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Twitter Chats and Public Engagement: Examining Concern and Critique in Questions About the Ebola Epidemic

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ABSTRACT: A thematic analysis of three Twitter chats hosted by the Centers for Disease Control and Prevention during the 2014-2015 Ebola outbreak suggests that public questions addressed by the CDC focused on reducing uncertainty about disease transmission and clarifying protocol. Negative comments about CDC practices and transparency presented an opportunity for the organization to address criticism in a controlled online space.

KEYWORDS: engagement, social media, risk communication, infectious disease outbreaks, crisis communication

1. INTRODUCTION

The 2014-15 Ebola outbreak, the largest outbreak of Ebola in history, devastated West African countries and brought global attention to the disease as it spread to Europe and the United States. The epidemic garnered responses from major international health organizations (e.g., WHO), nonprofit organizations, and the Centers for Disease Control and Prevention (CDC), the U.S. government agency tasked with protecting the health and security of Americans. CDC officials, including the director, Dr. Frieden, and on-the-ground epidemiologists known as “disease detectives” became leading sources of information and analysis regarding the outbreak.

The CDC situated itself as the expert source for up-to-date information on the outbreak, disease transmission, and disease protocols (Dalrymple, Young, & Tully, 2016) and offered the press, public, and health officials a number of opportunities to use this expertise through traditional media, the CDC website, and social media. The CDC and its experts were active on social media, particularly Facebook and Twitter (Murphy, 2014). The Ebola crisis was a time of high uncertainty among various publics as images of the deadly disease flooded nightly newscasts and confirmed cases crossed U.S. borders. As such, the CDC was repeatedly in the spotlight receiving both criticism and accolades for its work (Cruz, 2014).

Despite reassurance that there was nearly no risk of an outbreak in the U.S., fear of the disease was widespread. In the fall, after the first person diagnosed with Ebola in the U.S. infected two health care workers, 15% thought it was very or somewhat likely that they or an immediate family member would get Ebola (Newport, 2014). Public concern was paired with public confusion about disease transmission. In October 2014, more than 80% said that you were likely to get Ebola from a sneeze or cough, even though experts repeatedly emphasized...
that the virus was not airborne (Harvard School of Public Health, 2014). Amidst confusion and a rapidly evolving epidemic, the primary goal of CDC communications was assuaging concerns and correcting misperceptions about disease characteristics and transmission (Murphy, 2014), while simultaneously maintaining the CDC’s position as the expert source on the Ebola outbreak.

To address public questions and concerns, the CDC hosted three hour-long “Twitter chats” in August and October 2014. The Ebola crisis offers an illuminating opportunity to examine how the organizational imperative to clearly and dispassionately convey factual information about health and science crises conflicts with the need to assuage fears, the contingent nature of scientific knowledge about emerging threats, the pace of social media communication, and the call for organizations to actively engage publics. Given the complex nature of the situation and communication needs of various publics, we ask: when given the opportunity to ask questions and engage with CDC officials, what do people want to know?

To address this question, we conducted a thematic analysis of the public questions posed and answered during three CDC “Twitter chats” (#CDCchat) regarding the Ebola outbreak. The chats received widespread attention on Twitter. The CDC’s tweet announcing the first chat in August was retweeted 454 times with subsequent reminder tweets retweeted 100, 78, and 31 times. The second chat on October 2, 2014 occurred after the first U.S. case of Ebola was diagnosed. The first chat announcement on October 1 received 216 retweets, a second announcement received 299 retweets, and the final announcement on October 2 was retweeted 520 times. During the chat, the CDC received 4,580 tweets from 1,670 participants (Lee, 2014). Lazard et al. (2016) used text mining to identify topics in public tweets from the same October 2 chat and found that tweets coalesced around eight main topics, including symptoms of Ebola, how the disease was transmitted, how long the virus survived, and concerns about travel. It is important to note that although the CDC received thousands of public comments and questions during the hour of the chat, only a fraction of these questions were addressed by one of the CDC’s Twitter accounts during the chat. The focus of this analysis is the public comments that were answered by the CDC and subsequently archived using the online curation tool Storify. We build on the findings of Lazard et al. (2016) by including all public chats hosted by the CDC on the topic of Ebola and by using qualitative thematic analysis to gain an in-depth understanding of the major themes that emerge in the exchange of public questions and CDC responses during the chats.

2. LITERATURE REVIEW

2.1 Ebola: A Risk and Crisis Communication Challenge

In the U.S., public panic about Ebola was in contrast to the actual risk of an outbreak, which most health experts described as near zero. In risk communication, public fear about a risk that science predicts is unlikely to occur may be understood by experts as a misperception that requires correction (e.g., Sandman, 2003). When diseases involve organisms that cannot be seen and symptoms that are unfamiliar to the general public, individuals are likely to develop a heightened perception of risk, which must then be addressed, or corrected, by risk communicators (Reynolds & Seeger, 2005; Sandman, 2003). This poses challenges for public health officials who are expected to convey quick and up-to-date information about the transmission and spread of the disease while also assuaging fears.
The CDC states that communication during public health crises should ideally be “accurate, credible, timely, and reassuring” (Reynolds & Seeger, 2005, p. 45). During the Ebola outbreak, communication challenges included widespread and sometimes incendiary news coverage, the rapid dissemination of information on social media, lack of public knowledge about Ebola paired with increasing fear, the politicization of the outbreak by legislators, and the death of a patient diagnosed in the U.S. and the failure of extant protocol to protect two nurses who cared for him. Thus, continued reassurance and maintaining credibility in the face of unanticipated events was a highly visible feature of CDC communication. An analysis of CDC tweets during the Ebola outbreak found that these goals produced communication that skirted a fine line of justifying involvement and minimizing risk. CDC officials reiterated that risk to the U.S. was minimal, but that CDC involvement in West Africa was necessary to safeguard U.S. citizens, and that the CDC, and the U.S. health system in general, was adequately prepared for an outbreak, even though an outbreak would not occur (Dalrymple et al., 2016).

Another challenge for CDC communications was how and when to engage the public by seeking feedback or comments. Infectious disease outbreaks can pose grave risks to public health. Outbreaks are also crises that unfold rapidly in ways that can be difficult to predict. Thus, communication about disease outbreaks draws on best practices for risk and crisis communication, which often involve suggestions for engaging the public in an ongoing dialogue (e.g., Covello, 1992; Fearn-Banks, 2002; Reynolds & Seeger, 2005). Engagement, sometimes described as two-way communication, is important to many models and definitions of risk and crisis communication. The National Research Council (1989) describes risk communication as “an interactive process of exchange of information and opinion among individuals, groups and institutions” (p. 2). Other definitions or models of risk and crisis communication emphasize that communication is an exchange between an expert or organization and the public, a two-way exchange that contradicts the deficit model, in which experts communicate one-way information to a passive audience. For example, Fearn-Banks (2002) describes crisis communication as “interaction between the organization and its stakeholders” (p. 480). Covello (1992) defines risk communication as “the exchange of information among interested parties about the nature, magnitude, significance, or control of a risk” (p. 359). These definitions highlight the stated value of engagement to risk and crisis communication.

The CDC has its own model of communication during health crisis, the Crisis and Emergency Risk Communication (CERC) model, which has the goal of helping “individuals, stakeholders and entire communities make the best possible decisions for themselves and their loved ones” (CDC, 2011). A collaboration between researchers and the CDC, and grounded in communication theory, the CERC model seeks to accomplish this goal by combining strategies from risk and crisis communication to approach crises with a “process view of crisis as beginning with pre-event stages of risk and risk development, moving through the eruption of some triggering event during crisis stages and into postmortem and clean up phases” (Reynolds & Seeger 2005, p. 49).

Public engagement is embedded within the CERC model at several of these stages. Depending on the stage of the crisis, CERC recommends actions such as encouraging dialogue and cooperation with other agencies and groups in the pre-crisis stage (Reynolds & Seeger, 2005) and developing messaging that facilitates “informed decision making by the public” during the management stage (Reynolds & Seeger, 2005, p. 52). In a webinar describing the
CERC principles, Bret Atkins, a health communication specialist, states, “it is as important to listen as it is to speak when we are in a crisis and we are trying to present information to people” (CDC, 2011).

However, it is sometimes unclear what constitutes listening or engagement within the model, and what the goals of engagement might be. In models of public relations, Grunig and Hunt (1984) distinguish between two-way symmetrical communication, in which both parties benefit, and two-way asymmetrical communication, in which public feedback is solicited with the goal of accomplishing organizational goals, an aim that is akin to persuasion rather than an equal exchange. The model of CDC communication during outbreaks may privilege listening, but helping people make decisions about risks also requires rapid dissemination of information that is “first, right, and credible” (CDC, 2011). Although social media theoretically makes timely engagement easier, studies have shown that, during crises, organizations primarily use social media to disseminate information rapidly, rather than to engage with public questions and concerns (Chew & Eysenbach, 2010; Muralidharan, Rasmussen, Patterson, & Shin, 2011; Waters & Williams, 2011). Considering this, the purpose of engagement during outbreaks may not be two-way symmetrical communication or even exchange but rather the opportunity to reassure and reduce uncertainty in times of crisis.

2.2 Public Information Needs During Outbreaks

Models of risk and crisis communication operate from the perspective of the organization and its goals. Thus, engagement is often defined in relation to an organization’s goals for a crisis event, such as safeguarding reputation or educating the public and addressing perceived misconceptions that could impede goal attainment. However, it is also important to investigate the value and goals of engagement from the perspective of the public. In other words, what does engagement during outbreaks offer the public, and how can engagement meet public needs?

Otway and Wynn (1989) argue that public perceptions of risk diverge from expert perceptions because people perceive risks as a function of how they will affect them personally, not because public perception of risk is incorrect or a so-called misperception. Additionally, queries for information may not actually be about filling a knowledge gap, but rather may be “surrogate demands for openness” from experts and organizations controlling the dialogue (Otway & Wynn, 1989, p. 143). In line with the view that perception of risk occurs in relation to what individuals perceive as the likely effects for themselves, their families, and their communities, research shows that, during outbreaks, the public prioritizes information that reduces fear (Odlum & Yoon, 2015). However, additional factual information does not always equal a reduction in fear if messages are confusing. Odlum and Yoon (2015) argue that although information was widely disseminated during the 2014 Ebola outbreak, there was also widespread public fear of the disease due to poor messaging strategies and challenges to public health expertise by lawmakers and others.

Public uncertainty about risk and disease outcomes can lead to increased fear or misperception of risk. Thus, a related public goal during outbreaks or other crises may be reducing uncertainty by obtaining credible, accurate, and concrete information about the event. The goal of reducing uncertainty is complicated by the fact that uncertainty is a feature of all crises, as well as dissenting views among experts about how transparent to be about scientific or organizational uncertainty during risk or crisis communication challenges (Holmes, Henrich,
Hancock & Lestou, 2009; Frewer et al., 2003). Frewer et al. (2002) found that people want to be provided with information about uncertainty as soon as the uncertainty is identified. Individuals also are more accepting of uncertainty associated with the scientific process of risk management than they are of uncertainty due to perceived lack of action or interest on the part of government agencies (Frewer et al., 2002).

A related public need during crises is for transparency, or the sense that information being disseminated by relevant organizations about the event or about protocols is complete and accurate. The consequences of perceived lack of transparency can be loss of credibility. Green and colleagues (2005) suggest that, while public fear during crises may be acute, the ramifications of a perceived lack of transparency during crises may be more sustained. They argue that the public does not necessarily want reassurance at the expense of transparency about uncertainty: “An information strategy that is open about risk uncertainties may be, in the long term, more effective than one that attempts to simplify messages to reduce ‘irrational’ reactions” (p. 526). However, this assertion deserves additional research, as few empirical studies have investigated public responses to organizational transparency about risk or scientific uncertainty during outbreaks.

Social media provides another opportunity for listening to public questions and concerns. Due to the increased ease of rapid two-way communication over social media, the CDC used Twitter as an opportunity to address public questions and concerns in real-time. Lazard et al. (2016) found that, for the October 2, 2014 chat, public comments using the #CDCChat hashtag focused on increasing understanding of the disease, such as symptoms and transmission. During this chat, the public sought information that would reduce fear and improve understanding of transmission and spread. Our study focuses on those questions addressed by the CDC, and thus identified by the organization as part of the official record of the chat archived using the organization’s Storify account. We use thematic analysis to provide a more in-depth, nuanced view of the questions and comments sanctioned by the CDC during three opportunities for online engagement. We ask: What themes emerge in public comments or questions about Ebola addressed and archived by the CDC in its hosted Twitter chats?

3. METHODS

The sample for our thematic analysis included public comments and questions (n = 295) addressed by the CDC during three hour-long Ebola Twitter chats organized by the hashtag #CDCchat. Chats were promoted on Twitter by the CDC and in retweets from other organizations and Twitter users. The chat was open to anyone on Twitter, and participants flagged questions or comments by using the #CDCchat hashtag. The three chats were held on August 4, October 2, and October 8, 2014 and included the following flashpoints during the outbreak: the evacuation of a U.S. aid worker diagnosed with Ebola from Liberia to Emory University Hospital in Atlanta, Georgia, and the diagnosis of the first U.S. case in Dallas, Texas. Public questions and CDC answers were archived by the CDC using the online curation tool Storify. In this online archive, the CDC only included tweets that were answered by CDC Twitter accounts. The Storify file for each chat was used to identify public tweets for coding. A fourth chat, held August 8, 2014, was targeted to health care workers and was not included in the analysis.

Tweets were analyzed for emergent themes using an iterative, constant comparative process to identify relevant themes that arose from the data (Glaser, 1965). First, the lead
The author read all public comments and developed an inductive list of codes, which represented discrete concepts identified within the data. (The analysis was conducted before the publication of Lazard et al.’s (2016) article that used text mining to analyze public questions, so the topics identified in that article did not inform our analysis.) Next, the first author re-read comments, grouped codes into themes, and developed operational definitions for themes. Two other researchers then reviewed public comments and questions to refine themes. All authors then met to discuss and refine themes, agreeing on a final list of themes and identifying tweets to illustrate each theme (Table 1). All authors noted that themes were consistent across all chats.

Table 1. Themes and Illustrative Tweets

<table>
<thead>
<tr>
<th>Theme 1. Specifying Disease</th>
<th>So people can catch Ebola by touching or having exposed skin contact bodily fluids? Is it transdermal? #Ebola #CDCchat (8/2)</th>
</tr>
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<tbody>
<tr>
<td>Asked the CDC to provide specific information about how Ebola was transmitted; the life cycle of Ebola, particularly in relation to other, more familiar diseases; the symptoms of Ebola; and how the disease could be prevented</td>
<td>@CDCgov What % of patients present with fever as a 1st symptom? Could someone be contagious without fever? #CDCchat (10/2)</td>
</tr>
<tr>
<td></td>
<td>#CDCChat Is #ebola a virus like the flu which goes away, or pox which can reappear, or like HIV which is forever? (8/2)</td>
</tr>
<tr>
<td></td>
<td>#CDCchat Can it be caught from public surfaces (touching door handle, touching mouth..)? (10/8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 2. Specifying Risk</th>
<th>@CDCgov Paranoid &amp; hypochondriac here. How likely is it that #Ebola will spread in the US? #CDCchat (8/4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asked the CDC to provide specific information about the likelihood of an Ebola outbreak occurring in the U. S. or to quantify risk to U. S. residents</td>
<td>@CDCgov even with the amount of high quality medical centers we have America, is an outbreak still possible? #CDCchat (10/2)</td>
</tr>
<tr>
<td></td>
<td>@CDCgov #cdcchat How long do we have before we all have to evacuate, like for real? Many of us have seen &quot;Contagion.&quot; #ebola (8/4)</td>
</tr>
<tr>
<td></td>
<td>@CDCgov #CDCchat Is the chance of dying slimmer in the US than it is in Africa? (10/2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 3. Specifying Protocol</th>
<th>CDCChat CDCChat Can you send out an “advisory” 4 anyone who was in Dallas &amp; feel they are getting sick to not go to the E.R. &amp; call 911? (10/2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressed for additional clarification about CDC protocols and suggested potential alterations to current protocol</td>
<td>@CDCgov what are recommended screening questions for 911 operators and hospital triage? #CDCChat #ebola (10/2)</td>
</tr>
<tr>
<td></td>
<td>@CDCgov People in West Africa are being screened for Ebola before they get on planes. What does this screening involve? #CDCchat (8/4)</td>
</tr>
<tr>
<td></td>
<td>@CDCgov #CDCchat does CDC work with state health depts to create a plan should contact trace fail, like it has in Africa? (10/8)</td>
</tr>
</tbody>
</table>
Twitter chats are powerful tools for public engagement. For example, during an Ebola outbreak, tweets from CDC chats focused on clarifying disease transmission, symptoms, and treatment. Participants often questioned the accuracy of CDC guidance, as seen in this exchange:

"#CDCchat Did the patient ACTUALLY get infected with Ebola in Dallas TX or Liberia or during the flight? R we going to have vaccinated? (10/2)"

"@CDCemergency Press conference said asymptomatic people aren't contagious; Travel guidance on CDC site suggests otherwise. What gives? (10/2)

"So, why did we introduce a deadly disease with no cure into America? Death by PR/PC? #CDCchat (8/4)"

"@CDCgov #CDCchat why aren't we isolating suspected EBOLA patients to one or two facilities in the US & not spread all over various states? (10/8)

"So, standard precautions is enough to prevent the spread of Ebola? Seems too easy. #CDCchat (8/4)"

"@CDCemergency casual contact is nonsense to tell the public. Give more descriptions, be specific in order to prevent the spread (10/8)"

Note: Date of chat in parentheses after each tweet.

### 4. RESULTS

We identified four main themes in public tweets sent during the CDC chats: (1) specifying disease; (2) specifying risk; (3) specifying protocol; and (4) critiquing CDC policies and practice. In the following section, themes are explicated and illustrative tweets are provided below (see also, Table 1). The date of the chat during which the tweet was posted and answered is provided in parentheses.

#### 4.1 Specifying Disease

Public opinion polls administered during the outbreak identified public confusion about Ebola, particularly how it was transmitted (Harvard School of Public Health, 2014). Confusion and concern about the disease was reflected in the Twitter chats and emerged as the dominant theme in questions answered by the CDC. Questions pressed the CDC to be clear, concrete, and certain about how Ebola was transmitted, its symptoms and treatment, how long the virus might live outside the body, and how to kill the virus with household cleaners.

"#CDCchat Is there a way to test for Ebola in the blood for someone who is getting a blood transfusion from someone who didn’t know infected? (10/8)"

"@CDCgov Does Ebola respond to "Purell" and alcohol based hand sanitizer, or soap and water? How about bleach? #CDCchat (10/2)"

With misinformation spreading via social media (Fung et al., 2014) and confusion high, participants in the chat pressed the CDC to distinguish fact from fiction.

"@CDC_eHealth I’ve heard Ebola can remain in semen for over 10 weeks after recovery and exhibiting outward symptoms. Is this true? #CDCchat (8/4)"

Some tweets also asked the CDC to make predictions about the future behavior of the disease as it continued to spread. Of particular concern was how the disease might mutate,
particularly whether it might “become airborne” so that it could be transmitted more easily between humans, like the cold or flu viruses.

#cdechat Experts are saying if #ebola is not stopped in Africa it could morph into an airborne disease. Possible?? (10/2)

In addition to pressing for predictions, questions reflected uncertainty about the state of scientific knowledge about the disease, pressing for more evidence and clarity.

@CDCemergency Why isn’t Ebola contagious before the patient is symptomatic? Why shouldn’t we worry before then? #CDCchat (10/8)

Additional questions asked for clarification about scientific terms used by the CDC and public health officials in previous communication.

Confusion over what “body fluids” encompass, and relative risk of each, can you clarify? #CDCchat (10/2)

The subtext of questions pressing for more information about the disease was prevention and protection. More detailed knowledge of how Ebola was contracted, for example, would help people avoid the disease and minimize the chance of widespread transmission in the U.S.

4.2 Specifying Risk

A main theme of the CDC’s communication to the U.S. public during the Ebola outbreak was that the risk to U.S. populations was minimal. Public questions pushed the CDC to reiterate that there was minimal risk by making predictions and quantifying risks. Many questions sought additional reassurance that Ebola would not spread to the U.S. or posed hypothetical questions about the ability of U.S. health-care systems to cope if the disease did spread to the U.S.

#CDCchat Any possibilities of a massive spread of the #Ebola virus in #America? (10/8)

@CDCgov How can CDC say ebola has no significant risk to the American people. We are bringing it here. Can you control it for sure? #CDCchat (8/2)

Tweets also asked for transparency about how the CDC made predictions, or pressed for specific numbers to quantify the likelihood of the disease spreading or risk to U.S. residents rather than vague statements about minimal risk.

@CDCGlobal How are you calculating the risks and probabilities of various outcomes? Where can I find those materials? #CDCchat #Ebola (10/8)

A few commenters revealed that, despite government reassurance, they were deeply frightened by the possibility of an outbreak on U.S. soil.

#CDCChat I have 7 yr. old and a 7 mo. Pregnant wife who works in the health care community. YES! I AM SCARED!! #EbolaOutbreak (10/2)
Public questions reflect a need for continued reassurance that an outbreak in the U.S. was extremely unlikely. They sought certainty from the CDC that their fears were not founded while simultaneously wanting the CDC to take their fears seriously.

4.3 Specifying Protocol

Other public questions asking for additional detail coalesced around the theme of protocol, or official CDC rules and procedures for addressing the Ebola epidemic in the U.S. and abroad. Most questions about specifying protocol asked for additional detail about procedures related to screening travelers, assessing potential U.S. cases of Ebola, or ensuring safe disposal of medical waste. These public queries did not question the value of CDC protocol, but rather pressed for additional information.

#CDCchat do you have any plan to stop people who aren’t yet sick but don’t report their possible exposure from coming to US? (10/2)

Similarly, there was great interest in how well CDC protocols would isolate the disease and protect American citizens. For instance:

#cdcChat So far negative infectious isolation room have been used on #ebola patients US. Is this really required? Could reg sep. rm be used? (10/8)

What will happen to the deceased US Ebola victim’s remains? #CDCchat (8/4)

#cdcChat Does #CDC have #Hazmat teams to clean #ebola infected areas e.g. patient homes or will it just depend on contractors? What testing? (8/4)

Similar to questions about the disease, questions about protocol were directed at clarifying the CDC’s position and providing assurance that the situation was under control, despite the ever-evolving nature of the outbreak. However, not all chat participants were simply looking for more information. Others were there to challenge and critique the organization and its response efforts.

4.4 Critiquing CDC Policies and Practice

The CDC handling of the Ebola outbreak attracted public criticism. During Twitter chats, the CDC also answered critical questions about protocol or past communication. These questions differed from the previous theme, Specifying Protocol, because they attacked protocol rather than asked for clarification, and many tweets that fit this theme were explicitly hostile toward the CDC or government response more broadly.

Some questions suggested that the CDC had not been honest or transparent with the public. Tweets also identified possible discrepancies in CDC communication, particularly when past statements seemed to contradict the CDC’s claims that all was under control and risk was minimal.

@DrFriedenCDC CDC guidelines says PPE will protect, why are all photos of CDC staff shown wearing Level 3 containment suits? #CDCchat (10/8)
5. DISCUSSION

Building on our previous research (Dalrymple et al., 2016), thematic analysis of three Twitter chats hosted by the CDC during the recent Ebola outbreak suggests that the questions answered during Twitter chats focused on reducing uncertainty about disease transmission and specifying protocol as well as addressing critique of organizational practices and protocols. As suggested by past research (Lazard et al., 2016), in questions answered by the CDC, the public sought information to reduce fear by increasing knowledge of and perhaps gaining a sense of control over the disease and their likelihood of contracting it. Public questions also attacked the CDC for a perceived lack of transparency and inconsistency in its messages regarding transmission and safe practices. Our findings add to the literature on public informational needs during disease outbreaks, specifically regarding the types of questions that are sanctioned by experts, in this case, the CDC, by being answered and archived during an online public forum.

The main theme in public questions was related to the disease itself. Questions answered by the CDC pressed for more detailed information about disease transmission and prevention. Some authors have argued that social media lead to the spread of misinformation about Ebola, which inflamed public fears (Fung et al., 2014), something the CDC sought to address. In the questions about Ebola, public questions pressed for additional certainty about the behavior of the disease in different circumstances. The level of detail requested from answers was high. For example, individuals asked exactly how long the disease might remain in bodily fluids, how long it could live on surfaces, and exactly which cleaners might be effective at killing the virus. Questions pressed the CDC to state, unequivocally, that they were sure or certain about how the disease behaved, suggesting a public need to push against the boundaries of potential scientific uncertainty to find the limits of scientific knowledge.

Some questions about the disease as well as questions about risk pressed the CDC not only to state what was currently known but also what was possible or likely in the future. Significant concern accrued to not just whether Ebola could be transmitted through air, like the cold or flu, but also whether it was possible that the disease might ever mutate to become airborne. Questions about specifying risk also required prediction to reassure the public that an
outbreak of Ebola absolutely would not be possible on U.S. soil. As such, the CDC’s statement that risk was “near zero” might even have been seen as too contingent for people seeking absolute reassurance that they and their communities were safe from Ebola. The CDC answered public questions about protocol that asked for increasing detail or justification about issues such as how hospitals had been told to protect against the disease or how travelers were being screened. Again, increasing knowledge about how the CDC operated could be seen as an attempt to reassure that the U.S. was protected against any possibility of a future outbreak or even of additional cases of the disease.

It is interesting to note that, when filtering questions to answer and include in the Storify archive, the CDC included a substantial minority of questions that were skeptical about or frustrated with two main areas: (1) the CDC’s perceived lack of transparency; and (2) protocol related to travel, specifically the decision not to close the U.S. borders to travelers from West Africa. From an organizational perspective, receiving critical feedback or complaints is a potentially challenging aspect of public engagement. Addressing criticism may bring it to a wider audience, but ignoring it could allow it to fester, without the opportunity to correct perceived misconceptions or to articulate the organization’s message. Of note is that the critical comments were posed as questions, primarily specific questions with a specific answer, rather than a general criticism of the government or the CDC. This trend suggests that the agency viewed the Twitter chats as a chance to offer additional clarification about disease characteristics as well as about protocol or past statements that may have inflamed public anger rather than as an opportunity to engage in truly dialogic communication. Including these critical questions was another opportunity for the CDC to reiterate its stance. The chat archives thus align more with the two-way asymmetrical view of engagement (Grunig & Hunt, 1984), in which feedback is primarily an opportunity to help reach organizational goals, in this case correcting misinformation about Ebola and providing reassurance to fearful publics.

As evidenced by this tweet from the CDC during the final minutes of the last Ebola chat on October 8, 2014, the Storify was viewed as an archive and a resource, a sort of ‘Frequently Asked Questions’ page: “Sorry we were unable to answer all Qs submitted, but we will post a Storify of #CDCchat & invite you to check it out to see Qs answered.” However, in the October 2, 2014, chat, one of the most prominent topics using the #CDCChat hashtag was described as a subconversation (Lazard et al., 2016) that occurred during the chat. This suggests that there is substantial activity unaccounted for in the CDC’s archives of the Twitter chats. Future research should investigate online engagement activities such as Twitter chats to identify any trends in public questions and comments addressed by organizations versus those that are not addressed. Answering or addressing questions or comments, as with the questions included in this analysis, sanctions those comments and includes them in the official conversation. Identifying trends in which comments are not included sheds light not just on how organizations define engagement in the abstract but on how they operationalize engagement on social media. With this in mind, we are currently conducting a content analysis to identify and code tweets from a February 2016 CDC chat dedicated to the Zika virus. This analysis will allow us to see which questions are excluded as well as those included to explore how the CDC manages its chats and preserves them as a lasting record.

The themes identified in public questions were consistent across the three chats, suggesting that either the content and tone of public questions, the filter applied by the CDC in selecting questions to answer, or both remained relatively stable during this turbulent three-month period. Our analysis both affirmed the topics identified in previous computer-aided text
analysis and added depth to that analysis. While the topics we identified – disease characteristics, protocol – were the same as those identified in the computer-aided analysis (Lazard et al., 2016), our qualitative analysis identified some striking trends in tone of questions. Questions about travel or screening protocol, for instance, could be either neutral in tone as participants sought additional information or critical as they challenged the CDC and U.S. government about these protocols.

Considering the varied valence of these tweets and the lack of any “positive” comments, our current research is investigating whether there are differences between critical questions addressed by organizations during outbreaks and those that are not addressed to better understand the purpose and function of social media chats. Using the ongoing Zika virus outbreak, we are investigating the source, content, and valence of tweets from a Zika CDC-hosted Twitter chat. Preliminary analysis suggests that the CDC remained committed to providing its expertise, often ignoring other possible expert sources, and “staying on message” as it avoided addressing off-topic and tangential questions. Comparing the CDC’s response to Ebola and Zika will provide additional insight into organizational operationalization of engagement on social media during health crises, an area that remains ripe for continued research and in-depth exploration.

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