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ORIGINAL PAPER

After the Waters Receded: A Qualitative Study of University Official's Disaster Experiences During the Great Iowa Flood of 2008

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Abstract When the Great Flood of 2008 hit towns across Eastern Iowa, officials from the University of Iowa shut its operations for a week, relocated and evacuated students and community residents, and suffered damage to over a dozen buildings. This study is a qualitative assessment of the experiences and perceptions of twelve university officials involved in the response and management of the disaster. Major themes are presented according to phases of the Disaster Management Cycle. During the preparedness phase, an established all-hazards plan as well as specific annexes for flooding and pandemic influenza proved to enhance community response to the flood. However, training university clientele across a large organization to execute these plans and respond to future disasters is not an easy task. The content and effective means for delivering these trainings are areas for further research. During the response phase of the flood, officials swiftly expedited a business continuity plan to assure that personnel were paid during the university closure. However, enforcing a policy to avoid coming to work during the closure was challenging. Thus, future work must be done to determine and implement effective disaster communications that relay clear messages about roles and responsibilities. Now, in recovery, the university must rebuild its infrastructure and consider potential mental health issues. Lessons learned from the Great Flood of 2008 provide the opportunity to self-assess and prepare universities for disasters in the future.

Keywords Disasters · Floods · Universities

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Introduction

In late Spring 2008, Iowa suffered the worst flooding recorded in state history. Melted snow from a harsh winter coupled with spring storms brought rivers, streams and reservoirs to unprecedented water levels. The University of Iowa, located in Eastern Iowa, was among the hardest hit communities. With more than a dozen flooded buildings, the University was closed for one week. Hundreds of local residents from the university and surrounding community, including students, were displaced. Two years after the flood, the University is still recovering from this disaster, with two departments displaced and many buildings still unusable.

The Great Iowa Flood and other events, such as the 2007 Virginia Tech shootings, demonstrate that natural as well as human-induced disasters have severely affected universities and colleges throughout the U.S. [1]. Other types of hazards, such as the 2009 H1N1 flu pandemic was not as serious as predicted but also pose a threat to University campuses. Universities must create and execute centralized disaster response plans for a complex environment with large and diverse student and staff populations dispersed across many different buildings often over a wide geographic area.

Few studies have examined University disaster response plans, and these have focused on response to health emergencies and violence such as the 2007 Virginia Tech

shooting. Two previous studies found that only a handful of universities and colleges throughout the US have policies on school shootings and pandemic influenza [2, 3]. An evaluation of the University of Washington's disaster plan revealed significant gaps related to isolation and quarantine, continuity of operations, disaster mental health services, health services, tracking travel of students and personnel, and communications problems [3]. The 2007 Virginia Tech shootings revealed challenges and inadequacies in emergency communications and response strategies specific to school shootings. During the shootings, communications problems became more serious as the disaster proceeded [4]. Since then, mass notification systems have become a high priority in educational institutes and the term "active shooter" has become part of the dialogue in campus safety and security [5, 6]. With increased attention to disasters, institutes of higher education have begun to adopt disaster response plans or policies, many of which are general and lack specificity. To our knowledge, no previous studies have been conducted on university preparedness for natural disasters [3].

This qualitative study is the first examination of a university's response to a wide scale natural disaster, specifically, the Great Iowa Flood of 2008. We describe the disaster experience of university officials. The overall goal of this research is to understand the strengths and weaknesses in university disaster preparedness protocols and identify the areas for improvement.

Methods

Qualitative interviews were conducted with twelve key informants from the University of Iowa with leadership roles in various units involved in the flood response during the summer of 2008. The units represented in this study were central administration, risk management, human resources, public safety, university relations/communications, university housing, student health, student mental health, and the University of Iowa Health Care.

A semi-structured interview guide was developed using the Disaster Management Cycle as the main framework. The US Department of Education uses the cycle as a guide for schools to understand and develop disaster plans. There are four defining phases of this cycle: mitigation, preparedness, response and recovery. For purposes of this study, we combined mitigation and preparedness into one category representing the pre-event preparedness stage.

For each of the three stages, we created open-ended questions to gather in-depth information about experiences, behaviors and perceptions. Under mitigation/preparedness, we explored training, plans, procedures, communications strategies, and equipment/supplies. Under response, we assessed disaster management roles and actual experiences with previous disasters. Under recovery, we asked key informants about the University's experiences in and challenges to recovering from the recent flood.

Interviews were conducted between May and September of 2009 in English at the key informant's place of work at the university and lasted approximately 1 h. For each session, two members of our 3-person field team attended all interviews, one to capture field notes and the other to ask interview questions. All sessions were digitally recorded, and notes were transcribed and checked against digital recordings. This research was approved by the Human Subjects Review Board at the University of Iowa.

Analysis

Using Framework Synthesis, we adopted the Cycle of Emergency Management as the a prioiri framework for the extraction and synthesis of findings. Our initial codebook included the three stages of preparedness/mitigation, response and recovery as super-codes and open-ended questions from the interview guide as sub-codes [7–9]. Using an iterative coding process, two members of the team applied this scheme to the initial qualitative sessions to rearrange qualitative data into appropriate super-codes and sub-codes. This led to the identification of patterns, categories and themes [9]. As additional interview data were included, we used the initial codebook to confirm findings. This involved analyzing how patterns, themes, and categories were consistent or deviant from initial findings. We also added additional codes when emergent themes were identified.

Finally, we triangulated data by identifying and summarizing themes across units and respondents. To quantitatively describe the data that emerged from our interviews, we summed the frequency of themes according to phase of emergency management (preparedness, response, recovery and crosscutting which overlapped across these three phases) and by three categories of units (i.e., Administration/Human Resources (HR), Public Health and Safety, and Housing/Facilities). Because of the small number of transcripts, we were able to code and triangulate by hand.

Results

Quantitative Findings

Demographics

Slightly over half of those interviewed were men (58%) (Table 1). Most informants worked in administration or

Table 1 Characteristics of respondents (n = 12)

Department employed	
Public health and safety	n = 4 (33%)
Public safety (UI police)	
UIHC	
Student health	
University counseling services	
Housing/facilities	n = 3 (25%)
Facilities management	
Iowa memorial union	
University housing	
Administration/human resources (HR)	n = 5 (42%)
Provost administration	
Risk management	
Human resources	
Gender	
Male	n = 7 (58%)
Female	n = 5 (42%)
Length of time working	Mean (range)
At the university	11.4 years (3 months–25 years)
In current position	8.3 years (3 months–25 years)
Disaster experience (prior to Great Flood of 2008)	
Tornado (2006)	n = 9 (75%)
Winds (1998)	n = 2 (17%)
Flood (1993)	n = 5 (42%)
Shooting (1991)	n = 5 (42%)

human resource positions (42%), while those working in public health and safety positions (33%) and in housing or facilities (25%) comprised the remainder of those interviewed. Key informants at the University of Iowa were employed an average of 11.4 years.

Qualitative Findings

Preparedness and Mitigation

Respondents identified a number of themes related to preparing for floods and other types of disasters. The themes most frequently mentioned by Public Health and Safety and Administration/HR were having a plan or policy and the inadequacies of these existing plans. Attitudes of university staff, faculty and students were also mentioned as critical factors that affected preparedness. In particular, positive engagement of the university community was necessary to improve preparedness, as indicated by Housing/Facilities and Administration/HR. On the other hand, an unwillingness to prepare could hinder preparedness, as also noted by Administration/HR. Finally, procedural issues in training and communication were discussed by all informants (Fig. 1).

Established Disaster Preparedness Plans and Policy The University of Iowa is one of the few institutes of higher education in the U.S. with three disaster policies in place, and having a plan or policy was the most common theme mentioned by respondents overall (Fig. 1). According to respondents, a Flood Emergency Response Plan (FERP) was created after the university's experience with a previous flood in 1993. A pandemic influenza disaster plan was developed more recently in 2008 with the support from the UI Provost's office and efforts by the UI Upper Midwest Preparedness Training Center [10, 11]. The Critical Incident Management Plan (CIMP) is an all-hazards structured response strategy initially developed in January of 2001 and recently updated in September of 2008. The CIMP serves as the primary plan for all-hazards planning and management [12]. CIMP identifies roles and responsibilities, internal and external resources, and emergency communications procedures. These documents did guide actions during the Great Flood of 2008. Informants indicated that several aspects of these established plans were actualized during the flood and enhanced during the university's response efforts.

Individuals from Housing/Facilities highlighted that existing plans provided guidance for a necessary infrastructural response. The FERP plan allowed university officials to identify strategic locations for the placement of dikes during the flood. Furthermore, informants from public health and safety described the pandemic influenza plan as a "*great plan for the University*", citing that it helped University of Iowa Health Care (UIHC) hospitals and clinics to formalize its relationships with the University during the disaster. The plan established locations for triaging the injured and vaccinating large populations.

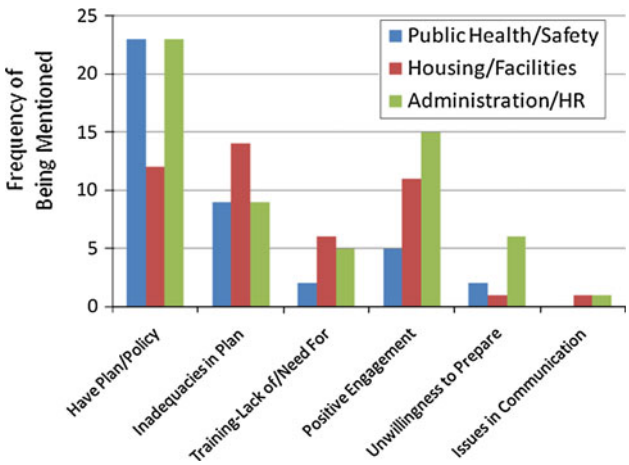

Fig. 1 Themes identified in preparedness and mitigation

> Because of pandemic flu planning…the plan allowed for us to put into place communications to our critical vendors. We knew how to get into touch with everyone—using emergency contact numbers, cell phones, and even knowing who was on what internet service provider.
> -Administration/HR

Informants felt that the University of Iowa was far more prepared for the 2008 flood than most other campuses would have been if faced with a similar disaster. Many directly attributed a high level of preparedness to the well integrated, interdepartmental planning process used at the University in response to previous disasters, including the 1993 flood and the 1991 school shooting.

However, because the unprecedented 500-year flood of 2008 posed additional and unique challenges, the need for improving plans and procedures were noted particularly among Housing/Facilities respondents who dealt with evacuations and closures of buildings. Many felt that current FERP and pan flu disaster plans had not been tested adequately and could create unnecessary panic when implemented. For example, public health and safety informants felt that when dealing with a larger student population during an "*event affecting* (*many*) *people*" such as a flu outbreak, you have to "*take careful, reasonable* (*and*) *progressive steps to…lessen panic*." Some expressed that plans lack the strength and necessary framework to ensure compliance. According to one respondent, during the flood of 2008, the Critical Incident Management Plan[1] was not easy to follow, and when implemented caused "*great confusion at the ground level*". Others indicated that determining how to coordinate the numerous plans in place across University departments was nearly impossible.

> We are all driven to write these incredible plans, but we really don't test them …and the reason why we don't test them is because finding the time to do so is challenging, and every plan presents its own challenges…as with plans that (are used to evacuate large concentrated populations), and when implemented (have) a high risk of creating panic where it should not exist. (Ultimately), there are so many plans, with many individual components, each with their own unique challenges, that I don't foresee being able to force people to follow the plans…or being able to coordinate plans together across departments…which (in the end) may cause confusion above anything else.

Training Great effort had been expended by the Risk Management and Public Safety departments to train core individuals involved in disaster response (i.e., informants in the study). And, various training methods have been utilized within the University of Iowa, including tabletop exercises, training conferences, mock drills, electronic/online training tutorials, campus lockdowns, and evacuations. Twice yearly, university-wide, full-scale emergency preparedness drills have positively and constructively allowed the university to practice disaster plans and identify problem areas. These emergency drills have also served to assign job responsibilities to individuals, which would be assumed in the case of a real disaster.

Although these trainings were perceived as extremely useful, respondents identified a number of challenges in conducting them. Informants in high-level disaster management roles preferred training through tabletop scenarios, rather than "*online training which really isn't sufficient*". Yet, those from Administration/HR expressed difficulty in pulling people away from their daily responsibilities to participate in ongoing tabletops offered by the University. Another respondent concluded that the Critical Incident Management Plan would have benefited from "*additional implementation training*." These comments reflect a need to revamp the training protocols at the university and carefully evaluate the content and format of training to assure that realistic exercises are utilized and roles are delineated.

> … it is crucial that real information and real training, as opposed to measures, devices and training which make people feel prepared but is not useful, and potentially even a hindrance, must happen.
> -Administration/HR

Comments made by many interviewees also point to a larger issue at hand, which is how to appropriately train a large lay community in disaster management. This was viewed as problematic for, say, a department administrator or a facilities manager called to assist in disaster management responsibilities beyond his or her routine daily tasks. Thus, universities must address significant challenges in determining the necessary amount of disaster information for staff and faculty. As one informant from Administration/HR suggested, "*We need a one page information sheet about what* (*each individual should*) *do if a disaster strikes…we need to get something at their desk*."

[1] The Critical Incident Management Plan is designed to maximize human survival and preservation of property, minimize danger, restore normal operations of the University, and assure responsive communications with the University, surrounding neighborhoods and cities. This Plan is set in operation whenever a natural or induced crisis affecting the University reaches proportions that cannot be handled by established measures. A crisis may be sudden and unforeseen, or there may be varying periods of warning. This Plan is intended to be sufficiently flexible to accommodate contingencies of all types, magnitudes, and duration. http://www.uiowa.edu/~pubsfty/cimp.pdf

Response

When discussing response actions to the flood, personnel challenges were highlighted most frequently by Public Health and Safety and Administration/HR (Fig. 2). Issues in disaster communication were also often mentioned across all departments but most often by Public Health and Safety informants. Destruction to campus infrastructure and use of various types of disaster response equipment and supplies were often described by Housing/Facilities and Administration/HR. For example, informants in Housing/Facilities repeatedly mentioned the important use of sandbags to barricade buildings and protect equipment; while those in Administration/HR frequently discussed the use of the Internet to establish a flood blog and campus websites to keep people informed. Housing/Facilities and Administration/HR reported engaging heavily in activities outside their daily routines during the flood disaster.

Personnel Challenges When the flood of 2008 reached the University of Iowa, officials were forced to shut down the majority of University buildings and facilities for nearly a week. This posed new challenges to Human Resources. However, because of the initial legwork in planning for continuity of services under the auspices of the pandemic influenza plan, business operations continued functioning to pay employees during the flood period.

Some confusion arose, however, when the University of Iowa announced that only "essential personnel" were required to be on-campus for safety reasons. Essential personnel were limited to those who worked in positions related to management, healthcare, response or continuity of university operations. For example, personnel with life-saving responsibilities such as those employed in the University health care system, security, or risk management may be considered essential. Each department was independently responsible for designating which personnel performed essential or non-essential functions. According to informants, especially those from Administration/HR, this process caused confusion and concern across campus, for which some were ill-prepared. For example, those interviewed noted how some researchers were very resistant, some even refusing to leave their work and/or labs behind. They viewed their work as essential, stating it was just as important as their own lives. Consequently, a number of individuals were escorted from their labs and offices by University security which, in turn, created "a lot of tension." Central administration later clarified that "the essential vs. non-essential designation refer(ed) to employees skill sets as they related to flood relief…and employees should contact their direct supervisors to determine their status."

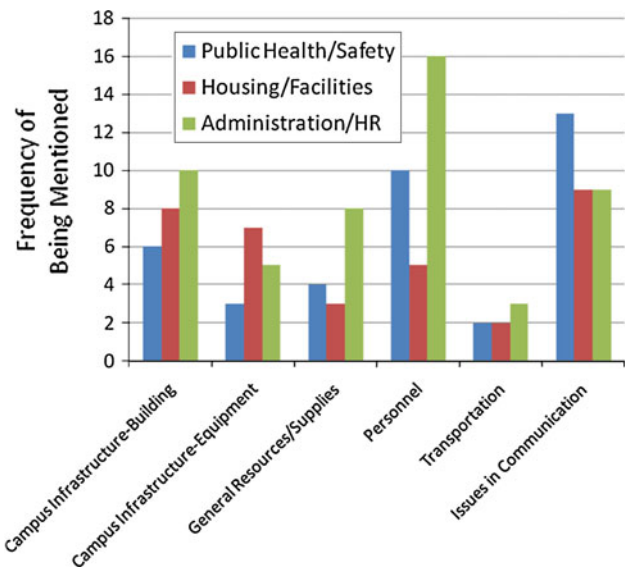

Fig. 2 Themes identified in response

Despite this setback, informants identified a core strength of the University while responding to the flood—the ability and willingness of University personnel to work as a team in the face of a disaster. A University facility official pointed out that staff, students and faculty "*were out there* (*in the field*), *prepared to make good decisions…the coordination of things became really incredible*." This was particularly evident during sandbagging efforts, when hundreds of volunteers from the university community worked side by side from sunup to sundown moving vital equipment and making sandbag walls.

Issues in Communications The confusion surrounding the essential and non-essential employee designation exemplified the university's challenge in disaster communications, the second most common theme that emerged from interviews (Fig. 2). The UI has instituted a number of disaster communications means, including emails, phone trees, University blogs, HAWK Alerts,[2] and PA system announcements. A flood blog was set up through UI Public Relations which provided a space for students, staff and faculty to share experiences. The blog was housed within a centralized website, which provided a one-stop shop of information and instructions regarding the flood. These technologies contributed to a multi-layered communications

[2] The Hawk Alert System is used to notify the campus community of threats to physical safety in emergency situations (tornado, violence, hazardous material incident, and so on). Hawk Alert allows UI administrators to send recorded or electronic emergency messages ("Hawk Alerts") to UI students, faculty, and staff by mobile phone, home phone, office phone, and e-mail (all at once), using contact information from the University's Enterprise Directory (updated via ISIS or Employee Self Service). The entire campus community can be notified in about 15 min. (http://hawkalert.uiowa.edu/).

plan developed by the UI to assure that individuals were kept up-to-date on current events.

Even with this extensive communications network, still, respondents felt that improvements could be made primarily in the content and coordination of disaster messages. Several respondents emphasized the need to keep communications clear, and open during an emergency. The lack of communications coordination between departments, administrative levels, and even the county, was cited as a root cause of response problems.

> Communications was key. People assume too much about how they will get their information. We learned that we needed to make sure that communications stayed open in order for things to run smoothly, because timing was everything, and decisions needed to be made (and communicated) at the moment…and when communications failed, we often (had to) scramble to figure out where and what the campus issues were.
> -Public Health and Safety

Recovery

As of March 13, 2010, the total economic impact to the University was estimated at $743 million [13]. A number of themes emerged when discussing the University's recovery process (Fig. 3). These included financial impacts, damage and rebuilding of university infrastructure, emotional issues and challenges in resuming normal activities, and issues in communications. Administration/HR often mentioned the emotional impacts, as did Housing/Facilities. Because of direct involvement in rebuilding structures, Housing/Facilities discussed the many challenges to re-establishing the university's infrastructure post-flood.

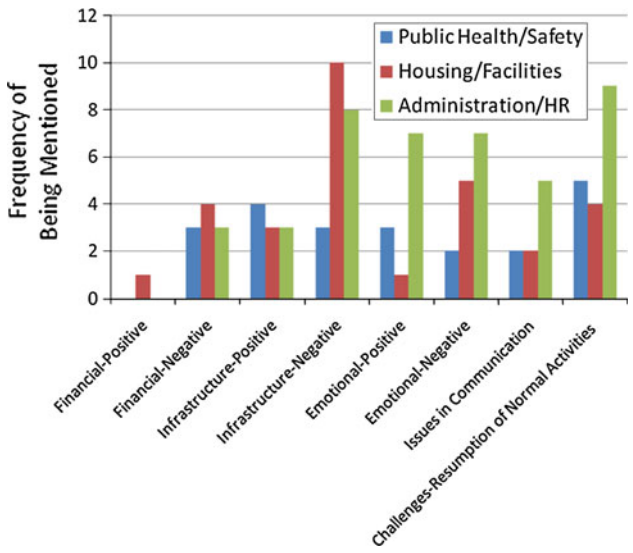

Fig. 3 Themes identified in recovery

Infrastructural Impact One interviewee noted that it took quite some time to realize the magnitude of destruction to University property. Infrastructural (building/facilities) recovery at the University was perceived by some informants as proceeding poorly (Fig. 2). Respondents close to the wreckage, particularly Housing/Facilities, felt that recovery efforts were moving along too slowly.

Although these challenges in restoring the University to pre-flood conditions remain, the University has not only been resourceful and resilient in facing its losses, but has effectively preserved a focus on education and research. Informants highlighted that the University responded quickly with many innovative temporary infrastructural solutions to allow departments to continue functioning during the recovery process, including, but not limited to: the purchase of mobile units for office/research use, the purchasing/renting of buildings off campus to house classes/performances, and even expanding bus services to accommodate newly established facilities.

Emotional Impact The impact resulting from displacements persisted during the recovery period. One informant said, "*So many people were suddenly out of a place to live, a place to work, and didn't know what to do*." Those interviewed from Administration/HR and Housing/Facilities mentioned that emotional recovery at the University since the flood of 2008 has been difficult at times. Evacuations required that many abandon their workplaces to slowly rising waters. One respondent indicated that some researchers had lost a lifetime of work; graduate students were starting over; and businesses had yet to re-open. The student union building was shut for a year, and students are feeling as if they lack a central gathering place. An interviewee noted that:

> We need to continue to recognize that we are still in the process of recovery. There is a lot of anxiety, and a great feeling of loss. We cannot forget that people are still displaced, and at the minimum, it will take 5-7 years to get everything back into its place.
> -Administration/HR

Several informants drew attention to the ability of many individuals at the University to maintain an optimistic outlook throughout the disaster, and come together to discover ways to positively cope. One official noted that, "*Family, friends, and churches were* (*all supportive*) *and helped to remind people about coping*". The official further explained that during the disaster "*the magnitude of destruction could be overwhelming… but* (*individuals*)

came together and became one group, which really helped."

Discussion

In so many ways, the UI has proven to be a resilient institution that has faced two devastating floods, a tornado in 2006, a school shooting in 1991 and numerous weather-related emergencies. Over the past two decades, a heightened level of awareness about disasters has led to significant strides in planning and preparedness. The Floods of 2008 tested many of the UI's existing plans and, in its aftermath of the flood, continues to challenge the university in improving disaster management protocols for the future.

Our qualitative interviews with University of Iowa personnel identified three main areas important for university planning. First, plans and procedures are the foundation for efficient and structured disaster management and response, and require ongoing training and enhancements. Second, during all stages of a disaster, clear and effective communication is critical, and should be directed by consistent, overarching leadership, both within and across departments. Third, during recovery it is essential that continued attention be given to both the infrastructural and mental health needs of the population.

Across the nation, universities likely adopt, at minimum, a basic all-hazards Incident Command Plan. The UI has created more than this minimum with established Flood Emergency Response and Pandemic Influenza Plans. Although these plans have not been thoroughly evaluated, our study and recent research supports the necessity in having resilient but flexible plans during any disaster [14]. UI's existing disaster plans were applied to the recent floods, and in fact demonstrated that business continuity procedures created under one plan, the pandemic influenza plan, were applied to another disaster, the 2008 flood.

Despite the challenges unique to the Great Flood of 2008, pre-tested annexes (i.e., flood response and pandemic sub-plans) within a larger all-hazards plan proved to be extremely helpful. These specific plans contain instruction needed to manage certain types of disasters and may be necessary at the high management level. This assures that university emergency managers and leadership have necessary guidance for life-saving decisions specific to a disaster. For example, the existing Flood Response Plan had basic strategies for evacuating students and for mobilizing flood response resources from the local community. We propose three categories of planning needed for universities: one for public health outbreaks, another for natural disasters, and a third for violence. Ultimately, however, university-based hazard assessments that consider local disaster risks and vulnerabilities would determine the types of plans needed for its specific population.

The stories told by informants further underscore the importance of pre-incident planning, when clear leadership and critical relationships are established. In the aftermath of Hurricane Katrina, researchers likewise found that organizational preparedness with transparent leadership was critical in their response [15]. This assures that when disaster strikes, procedures to adopt new policies, such as HR's policy to continue operations during the flood, was done swiftly with little resistance.

Indeed, the fine-tuning of existing plans and practices is part of the Disaster Management Cycle. Improvements to the training in, knowledge of, and access to established disaster plans are critical steps. The daily responsibilities of staff and faculty in the business of education often do not include disaster management, with the exception of personnel in Public Safety. Thus, training lay people in high-level complex decision-making required during a community-wide disaster is a significant challenge. This is an issue relevant both to the core disaster management players and lay personnel from various departments across campus. Logistically, training in a large university setting is extremely difficult to institutionalize, particularly given its diverse community of administrative and research staff, faculty, and students of domestic and international backgrounds. Furthermore, despite the recent focus on disasters such as the Haiti earthquake and H1N1, there still exists a feeling that disasters are far and few between and that practicing may be unnecessary. Thus, the methods in and content of trainings have yet to be established and depend on anticipated roles of the trainees during specific types of disaster.

Clear, concise and timely disaster communications insures adequate management in university settings with multiple buildings spread across large geographic areas [3, 15–17]. For the most part, disaster communications during the recent flood were delivered without incident. Through using multiple technologies (emails, phone tree, University blogs, HAWK Alerts, and PA system announcements), a multi-layered communications plan assures that through some means a message is delivered with a high probability of receipt by intended recipients.

Is one means of communications preferable over another? In a study of the 2007 tornado disaster in Kansas, emphasis was placed on low-tech and no-tech solutions for improving communications coordination during the disaster event, including distributing printed newsletters [16]. Another study concluded that the most effective way to communicate during a disaster is via a "one-stop" webpage about the disaster, designed to allow the many quasi-independent units of the University to obtain accessible, consistent information [3]. With no consensus, research has

yet to show if multiple methods or one specific means of disaster communications in a university setting is best.

The content of disaster messages was another significant area of concern and requires future evaluation. While many received necessary disaster information, few fully comprehended messages that designated individuals into essential vs. non-essential roles, for example. Future research is needed to determine the content of disaster instructions that lead to desired behavioral outcomes, such as leaving the workplace or staying home during the peak of a flood.

Finally, it is during the recovery process when a university can reflect upon successes and failures during a disaster. It is a time to improve established plans and attend to both the infrastructural and mental health needs of the population. The University of Iowa is still in the recovery phase even with its successes in rebuilding the community. Certainly, addressing the mental health needs of a diverse university population can be a challenge, especially as time progresses and the disaster becomes a distant memory. With departments across campus still under reconstruction and lacking permanent locations, continued efforts should be focused on reaching traumatized students and staff, either through University Counseling Services, Student Affairs or Employee Assistance Programs.

Limitations

This qualitative study has some limitations. Our sample of interviewees was small and purposive. However, subjects were selected to represent a wide range of departments across campus involved in disaster management and response. These individuals and their respective departments were identified with the assistance of the Chairperson of the University's Pandemic Influenza Task Force. Interviews may also have some level of reporting bias due to social desirability. During the recruitment phase and prior to all interviews, however, we emphasized the importance of a post-flood assessment, i.e., that findings can lead to improved disaster plans and protocols.

Conclusion

The University of Iowa's response to a wide scale natural disaster, specifically, the Great Iowa Flood of 2008, presented a unique opportunity to assess the disaster experiences of University officials, and their perceptions of strengths and vulnerabilities in the university community's disaster preparedness procedures. Existing disaster plans based on previous experience with a flood, shooting and tornado led to an organized response to the flood of 2008. Strong leadership and relationships established from recent disaster planning activities also significantly contributed to disaster management efforts. Two areas for improving preparedness include: training individuals across a large organizational structure and effective disaster communications with clear messages about roles and responsibilities. In all, the experiences shared by the UI provide important lessons, paving the way for other institutions of higher education to better manage the unique risks they may face during emergencies and disasters.

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