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Ebola crisis response in the USA: Communication management and SOPs

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**Abstract**

This research focuses on the 2014 Ebola crisis response by emergency managers in the Dallas-Fort Worth (DFW) Metropolitan region in the State of Texas, U.S.A. It examines the patterns of crisis communication and the use of Standard Operating Procedures (SOPs) during the first month of the crisis. Primary data collected from 24 face-to-face interviews and 12 online surveys are analyzed. The research identifies elements contributing to organizational failures, which by their very nature gain public and media attention, and also explicates the less mentioned successful decisions made by response agencies in the DFW region. It is important to investigate both failures and successes to help inform organizational learning for better preparedness to future health crises. Findings suggest that, although there was a breakdown in communication between small city governments/municipalities and higher levels of government at the State and Federal levels, prior training and collaborative relationships helped in improvised decision-making. Takeaways for practitioners include reiterating the importance of establishing SOPs, merits of flexibility, and improvisational decisions for shared learning.

**Keywords:** Ebola U.S.A, Crisis response planning, Crisis communication, Standard Operating Procedures (SOPs), Improvisation, Flexibility in crisis response

1. Introduction

On 29th March 2016, the World Health Organization (WHO) lifted the Public Health Emergency of International Concern (PHEIC) related to Ebola in West Africa. Starting from the early months of 2014 when the first cases were detected in the African continent, to when the Ebola outbreak was declared a PHEIC on August 8, 2014, to late March 2016 when the threat designation was lifted, a total of 28,616 confirmed, probable and suspected cases had been reported in Guinea, Liberia and Sierra Leone, with 11,310 confirmed deaths\textsuperscript{[48]}. Although only one of those deaths was reported in the United States of America (USA), it sent the American media, the public, government officials and response agencies on high alert from September 30, 2014, when the Centers for Disease Control and Prevention\textsuperscript{[11]} confirmed the first Ebola case in the City of Dallas, Texas, USA. Three other cases were reported thereafter.

The Ebola crisis has attracted research attention from public health experts and communication scholars who bemoan the challenges of conveying comprehensive information that enables the public to take informed protective actions\textsuperscript{[19,24,39]} in the face of uncertainty. However, less attention has been received from public administration and crisis management scholars. From the first confirmed case of the Ebola virus on September 30th, 2014 in Mr. Eric Duncan, a Liberian national visiting Dallas, Texas, various response agencies in the Dallas Fort Worth (DFW) Metropolitan region came under heavy scrutiny from the world. The likelihood of an American case escalating to an epidemic state and expectations of high mortality rates, made it so. Despite this attention there appears to be no research published to date on how emergency managers in the USA responded to this perceived transboundary health crisis and the adaptive learning and improvised decision making that resulted following the “communication crisis chaos”\textsuperscript{[20]}.

According to Boin\textsuperscript{[6]} a transboundary crisis is one in which “the functioning of multiple, life-sustaining systems, functions, or infrastructures is acutely threatened and the causes of failure or courses of redress remain unclear.” He further enumerated three characteristics of a transboundary crisis. First, it crosses geographical borders, threatening multiple cities, regions, countries and continents — e.g. the Ebola virus which originated in West Africa and crossed international borders and reached the US. Second, it jumps functional boundaries — e.g. the Ebola crisis affected not only health systems but safety and security systems, and the travel and tourism industry globally. Third, it transcends traditional time boundaries such that a clear beginning and ending cannot be pinpointed easily in time — e.g. the March 2014 Ebola outbreak declared as a PHEIC took over two years to clear globally.

“A transboundary crisis has no, or at least not one, Ground Zero”

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Section 3 provides a timeline of events in the DFW region in Texas and examines the conditions or circumstances under which failures or successes to help inform organizational learning for better management decisions in the DFW region, which receive less attention from practitioners and newsworthy but also to explicate the success of Ebola crisis management. Morgan et al. [28] further emphasize the need for a deeper understanding of the mental models or cognitive structures of both decision makers and the public. Getting the priorities and uncertainties of both sides clarified will help streamline the risk communication process such that it is simple, meaningful and helpful to the public in making complex decisions.

2.2. Crisis communication challenges

Effective crisis response also depends on the availability of real-time accurate information exchange for dynamic decision making. However relevant information collected from appropriate sources, needs to be verified and then shared with response agencies [21]. This requires effective coordination between multiple agencies to ensure resources are used wisely [23] and duplication of efforts is minimized. Smith [42] observed that public agencies typically adopt one of two crisis communication approaches for infectious diseases. Firstly, they issue warnings about what protective actions to take to reduce possible contact with the disease through regular screening, washing hands, wearing a mask, maintaining hygiene and disinfection. Secondly, for greater perceived threats they issue health warnings advising the public to restrict contact with those infected through quarantine measures, travel restrictions, or isolation of the infected person. Instituting these control measures and proper dissemination of such information is important to gain public trust and minimize fear, helplessness, and anxiety among the general public [17], p.1488.

However, most high profile communicable diseases affecting individuals at the global scale are low probability events with high impact to human life and economies [34],[43], making crisis communication challenging and confounding to emergency management agencies. The onset of a communicable disease has a profound effect on the public, leading to a heightened perceptions of risk especially if it is perceived as likely to spread quickly and result in high mortality rates. For example the severe acute respiratory syndrome (SARS) outbreak in 2003, which spread rapidly from China to some 37 countries infected approximately 10,000 and killed around 1000. It demonstrated that when there is substantial scientific uncertainty about the cause of an outbreak, and response plans with well-defined SOPs, as evidence of jurisdictional preparedness [33]. However, in the case of a transboundary crisis where the very nature of the hazard agent is unknown and response needs change dynamically, SOPs and a hierarchical response structure may prove to be inadequate. Causes of poor response are often because of a disconnect between bureaucratic standards, i.e., what government agencies have planned for prior to the disaster and the new norms and expectations of those affected, that emerge following a disaster [35,40].

Waugh and Streib [47] reviewed the emergency management system in the USA since its inception in the 70's to the creation of the Department of Homeland Security following the 9/11 attacks. They underscored the limitations of imposing a command and control system for crisis response on emergency management organizations, which by their very nature, are collaborative in nature. They aptly noted that, “modern emergency management presents a paradox. On the one hand, emergency response requires meticulous organization and planning, but on the other hand, it is spontaneous, emergency managers have to innovate, adapt, and improvise because plans, regardless of how well done, seldom fit circumstances” (p.132).

This sentiment towards encouraging flexibility and improvisation resonates with other eminent disaster scholars as well [43,49]. Mendonca, Beroggi and Wallace [29] posited that faced with complex, unpredictable events of our times, emergency response organizations must be prepared to improvise by reworking their knowledge in novel ways, to meet the needs of the unfolding situation. They suggested encouraging improvisation and learning from it by using a computer based system to log all improvised decision-making in dealing with contingencies and using this to understand cognitive processes and mental models of team members to support training for better preparedness [27,28,29].

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the effectiveness of protective measures called to question, it creates widespread public anxiety ([42], pg.3115). This anxiety is further heightened when dreaded consequences are manufactured by the mass media leading to unwaranted public fear and loss of trust in government response mechanisms (pg. 3117).

Fogarty et al. ([118], pg.2) also found that, “emerging diseases with uncertain trajectories attract disproportionate news coverage.” The public at large is less concerned with scientific data and facts and easily influenced by media sensitization of risks [41]. Their concern is primarily with who makes decisions that affect others safety or well-being and whether they can be trusted ([26], p.4). This puts demands on crisis management authorities in high stress situations to demonstrate their trustworthiness in taking appropriate safety and preventive measures to control the spread of the disease [7]. Sharing this knowledge with the public through effective communication strategies will make them safer (Sandman 2003) and less likely influenced by biased media frames.

During crisis response the demands placed on responders to gather, process, and disseminate information promptly can overwhelm the existing flow of information [14]. Given the nature of the Ebola virus and the types of risks associated, the ability of government agencies to transmit risk information effectively to the public depended on the credibility of information from a higher level government (i.e. the CDC). However, in light of the perceived failures in receiving scientific and expert information, ad hoc communication methods were devised to check and crosscheck the information and expedite the risk communication and warning dissemination. These needs to be examined.

3. Ebola crisis timeline —— DFW metropolitan region

According to the WHO (n.d.) fact sheets the Ebola virus disease (EVD), formerly known as Ebola hemorrhagic fever first appeared in 1976 in two simultaneous outbreaks, one in South Sudan, and the other in the Democratic Republic of Congo. The virus is transmitted to people from infected wild animals such as bats, chimpanzees, gorillas and monkeys and spreads in the human population through direct human-to-human transmission of bodily fluids from infected people. There are, however, no documented examples of respiratory transmissions [44]. It is so feared because the average case fatality rate is around 50%. The March 2014 outbreak in West Africa with the most severely affected countries including Guinea, Liberia and Sierra Leone is the largest and most complex Ebola outbreak since the Ebola virus was first discovered. It was also the first time that the virus spread outside the African continent, posing a risk to urban areas in addition to rural areas [44].

On September 30, 2014, the US Centers for Disease Control and Prevention (CDC) formally announced the diagnosis of the first case of Ebola in the United States ([4] Texas Task Force report, p.4). As per the CDC report, Mr. Eric Duncan—a Liberian National visiting the City of Dallas, Texas—had not shown any symptoms upon arrival on September 20, but developed them approximately four days later. The Texas Task Force (TTF) Report (2014) noted that the victim had probably contracted the Ebola virus when he accompanied a sick friend to a hospital in Liberia on September 15; and that friend had later died.

Mr. Duncan first sought medical care at the Texas Health Presbyterian hospital in Dallas on September 26, where he was prescribed antibiotics and sent home, but returned two days later when his condition deteriorated and was admitted. On October 8th, Mr. Duncan succumbed to the Ebola virus, sending the whole nation into high alert with the possibility of an infectious disease pandemic in the US looming ahead.

3.1. Response timeline

First 5 days (September 28-October 1, 2014)

Following the confirmed diagnosis from the CDC on September 30, the Texas Governor led a meeting of an Ebola response team on October 1st and addressed the public, assuring them that 15 people were being monitored for symptoms. Initially, based on Mr. Duncan’s travel history, the CDC recommended that visitors returning from the African continent be tested for Ebola. The CDC also prescribed guidelines for isolating the patients with Ebola and the use of Personal Protective Equipment (PPE) for attending physicians and nurses. On September 30th, the CDC followed up with a statement that since Mr. Duncan had not presented any symptoms on his flight to Dallas, his co-passengers were safe. These initial reports reassured citizens of the capabilities of the agency to respond to Mr. Duncan’s needs and any future Ebola cases (The Washington Post, Sept. 30, 2014).

Next five days (October 2–6, 2014)

However, by October 2nd, 80 people were identified as having come in contact with Mr. Duncan. Further, Emergency Operations Centers at the Dallas County Office of Homeland Security and Emergency Management, the City of Dallas Office of Emergency Management, Dallas County Health and Human Services (DCHHS), and the Public Health Operations Center (P-HOC), were activated. By October 3rd, 50 individuals were being monitored, with 10 of them being considered at a high risk. As Mr. Duncan’s condition worsened, the CDC’s directives were called into question and control orders issued to quarantine Mr. Duncan’s closest contacts. In the subsequent days, the Texas governor announced the formation of the ‘Texas Task Force on Infectious Disease Preparedness and Response’ to aid local response. The task force activated the State Medical Operations Center (SMOC) and State Operations Center (SOC) who then deployed a Command Assistance Team member to the City of Dallas to assist with the health and medical branches of the Dallas County Emergency Operations Center (EOC) (Texas Task Force report, p.5).

10 days from the first Ebola Case Diagnosis (October 7–8, 2014)

On October 8, Mr. Duncan was pronounced dead and 76 medical personnel identified as being in contact with him during his treatment, also added to the list of people being monitored. Because of the considerable confusion generated by the CDC’s changing updates on the Ebola virus in first week, a public education campaign was started by the Dallas County EOC on October 9 (Texas Task Force report, p.6). Subsequently, two nurses and a lab-supervisor who had tended to Mr. Duncan presented symptoms of fever and nausea. When both nurses, Nina Pham and Amber Joy Vinson tested positive for Ebola on October 11th and October 14th respectively, the State Medical Operations Center (SMOC) was reactivated and both nurses transferred to other facilities for treatment on October15–16th.

By this point claims by the CDC that the Presbyterian Hospital staff were to blame for the spread because the “nurses wore too much protective clothing while treating Ebola patient zero Thomas Eric Duncan” and CDC chief, Dr. Thomas Frieden, explaining that “removing multiple layers of gloves and overalls is so difficult that it increases the risk of contamination”, garnered widespread criticism from the national and international media ([9]). There were concerns as to how best to tackle the deadly virus. With the infected nurses having travelled outside the state of Texas, it became clear that such mixed messages could likely have caused the spread of the virus to other States.

The CDC later admitted that they were wrong in their earlier statement of having enough capacity to contain the crisis ([110] October 16). By this time Dallas County Judge Jenkins who had taken over the management of the crisis made the decision to have the two nurses treated out of state when he realized that Dallas and especially the doctors and nurses at Presbyterian “were just spent” ([18], January 8). Meanwhile, the lab worker was placed under quarantine and tested negative for Ebola. On November 7, a total of 177 people –including family members, and others who had been in contact with the infected, including the 160 co-passengers on the flight with Nurse Vinson who had been monitored were cleared of any infections.

4. Research design

As a first step to understanding the Ebola crisis unfolding in close
proximity to us, we started scanning articles and newsfeeds in popular newspapers and TV channels starting September 2014. At the local level we reviewed articles in The Dallas Morning News, Dallas Observer, Fort Worth Star –Telegram, Houston Chronicle, KDFW-Fox 4, KXAS – NBC 5 to name a few, and at the National level we reviewed articles in The Washington Post, CBS News, New York Times, U.S. News, CNN, MSNBC, and Fox News. We also followed blogposts and updates on government websites including the Centers for Disease Control and Prevention and the Texas Department of State Health Services. According to Rolison and Hanoch [38] although the risk of contracting the virus in the US was small, the Ebola scare received extensive and continuous media coverage. “Close to 1000 segments about the virus aired between October 7 and November 3, 2014 (pg. 262).” The objective was to inform us of the major players charged with crisis response, the challenges faced by city officials and first responders in crisis communication and management and gauging public perceptions. A combination of search terms used included “Ebola,” “Dallas-Fort Worth,” and “Crisis Response.”

4.1. Data collection

Primary data collection was done through face-to-face interviews and an online survey using Qualtrics, a subscription software for collecting online data and analyzing it. Ethical approval was obtained from the relevant IRB Board at the University of North Texas for both instruments, as mandated by the US National Science Foundation that funded the study. 43 officials who had played a key role during the Ebola crisis response in the metropolis were initially contacted by phone. Their names were compiled from the review of media articles and posts and informal conversations with emergency management coordinators in the region. Of the 43 only 24 agreed to face-to-face interviews, generating a response rate of 55.8%. They were either emergency management coordinators, health care professionals or epidemiologists representing cities, counties, hospitals and universities from the four big counties — Dallas, Denton, Tarrant and Collin. Signed informed consent forms were received from all the respondents. Time spent per interview was between 45 and 90 min, averaging 60 min.

With an aim to increase the response rate, the research team modified the survey used for the face-to-face interviews to an on-line survey and administered it in January 2016, to 206 local government agency response experts from the metropolis. Two reminders were sent, one on February 22, 2016 and another on May 3, 2016 and the survey closed on May 27, 2016. Unfortunately despite concerted efforts, of the 206 only 28 responded to the survey (=13.6% response rate) of which only 12 were complete (=5.8% final response rate). Such a low response rate is likely due to a combination of reasons including interview fatigue among agencies that had come under heavy scrutiny from the news media and other researchers; the feeling that their responses would be misconstrued; and fear of retribution from the media, public and government agencies. There were 15 questions in the e-survey and on average it took about 10 – 15 min to complete. Respondent characteristics are described in Table 1.

4.2. Survey Instrument

To identify the major sources of crisis information and preferred channels of communication, respondents were asked:

- RQ1a: To what extent did you depend on the agency/ media sources [listed] in the first month, for information and updates? (Rate them by extent of use ranging from 1 = not at all to 5 = very great extent)
- RQ1b: During the first month of the Ebola crisis, which of the channels [listed] did your organization use, to update and inform the public about the unfolding crisis and protective actions to take?

To examine the value of emergency response planning documents, articulated as SOPs, the respondents were asked:

- RQ2: Did you have a Standard Operating Procedure for infectious diseases and did you use it? If 'YES' how did using the SOP help crisis response? If 'NO' explain why you did not use the existing SOP?

Finally, to investigate the ad hoc measures devised by organizations to meet emergent response needs and characterizing flexibility and improvisational decision-making, the respondents were asked:

- RQ3a: Did you create a new SOP or an addendum to your older plan specifically in response to this crisis?
- RQ3b: Given these experiences, how have you changed your organizational practices?

Printed materials including pamphlets, after action reports, professional presentations, and other publications used or created for public distribution during the crisis were also collected from the respondents after their interview.

4.3. Methods of analysis

In order to analyze the interview texts and responses, a triangulation technique was adopted with the primary data from face-to-face and online surveys. The aim was to gather a richer explanation related to the firsthand experiences of first responders during the Ebola Crisis, while providing a balanced picture on controversial issues related to information dissemination, communication and response procedures adopted, and perceptions of intergovernmental coordination. Others have advocated this technique to examine various viewpoints [2,13]. This technique was also employed with the secondary data collected, to cross-check inferences made from primary data analyses as suggested by scholars O’Donoghue and Punch [32].

One of the concerns in applying the technique is related to the type of questions asked of respondents and how best to interpret their responses. While there is a potential for misinterpretation of information provided, special care was taken to clarify meanings of words that may be contradictory to the context under discussion. The coding process of texts generated from interviews was done in two stages. In the first stage of coding, an independent coder was assigned to record the responses provided by 24 face-to-face respondents. A second coder was employed to highlight key points made by the respondents and classified these by major themes or categories. In the second stage, the researchers verified the major themes with secondary data collected from the printed materials as well as primary data collected from surveys. The coding process focused on answering the research questions and all materials were read carefully multiple times.

| Table 1: Respondent Characteristics. |
|--------------------------------------|
|                                       | Face-to-Face Respondents | E-Survey Respondents |
| Avg. Age                              | 43                      | 48                   |
| Education:                           |                         |                      |
| Masters Degree                       | 54%                     | 25%                  |
| Bachelor Degree                      | 46%                     | 33%                  |
| Associate Degree/High School         | –                       | 33%                  |
| Income (per year)                    | US$ 88,666              | US$ 86,322           |
| Ethnicity:                           |                         |                      |
| White                                | 78%                     | 91%                  |
| Non-White                            | 22%                     | 9%                   |
| Avg. Years in Position               | 6.79                    | 13.42                |
| Avg. Years of Residence in Metropolis| 20.58                   | 29.25                |
| Avg. # of Federal Disaster Declarations Responded | 8.42                  | 4.5                  |
| Sample Size                          | 24                      | 12                   |
5. Results and discussions

Two themes that emerged recurrently in the content analyses were related to the credibility of information sources and the use of SOPs in light of privacy issues, and administrative responsibilities.

5.1. Information sources and communication management

The respondents (face-to-face and e-surveys combined) noted all their sources of information in the first month of the crisis and ranked the top three in order of preference as the CDC (i.e., Mean = 4.36), the Texas Department of State Health Services (Mean = 4.29), and the North Central Texas Trauma Regional Advisory Council (i.e., Mean = 3.50).

While much of the information appeared to flow down from government agencies at a higher level, the respondents also reported that, during the first month of the Ebola crisis, they utilized additional channels to update and inform the public about Ebola including, City Websites (Mean = 3.76), Face-to-Face communication (Mean = 3.17), and Schools (Mean = 3.60).

Data gathered from the online survey suggested that most respondents working in municipalities and county governments utilized information provided by the higher level government agencies. Documents, news articles and after-action reports reviewed also suggest the important role played by CDC during the crisis. A respondent who was a high ranking official stated that,

“CDC and DSHS have done reasonably well at distributing guidance documents throughout the Ebola crisis. However, application of the guidance in a scenario-driven, real-world format would be more beneficial to the hands-on clinical provider versus simply reading the guidance documents.”

However, there appear to be differences of opinion on the performance of the CDC. Major challenges reported by local agencies during the crisis were related to conflicting information linked to regulations and procedures from the CDC [5,15], non-credible information from state and federal agencies, and misleading scientific evidence. There was a general consensus among respondents that the overall response by CDC, healthcare officials and organizations was slow, and that conflicting information created confusion and updates were not provided in a timely manner. These comments are consistent with findings presented in the current literature, especially on the major challenges in light of privacy issues, and administrative responsibilities.

Inadequate guidance from the CDC resulted in emergency managers losing trust in the CDC’s procedures and stating,

“The trustworthiness of information coordinated by the CDC was near to none.”

In addition to lack of communication among organizations across political boundaries, respondents also lamented on non-credible information from state and federal agencies. Local emergency managers reported that the flow of information was changing too rapidly, almost every 15–25 min. Much of the confusion was produced by fast changing procedures with little time to process information. A head of a local agency argued that,

“the CDC first informed local agencies that particular person was not at risk, then sent people in gears to clean a school.”

Respondents lamented that there was a disconnect between large and small jurisdictions and, it was hard to “insert themselves into the hierarchy.” Smaller jurisdictions were not privy to information and resources quickly enough and it was frustrating that they were dependent on larger city organizations for information updates.

We believe that constantly changing scientific information created a sense of confusion among the public and local agencies. During the first days of the Ebola crisis, the CDC did not provide adequate guidance, which caused emergency managers to lose trust in CDC procedures and guidelines [15]. In addition, medical centers and doctors were advised to respond as needed but managers reported that, “the doctors changed messages too many times,” whereby local agencies found themselves not trusting medical experts either.

Local emergency managers were also confused on how best to handle health care personnel working in the large city hospital (where Mr. Duncan had died) but traveling to their homes in adjoining smaller cities. Lack of travel restrictions or monitoring mechanisms in the first two weeks increased the anxiety that emergency medical services and law enforcement personnel might get infected.

5.2. Standard Operating Procedures (SOPs)

Of the 36 respondents (face-to-face and online surveys combined) about two thirds (75%) reported their jurisdiction had a SOP for emergency response to health threats, but it fell short of meeting the inevitable needs of the Ebola crisis. Resultantly, 81% reported updating their SOP with an addendum specifically for critical infectious diseases like Ebola. On the other hand, about 16.7% of the respondents said their organization did not use SOPs related to infectious diseases.

- Use of SOPs

Respondents who acknowledged the use of SOPs were further prompted to explain how these helped with crisis response. About 66.7% of those we interviewed face-to-face agreed that the SOP provided them with a template or general guidance to coordinate activities, which in turn, created a sense of Trust they hoped to receive from their peers.1 The psychological benefits of SOPs on the ability of their organizations to respond to the crisis may also be regarded as a noteworthy accomplishment of crisis planning practices. Statements favoring SOPs included,

“the [SOPs] were a basis for us to develop our response plan from” and “we followed standard practices for infection control.”

The element of trust and perception of professionalism were also underscored in comments like,

“we were able to gain trust because we could show that we had thought about this and had a plan. It had a calming effect…”

“also allowed us a starting point- even though some things may have had to be adjusted due to the circumstances, we at least had a place to start.”

Most respondents highlighted the value of SOPs in providing administrative and procedural standards for clarity and minimizing confusion and stated that,

“it removed confusion/fog of war”; “gave us a basis to go off of”; “helped continuity of operations.”

1 The figure is based on 24 face-to-face interviews. The responses were based on an open-ended question, which asked response if their organizations have Standard Operating Procedures (SOPs) for infectious diseases. “If “yes” then how did having these SOPs help crisis response?”
Table 2
Selected Statements Related to the Merits of Using SOPs.

| If 'Yes' then how did having these SOPs help crisis response? | If 'No' then why did you not use the SOPs? |
|-------------------------------------------------------------|------------------------------------------|
| **E-Survey Responses:**<br>They were a bases for us to develop our response plan from. | Out of date and did not address Ebola. We were getting guidance from health department via CDC. Public Health Hasn’t shared anything with us. |
| Followed standard practices for infection control. | <br>We were able to gain trust because we had thought about this and had a plan. It had a calming effect. It also allowed us a starting point - even though some things may have had to be adjusted due to the circumstances, we at least had a place to start. |
| Less having to “start from scratch.”<br>Helped continuity of operations.<br>Having a basis for infectious response helped.<br>Removed confusion/fog of war. | <br>Gave us a basis to go off of. Followed and resulted in less confusion |
| Face-to Face Responses:<br>Started off using their infectious disease manual. Gave them a starting point but soon realized they need to modify it. | <br>Just an assurance of what category agent this is and what we need to do. If they have a fever, put your PPE and go in |
| They have a pandemic influenza response plan and Health and Medical Annex for EOP.<br>It only had universal precautions so it had to be modified PPE. | <br>Used SOP set by TXDSHS. They have forms for each disease and recommend prophylactics <https://www.google.ae/search?q=guidance+from+health+department+via+CDC> and then enter it in the database. |
| Helped but nursing staff is familiar with that SOP for infections. | <br>Helped but nursing staff is familiar with that SOP for infections. |
| Worked well but not specifically for Ebola. But they have set procedures. | <br>It worked well but not specifically for Ebola. But they have set procedures. |

- **Did not use SOPs**

Among the 16.7% respondents who said their organization did not use SOPs related to infectious diseases, there was a general agreement that the response plan or SOPs were not tailored to an infectious disease such as Ebola and they preferred to rely on the federal or state government for up to date directives. One respondent noted that,

> “the SOPs were out of date and did not address Ebola. We were getting guidance from health department via CDC”.

Another suggested it was due to the lack of cooperation from public health agencies stating, “public health hadn’t shared anything with us.” Table 2 provides additional selected responses to the merits and inadequacies of SOPs.

5.3. Communication challenges and government protocols

Lack of confidence in the CDC directives and medical experts’ advice led some organizations to assess their jurisdiction’s threat and decide on self-imposed quarantine. As a local emergency manager of a small city stated,

> “………………..quarantine among the fire fighters who were concerned with contaminating family members if they went home. It was a dynamic situation as far as protection, transportation, and care for themselves and the public. Even though scientific information said safe to go home, fire fighters did not want to go home…”

The responses also suggest that individuals as well as organizations improvised to deal with the novel challenges of acquiring and donning protective gear and screening patients. For example,

> “PPE protocols, screening individuals coming into the hospitals, and ad hoc notification system was set up by IT [departments]”, “[X] has their own police dispatch, they send it out. Ebola Governance Council was formed in the first week … It got changed to the Emergency Management Governance Council last week (only hospital folks).”

The TTF Report (2014) also noted that the structure of the Task Force was,

> “unique and effective in that it combined academic knowledge with the agency leadership and practical experience of prior Texas emergencies.”

It consisted of “leading scientists, physicians, public policy, and public health professionals, and also the leadership of relevant state agencies such as DSHS and TCEQ.”

Local agencies also faced challenges because of the Health Insurance Portability and Accountability Act (HIPAA) and Family Educational Rights and Privacy Act (FERPA), two US federal regulations that limit the sharing of patient information to maintain privacy. Emergency management coordinators who were given the list of citizens to be monitored, were forced not to share the information with their coworkers. Furthermore, jurisdictions kept crucial information private among close networks.

Initially the Dallas City Health Department shared the list with the Dallas Office of Emergency Management and Dallas Independent School Districts, while leaving other adjoining jurisdictions out of the network. One survey respondent argued that,

> “every day until Ebola, they had a protocol to handle Ebola surveillance, but they stopped giving information to their Health department.”

Another noted that the City of Dallas in particular, had “horrible communication” with other agencies. Unable to receive information from the City of Dallas, local agencies contacted colleagues and friends at other county and state organizations such as the North Texas Central Council of Governments to receive information updates.

The selected transcripts discussed in the preceding sections, highlight the value of generic infectious disease management SOPs in serving as a starting point for response actions in the first days of the crisis. However, they also underscore the inadequacies of SOPs as the complexities of the unfolding crisis increased, forcing ad hoc, improvisational measures to be devised by local government agencies. While these improvised solutions proved successful they were necessitated by a lack of trust and coordination between lower and higher level government agencies and increasing fear among the public at large.

According to the public management literature, policies and practices are often contradictory and full of paradoxes [25]. The onus of answering questions like “who will be protected against what, when, and where?” [6] is inadvertently the responsibility of local government agencies as it is the very nature of emergency management governance structure in the USA. Response to the Ebola crisis also reflects political and administrative tensions among public agencies at local, regional, and state levels. These tensions can be explained by bureaucratic norms
and lack of credible information from public health agencies. Public agencies responding to communicable diseases were “bureaucratized” [3], where local government agencies had an expectation that the bulk of response activities was to be shouldered by a higher level government agency. Specifically, the expectation that information related to Ebola should be provided by the national public health agency the CDC; and that, this information was vetted and guided by experts and scientific knowledge. Writing about the pandemic response, [3] argues that “in their roles as experts of disease outbreak control, the agencies are likely to be called on to guide and publicly legitimate their governments’ pandemic responses.”

The Ebola response also highlights the importance of trust in the context of risk communication. According to [26], much of the failure in emergency response is related to “the failure of risk communication initiatives” in particular the reaction of the public to the content of messages as well as the sources of these messages. Under conditions of uncertainty the credibility of the information and “trust in those providing the information” ([26], p.4) is immediately called to question. If local agencies are to preserve their reputation and legitimacy among their constituents, they have to acknowledge that although command and control structures are important, there is value in “flexibility and nimble processes to ensure adjusting to changing situations” as demonstrated by the early days of the Ebola crisis response. Such “adaptive management –the process that encourages sharing of information and collaboration would foster organizational learning and facilitate adaptation and improvisation ([50], p.136).

5.4. Limitations

As with any research, this study is also not without its limitations. First, is the issue of low response rate despite concerted efforts by the research team to contact key informants multiple times. However, this is not unusual for research studies collecting ephemeral data immediately following the occurrence of a crisis. Scholars have argued that such research is often perceived as opportunistic (Wenger 1989; [17]), by the respondents and this perceived lack of trust is likely to have impacted response rates. Moreover, as Bertrand and Lajtha (2002) suggest, “many organizations are reluctant to publish/broadcast evidence of structural or management weakness – real or apparent. There are real life sanctions – for example, legal and market....” (p.188). Secondly, this research is limited to emergency management officials from city, county, schools, universities, hospitals and health departments in the DFW metropolitan area. Thus the findings on the preferences of information sources and the merits or inadequacies of SOPs for communicable and infectious diseases may not be generalizable to other parts of the US. These need further investigation. Despite these limitations, we believe that this research makes a significant contribution to health crisis response planning and management in the USA.

6. Conclusion

Decision making in light of emerging, transboundary crises of our times exacerbates challenges for emergency management organizations because SOPs created on the basis of the traditional concepts of an anticipated threat, urgency and uncertainty often fall short of response generated demands. This research highlighted that the Ebola crisis management response in the DFW metropolitan region resulted in both failed and successful outcomes including a breakdown in communication between small city governments/municipalities and higher levels of government at the State and Federal levels and timely improvised decision-making instrumental in preventing the spread of the disease to other parts of the country. The findings of this research present at least three implications for practice:

6.1. Planning in continuum

There is value in SOPs being established and tested to maintain a state of readiness, build multisector collaboration and trust, and increase procedural memory of response personnel. But they should be viewed as a “continuous process that can be updated and enriched with user experiences” [36]. In transboundary crises which are infrequent events that cut across multiple sovereign states and political boundaries, flexibility in decision making will be called for and improvised response the new norm.

However, finding a balance between flexibility and planning is a dilemma for response organizations [46]. Hence, individual and collective improvisational decisions should be logged, studied, and shared while training, to demonstrate the unanticipated opportunities or benefits reaped. Simultaneously, working on conducting threat assessments and writing emergency plans for known threats should continue.

For this an understanding of what makes SOPs work or fail is vital. Scholars have underlined the concept of ‘fantasy documents’ [5,12] in disaster preparedness planning as written plans that are just words and do not take into account emergent situations and fail during execution. Regular training to test the plans [12], although resource intensive is essential. Hence, further study is required to understand how more effective plans can be created by organizations to respond to health crises.

6.2. Crisis learning, a window of opportunity

The field of crisis management is in its infancy and as such each crisis will serve as a window of opportunity for effecting new institutional practices or industrial regulations to improve the crisis management process. Specifically in the state of Texas, many Ebola crisis response agencies have created or amended existing SOPs in preparation for future infectious disease threats. New addenda include protocols for donning and doffing PPEs, sharing of information with first responder agencies, fitting ambulance for transportation of infected patients and plans for regular drills and exercises to test their plans.

The State of Texas’s statutory framework on information sharing related to communicable diseases has also been changed. In the months following the crisis, the Governor of Texas instituted the HB2646 Bill amending the Texas Health and Safety Code (Dallas County Health and Human Services 2015). There is now a clause which authorizes the disclosure of information by local health departments for infectious disease threats, allowing first responders notification of individuals being monitored for communicable diseases through the EMS dispatch system.

6.3. Learning from successes and failures

Crisis call into question the confidence of response organizations as members experience fear and reprimand from the media and public. There is a need to ensure that as a crisis unfolds, not only failures but successes are noted and praised. Consistent with the social amplification of risk, where the process is amplified by the occurrence of risk-related events, the media has a tremendous role to play in framing crises appropriately and drawing the public, political and organizational leadership’s attention to laudable efforts by first response personnel to help build and rebuild their confidence [26]. Furthermore, as noted by Rolison and Hanoch [38] in their study of US residents perceptions of the Ebola virus, those with greater knowledge of the virus perceived less risk of contracting the virus and were more serious about taking protective actions compared to those with lesser knowledge. Thus providing accurate, reliable and up to date information through multiple trustworthy sources (e.g. traditional media, the internet, general practitioners, friends and family members or others) to enhance residents knowledge as the crisis unfolds will be crucial [16,37].
6.4. Future research directions

The Ebola crisis response suggests a need for further research in the areas of leadership as there was a variation in the perceived success of response by agencies at different levels of government. While some agencies perceived the CDC’s response as slow and inadequate, others reported that the CDC did the best they could under the circumstances and were able to distribute guidance documents in a timely manner. On the other hand, leadership roles assumed at the local level were consistently applauded [45]. It would also be worthwhile to understand what styles of leadership are effective in transboundary crisis response with ever changing needs, calling for improvised decision making. Finally, understanding how agencies and the public at large measure or characterize effective response is. It is measured in the time of response or framing of the issue by the media or political interest etc. This will likely help inform responding agencies on how to manage their organizational reputation and performance in future crisis.

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