however, only a few characters were missing from the end of an incomplete tweet, so we believe this did not result in much, if any, misclassification. In addition, we identified only 226 LHDs that used Twitter and tweeted at any point during the data collection period. There were likely some additional LHDs of the approximately 2 700 nationwide that may have been missed if they were not on the initial list of 287 LHDs known to be on Twitter. LHD Twitter accounts that were identified during the web search in our previous study²⁰ did not necessarily have to be verified. Despite these limitations, our findings contribute to the small but growing evidence-base on communication between LHDs and the public through social media and the use of social media for dissemination of public health information during emergencies.

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TABLE AND FIGURE LEGENDS

Table 1. Characteristics of local health departments tweeting and not tweeting about Ebola.

Table 2. Tweet topic categories and frequencies*

Figure. Trends in Ebola tweet topic categories between September 3, 2014 and November 2, 2014

Table 1. Characteristics of local health departments tweeting and not tweeting about Ebola.

	Tweeted about Ebola M (sd)	No Ebola tweets M (sd)	P
Population (millions)	.54 (1.11)	.21 (.33)	.001
Number of general tweets	85.68 (114.63)	40.83 (92.94)	.011
Miles to closest confirmed case	715.90 (114.63)	744.58 (441.91)	.725
	N (%)	N (%)	
Employs PIS	103 (85.8)	17 (14.2)	.002
Employs epidemiologist	112 (84.2)	21 (15.8)	.031
Executive has MPH	62 (39.7)	10 (23.8)	.057

Table 2. Tweet topic categories and frequencies*

Category	Description	Sample Tweet	n	%
Information-Giving	General information on Ebola		1 296	78.6
Resources	Directs people to learn more about Ebola through a website or infographic	Important information about #Ebola from @cdcgov: http://t.co/e192tGIMEj	1 121	68.0
Transmission	Describes how Ebola spreads	Fact: You can't get #Ebola through air, water or food. It's spread by direct contact with bodily fluids of sick or deceased Ebola patients	193	11.7
Prevention	Recommendations to prevent or reduce the risk of Ebola infection	How can you prevent Ebola? WASH YOUR HANDS! Don't touch bodily fluids of someone who's sick. More here: http://t.co/If8bdRgwFA	37	2.2
Dispelling myths /Providing facts	Clarifying information or facts to dismiss Ebola misconceptions	Ignore the myths: #Ebola is not airborne. http://t.co/1Ijb7unW0N	294	17.8
Reducing fear	Directly aimed at dismissing fear towards Ebola	This is why you shouldn't panic about #Ebola in the U.S. "We know how to control the virus..." http://t.co/9wf1Uz3F6T #slco	98	5.9
Risks/Symptoms	Risks or symptoms associated with Ebola infection	The symptoms of Ebola aren't just bleeding. We're on the lookout for fever, headache & weakness. WITH travel to Ebola-affected countries.	142	8.6
Preparedness	Risk reduction and preventive measures against Ebola by organizations		371	22.5
Educational institution	Primary, secondary, or higher education preparedness	Work at a daycare or school? Get recommendations on receiving students or staff from areas affected by #Ebola: http://t.co/9hBsdJ9hFw	4	0.2
Local government	Local or community-level preparedness	Boulder County Public Health is working with local partners to prepare for an unlikely local Ebola case. http://t.co/8FRH7bjNSk	199	12.1
State government	State-wide preparedness	@OHdeptofhealth is getting ready to report on Ohio's #Ebola Preparedness. Check out @WLWT's report on our readiness http://t.co/PjncXZnbof	61	3.7
Federal government	National preparedness (i.e. Centers for Disease Control and Prevention)	2 steps the CDC is taking to control #Ebola: care and containment - http://t.co/gHV8UjHqfv	109	6.6
Non-profit ^{†‡}	Non-profit organizational preparedness (i.e. American Red Cross)	n/a	0	0.0
For-profit [†]	For-profit organizational preparedness (i.e. Airports)	NYC is well prepared to manage #Ebola w/ established protocols and trained exercises w/ health & airport officials: http://t.co/kFy4Ix0HAn	5	0.3
Hospital	Preparedness in medical facilities	Backus, Lawrence Memorial hospitals hold Ebola drills http://t.co/AbHvyExOY2 via @thedayct	110	6.7
Foreign	Preparedness measures taken internationally	RT @globeandmail: UPDATE Canadian Ebola vaccine to start clinical trials; Canada continues to boost border protection http://t.co/3ljX364rfp	2	0.1

News Update		New information on the progress or actions taken against Ebola	342	20.8
New cases	Alert given for a new confirmed or diagnosed Ebola case	CDC reports 1st case of #Ebola in US	51	3.1
Current cases			200	12.1
Current status	Description of current Ebola cases within an area	There are no other suspected cases of Ebola virus in Texas at this time.	162	9.8
Change in status /former cases	Shifts in Ebola cases within an area	Dallas Ebola Patient Has Died: Hospital http://t.co/ZbYtmDj72m	38	2.3
International support	U.S. Ebola aid and assistance internationally	Glad the U.S. is taking a larger role to help with the #EbolaOutbreak http://t.co/QJe2TsB80d	46	2.8
Travel	Airport screening or travel bans to Ebola-afflicted countries	Enhanced entry screening at 5 airports will cover over 94% of travelers from #Ebola-affected countries.	46	2.8
Event Promotion		Physical or virtual platform to deliver information on Ebola outbreak with date, time, or location of event	170	10.3
Hotline	Phone lines set up to answer community Ebola questions	The Summit County Ebola information line will be staffed tomorrow October 18, 2014 from 8:00 a.m. to 12:00 p.m. The number is 330-926-3939	18	1.1
Speech/Forum	Televised speech or public forums to answer Ebola questions	Questions about Ebola? Get the facts from our experts at a town hall in the #Bronx 10/29 6-8PM (1040 Grand Concourse) http://t.co/IVgJpx1UIH	91	5.5
Webchat	Online arena to answer Ebola questions (i.e. Twitter or Facebook)	@CDCGov is holding a chat to talk about the first #ebola case in the US. Follow #CDCChat today at 4pm for the latest!	47	2.9
Radio	Public or health officials answer Ebola questions	Dr. John Baird, Health Officer at Fargo Cass Public Health, will be talking about Ebola at 1:30 p.m. today on AM-970 WDAY.	12	0.7
Other Codes		Other information included in Ebola tweets		
Research	Tweet mentions evidence from research	Study: 3 a month will fly with Ebola: Up to three Ebola-infected travelers might board an international flight... http://t.co/5YshOwfsTF	1	0.1
Phone number	Tweet includes a phone number	Ohio Dept of Health's 24-hour ebola information line: 1-866-800-1404	36	2.2
Physical address	Tweet provides a physical address	Questions about Ebola? Get the facts from our experts at a town hall in the #Bronx 10/29 6-8PM (1040 Grand Concourse) http://t.co/IVgJpx1UIH	4	0.2
Email address	Tweet provides an email address	#Ebola Qs? Email: Ebola.Info@baltimorecity.gov. Most importantly, remember there is not an outbreak of Ebola in U.S. Plz RT #FactsNotFear	3	0.2
Influenza	Tweet mentions influenza	Focus on more likely risks, like #flu, not #Ebola. Flu shots, nasal mist now available daily, no appt, 9am-1pm in Lobby 7.	58	3.5

*Tweets were coded for all categories that apply. The percentages listed are for the number in each group out of the total 1,648 tweets.

†Non-hospital

‡Non-governmental

