

Public Health Emergency Response: Evaluation of Implementation of a New Emergency Management System for Public Health in the State of Georgia

Funded in Part by the Natural Hazards
Research and Applications Information Center

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Abstract/Preface

Through a grant from the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), ICF Incorporated assisted with the development of an emergency management system comprised of emergency preparedness, response, recovery, and mitigation procedures for the Georgia Division of Public Health (DPH) during 1996 and 1997. Research revealed that the lack of pre-existing inter- and intra-organizational involvement in emergency planning placed significant burdens on public health professionals during large-scale disasters. ICF developed an emergency management system for DPH, the public health districts, and the county boards of health that is applicable and adaptable for the range of medical and public health issues that arise during a disaster. This Report presents a qualitative evaluation of the effectiveness of preparedness efforts in the State public health system during two subsequent disasters in 1998. Overall, the State and district staff reported that the planning process and regular plan maintenance implemented under the new public health system greatly improved their ability to respond effectively, especially in relation to staff management, communications, reduced stress, and improved deployment times, as well as other areas. However, some shortcomings with the new system were also noted. Overall, the system worked well, but will continue to require support and guidance from the DPH Emergency Coordinator for the procedures to run smoothly. The general sentiment after the analysis was that because of their prior flood experience, the public health staff knew they could handle anything; because of their planning, they knew they could do it efficiently.

This Report was funded in part through a Quick Response Research Grant from the Natural Hazards Research and Applications Information Center.

Research Question

? How did implementation of a new emergency management system for response of public health and medical emergencies in the State of Georgia in 1997 affect the Division of Public Health's (DPH's) response to closely timed flooding and tornado disasters in 1998? ?

Background

ICF Incorporated completed the development of an 18-month project to assist the Georgia DPH develop an emergency management system comprised of emergency preparedness, response, recovery, and mitigation procedures in 1997. This project was funded through a grant from the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC) to Troup County, Georgia. The purpose of the grant was to sponsor several mitigation initiatives in the aftermath of severe flooding and devastation in southwestern Georgia as a result of Tropical Storm Alberto in 1994.

Our research during the original grant (1996-1997) revealed that Georgia public health professionals found themselves overwhelmed and under-prepared to deal with a disaster on the scale of the 1994 floods. The lack of pre-existing inter- and intra-organizational involvement in emergency planning limited the ability of Georgia's DPH to effectively respond to several public challenges including:

- ◆ Providing public health nurses to staff ad hoc shelters as well as the health services role at American Red Cross shelters;
- ◆ Inspecting shelters for environmental health problems including food service;
- ◆ Meeting needs for pharmaceuticals;
- ◆ Inspecting potable water and septic systems;
- ◆ Conducting disease surveillance;
- ◆ Providing emergency medical services;
- ◆ Providing mosquito control; and
- ◆ Tracking displaced clients in the Federal-State Women, Infants, and Children's services program.

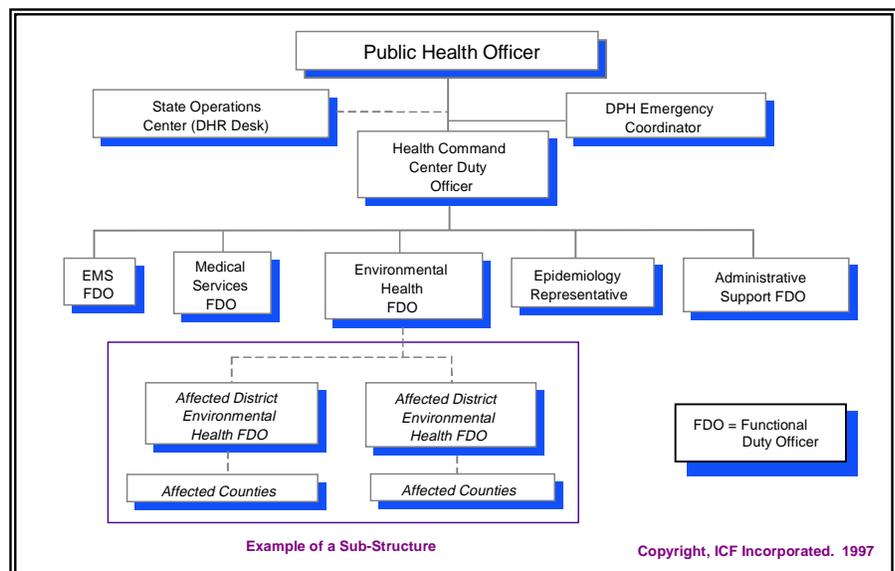
There was no clear understanding within the Division of the role DPH would be required to play during disaster conditions. Most local health agencies at the district and county levels were not active participants in the planning process with local emergency management agencies.

To address this need, ICF developed an emergency management system for DPH and the State's 19 public health districts and 159 county boards of health that is applicable for the range of medical and public health issues that arise during a disaster. The resulting system (1) establishes the organization, basic policies, delegations of authority, responsibilities, and actions required for effective mobilization, decision making, and resource use by public health staff during an emergency, and (2) establishes a system for recovery and mitigation after an incident. The concept of employing a functionally based emergency crisis system during a response (See Exhibit 1) was tested during the Division's response operations for the 1996 Summer Olympic Games in Atlanta, including operation of a Health Command Center. This emergency management system was fully introduced to public health staff in the State through training and exercises in the spring of 1997. Training was conducted at the State agency and at all 19 of the regional public health districts; county public health staff participated at the district trainings. Further implementation and evaluation of the new emergency response system was conducted in two table-top exercises in 1997. Interestingly, one of the exercises conducted in 1997 to initially test the new emergency management system parallels the disaster situation that occurred in the State in 1998: the simulation involved severe flooding in the south eastern portion of the State, followed by damage from eight tornadoes striking counties in the north-central portion of the State.

Disaster Situation

Natural disasters (flooding and tornadoes) occurred in two different portions of the State but only days apart in time (March 1998). These incidents required actions by state, district, and county public health responders on two fronts. Throughout both of these disasters, the State DPH Health Command Center was fully operational, and district and county level public health staff

Exhibit 1. Crisis Management System for Georgia Public Health



were active to varying degrees in implementing the new emergency management procedures in each of the two affected public health districts. These incidents provided an opportunity to test the procedures developed for the State Division and district offices in 1996 through 1997.

Disaster #1:

Severe storms and flooding struck Georgia starting on Saturday, March 7, 1998. Federal disaster aid was made available for flood victims in six Georgia counties (Baker, Dougherty, Irwin, Miller, Montgomery, and Seminole) under a major disaster declaration issued for the State by President Clinton on March 11, 1998. Ware County was added to the Governor's list of counties declared to be in a state of emergency on March 12, 1998. The affected public health district, District 8.2, activated its own Health Command Center. The American Red Cross established several shelters. Public health staff monitored mobile feeding sites, assisted with requests for bleach and clean-up kits, established and staffed a shelter for persons with special needs, performed field assessments, and conducted media outreach. District public health staff deployed a multi-disciplinary public health assessment team ("PHAST," pronounced "fast") and provided assistance in the field. Recovery from these floods lasted for months, particularly inspections of potable water and septic systems.



Disaster #2:

Severe tornadoes hit five northeast Georgia counties on Friday, March 20, 1998. A Presidential disaster declaration was approved for Hall and White Counties to include Public and Individual Assistance. The affected public health district, District 2, did not activate its own Health Command Center, but rather operated from the county Emergency Management Agency's (EMA) Emergency Operations Center (EOC). The American Red Cross opened shelters and DPH staff provided prescription services at one shelter. District public health staff deployed a multi-disciplinary PHAST and provided assistance in the field.



Methodology

Our methodology was to qualitatively evaluate the effectiveness of preparedness efforts in the State public health system. We recognize that it is difficult to evaluate these types of efforts quantitatively, because while the cost of plans and plan maintenance is readily available, quantitative data on corresponding benefits are not. In addition, disasters tend to vary in scale, making cross comparisons difficult. The 1998 flooding was not as large as that which occurred in 1994. The analytical timeframe is also a factor in any effectiveness determination: preparedness efforts paid for now, with appropriate maintenance, should continue to provide benefits for

decades into the future. The benefits of DPH's planning may also be transferable to other states, further increasing benefits and reducing overall costs. An important qualifying factor in our analysis is that it was difficult to distinguish between the experience gained from previous floods and disasters and the planning and training efforts conducted under the new emergency management system. We attempted to have interviewees delineate the perceived benefits of their prior experience versus the newly developed plans.

The ICF Team of investigators deployed to Georgia for two days of interviews on April 9 and 10, 1998. We felt that this approximately 20-day delay (from the initial onset of the disaster) was appropriate to allow participants a small amount of time for reflection, yet was not too distant from the response phase to forget important details. We interviewed state public health staff in Georgia's DPH during our field investigation, including the Division Deputy Director and Emergency Coordinator. We also interviewed the two affected Public Health districts (District 8.2, that was affected by flooding, and District 2, that was affected by tornadoes), including the District Health Directors, Emergency Coordinators, and staff who supported the response in each district. We focused our interviews to highlight lessons-learned from the implementation of the new emergency management system for public health response in the State. We also collected and analyzed situation reports, and analyzed and observed ongoing recovery operations.

After these interviews with DPH staff, we conducted follow-up telephone calls to further assess the level of inter- and intra-organizational preparedness efforts that preceded the response and mitigation actions following the events. In particular, we contacted county emergency management officials, hospital representatives, and American Red Cross officials by telephone. The goal was to discuss the response with staff outside the DPH organization who interacted with the DPH organization or who were customers for DPH services (e.g., the vice president of nursing at Phoebe Hospital in Albany). Unfortunately, two rounds of telephone calls - one round immediately following our on-site interviews and another round several months later - to County EMA Directors, the American Red Cross, and Phoebe Hospital produced limited responses.

Findings

Plan maintenance, such as training, exercising, and ongoing communication with state, district, and local counterparts, was crucial to obtaining the full value of the new public health emergency management system and preparedness efforts in Georgia. The DPH State Office and one of the districts involved in the recent disasters, District 8.2, were very active in working with and implementing their new plan and procedures prior to the onset of flooding in 1998. DPH and District 8.2 both had top-down management support for the new procedures, and were committed to incorporating the new system into their operations. For example, District 8.2 conducted monthly preparedness meetings with staff, and made continued progress in strengthening its relationships with the

county EMA, hospitals, and environmental health staff throughout the State.

However, District 2 management did not see the same value of the new procedures, and thus did not work the new system into the district's daily operations. Thus, when tornadoes struck this district, there was friction between this district's ad hoc approach and DPH's ongoing implementation of the new system. Exhibit 2 contrasts the preparedness situations in the two affected districts in more detail.

Sharing situation reports "up and down" the public health system during the disaster was found to be very important to providing all participants with a sense of the scope of public health-related disaster efforts. Sharing information was also helpful to reassure staff throughout the State that the public health system was being effectively managed and functioning well. District 8.2 distributed its situation reports to its counties, the State Health Command Center, the local medical society, and local hospitals. Both District 8.2 and 2 commented that they felt that the State should have similarly shared its situation reports with them. District 8.2 did not start receiving DPH situation reports until late in the response and District 2 complained that it did not know how the information it submitted was ever used by the State.

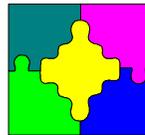
An important finding is the difficulty in maintaining dedicated support for a preparedness system. Even after (or perhaps because of!) successful implementation of the new

public health emergency management system in Georgia, DPH is now considering eliminating the dedicated Emergency Coordinator position at the State. Public health staff in District 8.2 and DPH in Atlanta strongly emphasized that this central position is necessary and important to the continued success of the system.

Public health staff in DPH in Atlanta and in District 8.2 emphasized the following benefits of preparedness and the new emergency management system:

✓ **Enhanced control during the disaster.**

Staff were managed more effectively and efficiently, and interactions among the State, the district, and the county-level response were more controlled. State staff believed the new system helped them to obtain the information they needed more effectively. Both the State and District 8.2 emphasized that the centralized Health Command Center concept "to work the disaster" was the key to this increased measure of control.



✓ **Communications technology improved the response.**

The State in particular relied heavily on Southern Company telephones¹, and found that these radios were extremely effective in coordinating activities. However, the benefit of this technology was more limited at the district level;

Exhibit 2. Contrast in Preparedness Between District 2 and District 8.2

Indicators of Response Capability	District 2	District 8.2
<i>Previous disaster experience</i>	Blizzard, two significant tornadoes, and the 1996 Olympics.	Large regional event (1994 floods), and a smaller repeat in 1998.
<i>Perspective on planning and new public health emergency management system</i>	Has not embraced the public health system emergency operating procedures concept.	Fully convinced of the value of preparedness and the new system.
<i>Management support</i>	Remains convinced that the District/County EMA relationship is enough. Wrote the public health contribution to the county plan, and feels the county plan is sufficient.	Strong leadership buy-in and ownership of the new public health response procedures and state-wide system.
<i>Training/Staff Awareness</i>	Limited depth in staff experience or training for response, though mentioned items they wanted (e.g., timesheet forms, situation report templates) that already exist in the plans.	Conducts monthly staff preparedness meetings. In the process of preparing a training course and exercise for staff. Also preparing outreach to begin involving county public health offices.
<i>Role of District Director during recent disasters</i>	Staffed county EOC and relief center. Limited formal delegation/ coordination.	Was not required to be involved in the daily management of the disaster. Started system in operation, efficiently and effectively delegated operations, and then stepped back and maintained daily business of the 14-county district.

¹ A dual function cellular phone and radio system developed by Southern Company and available to other parties. This system became operational within DPH during the 1996 Olympics and has been expanded.

District 2 has only two of these radios, and District 8.2 only has one. Both districts expressed a desire for more of these radios to further enhance communications during disaster response and recovery, particularly when staff may be working in the field.

✓ **Reduced stress and improved productivity.**

Public health staff with experience in both the 1994 and the 1998 flooding felt that their stress levels were considerably reduced in 1998. These staff emphasized that they were more productive during the response and recovery to the 1998 incidents.



✓ **Improved media outreach.**

A major benefit cited in District 8.2 was the capability to “get out ahead of public information” through early and proactive press releases. Press releases in 1994 tended to be reactive, whereas in 1998 public health staff were prepared with proactive information. In 1998, the media turned to the public health district for daily health information reports for the evening news.

✓ **Faster public health assessment and deployment of staff.**

In District 8.2, public health assessment teams were deployed to the field more quickly in 1998 as compared to 1994. In 1998, teams were deployed the afternoon of the onset of flooding, and were able to complete their assessment in the field in one day (note, however, that the extent of the damage in 1998 was substantially less than in 1994).



✓ **Better environmental health assessment procedures.**

In general, environmental health deployment and assessment occurred more smoothly in 1998 as compared to 1994. In 1994, state environmental agency staff “wanted to take over” the water contamination assessment. After the 1994 flooding, as part of the new public health disaster operating system, DPH and its state environmental agency counterparts hammered out their respective responsibilities. The result, in 1998, was a more informed and coordinated approach with no arguments about public health’s direction of the environmental health assessment effort.

✓ **Improved special needs procedures.**

District 8.2 established a special needs shelter more rapidly during the 1998 response (e.g., two days in 1998 versus seven to nine days in 1994). Furthermore, District 8.2 included questions on special needs and special diets in the environmental health shelter assessment questionnaire in its new disaster



procedures. Thus, in 1998, public health staff members analyzed special dietetic needs in the shelters, and made arrangements with a local hospital cafeteria to meet identified needs for special meals.

✓ **More efficient surveillance.**

Staff members who started working for District 8.2 after the 1994 floods observed that they were able to quickly and effectively assume the responsibilities of their functional positions, as documented in the procedures, during the 1998 response. An interview with the infectious disease control nurse at the local hospital confirmed that finding with respect to disease surveillance in 1998. Public health staff modified the 1994 disease surveillance survey instrument for use during the 1998 floods, and thus were able to more efficiently review emergency room records and tabulate the data from the onset of the disaster. In 1994, surveillance data on 35,000 individual entries were delivered to the CDC. However, these data were not returned to the health district in time to be analyzed in a timely manner. In 1998, psychosocial and illness measures were added to the survey, and data on 1,100 individual encounters targeted from just the affected counties were recorded and directly analyzed at the district level.

Public health staff at DPH in Atlanta and in Districts 2 and 8.2 emphasized the following shortcomings of the response effort:

✗ **Shelter location and staffing problems continued.**

American Red Cross rostered nurses did not staff emergency shelters, but left this responsibility to public health nurses. This occurred despite a memorandum of agreement and new arrangements made since the 1994 flooding. Furthermore, all three of the shelters opened by the American Red Cross in District 2 were located at sites that were not pre-approved (i.e., pre-inspected by public health environmental staff).



✗ **Administrative and technical demands were greater than anticipated.**

The administrative support needed to implement the new procedures was more burdensome than anticipated in District 8.2. Both districts stressed that additional communications equipment is needed to optimize public health response during a disaster. District 8.2 recommended that new staff positions be added to the procedures, such as a “scrounger” to locate resources from the community, and a technical person to manage hardware and electronics issues (such as re-wiring phone and fax lines for the command center, and ensuring that computer and communication systems function properly).



District 8.2's experiences in 1998 emphasized that each activated district EOC should, at a minimum, have at least one dedicated outgoing fax machine, more phone lines, and operational electronic mail. While District 2 did not feel that the reporting procedures to DPH had value, District 8.2 felt that the procedures helped minimize confusion by helping both the district and DPH to know what information to expect and when.



X More progress is needed to integrate mental health into the assessment team.

District 8.2 noted that, because mental health services are in the midst of being privatized in the State, it was difficult to convince them of their role in the system. Mental health representatives were included in planning and preparedness meetings prior to the disaster, but did not participate on the PHAST.

X Further implementation at the local level is still needed.

Both Districts 8.2 and 2 noted that they felt additional work is needed to implement the emergency management system more fully with their respective counties. The District 8.2 Director noted that this situation might be improved by having the districts coordinate more closely with their respective regional EMA coordinators. District 8.2 observed that coordination at the county level, although not optimum in 1998, was enhanced by the District's insistence that the county health department head nurse deploy to the county EMA. Furthermore, in 1994, county EMA staff did not even know who public health staff members were or what their responsibilities might be. In 1998, county EMAs began to recognize public health staff as a legitimate resource. However, there were still implementation problems. For example, the new EMA chief at Dougherty County in District 8.2 only wanted to deal with the county nurse manager as opposed to the district EOC.



Conclusions

As mentioned previously, it is very difficult to separate the effects of one's past experience from the effects of planning and preparing. We found that the State Office and District 8.2 staff clearly benefited from their previous disaster experience but virtually all of the interviewees maintained that the planning process and regular plan maintenance also added greatly to their ability to respond effectively. Regular meetings acted to reinforce the importance of planning and the roles each staff member would play (or could be asked to play) during disasters.

Key parts of the plan that were implemented include using a single point of coordination for the Emergency Operations Center. In both the State Office and District 8.2, the staff were prepared to quickly begin working from a central room. Both districts used the PHAST created under the new system to integrate key functions (e.g., nursing, environmental health, disease surveillance) in one group. The PHAST was dispatched quickly to assess public health needs immediately after the disasters and to circulate through shelters to ensure that public health needs were being met. Reporting and accounting procedures were set up quickly and information was distributed to key stakeholders.

The plans continue to be changed as staff recognize ways to improve procedures. For example, the administrative burden identified by District 8.2 will be corrected with some staff changes in addition to reporting changes. The plans have stayed flexible: PHASTs were staffed only with those staff required for the specific disaster circumstances and staff were able to take on different roles as the impacts changed.

It is interesting to note that the district most heavily affected by recent disasters is also the most supportive of the new planning process. It appears that areas that have never been overwhelmed (District 2) are content to assume that they can handle whatever is thrown their way. District staff that were overwhelmed by the 1994 disaster recognized that prior planning would have allowed them to work more effectively. During their 1998 disaster, they believe that their planning efforts paid off with a more proactive response and less stress on their staff. Because of their prior flood experience, they knew they could handle anything; because of the planning, they knew they could do it efficiently.

This statewide system will continue to need support and guidance from the DPH Emergency Coordinator. Work remains to more fully integrate the local county boards of health and county EMAs with the public health system. Furthermore, not all districts in the State have fully embraced the new disaster procedures, although significant progress in implementation has been made. To maintain the preparedness and mitigation gains that have been achieved, DPH will need to continuously emphasize exercising, standardization, and sharing of successful experiences and techniques throughout the State. In particular, DPH will need to be creative and persistent to solidify implementation of the system in districts with less real world disaster experiences to motivate them.



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