

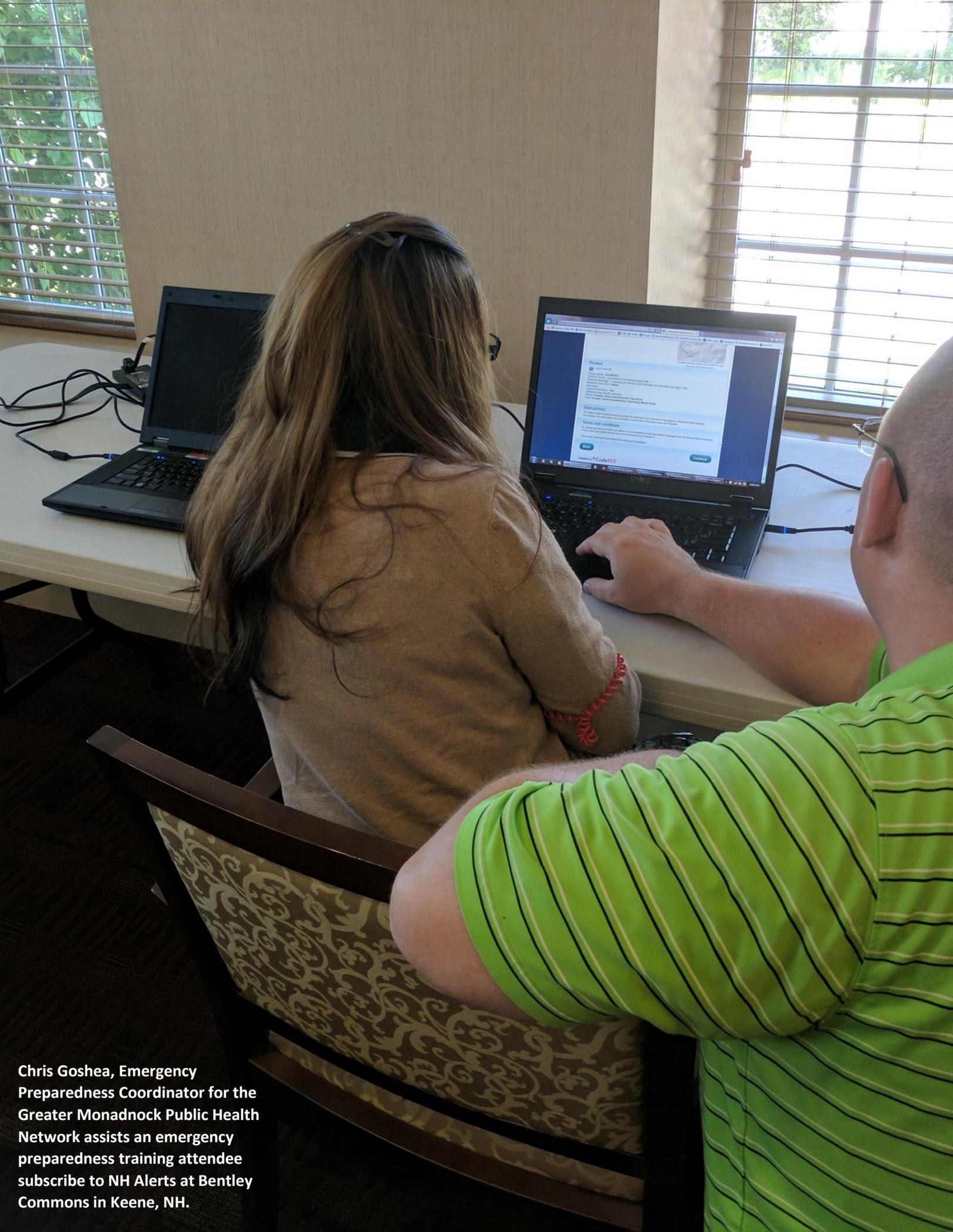
Climate and Health Intervention

Summary Report

The following materials were created using a Federal-pass-through grant of the State of New Hampshire Department of Health and Human Services, who awarded Cheshire County a Building Resilience Against Climate Effects & Severe Weather grant (RFP # 16-DHHS-DPHS-RPHN-BRACE-05; FAIN # UE1EH001046; CDFA #93.070) to develop a Climate and Health Adaptation Plan for the Monadnock Region.

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Chris Goshea, Emergency Preparedness Coordinator for the Greater Monadnock Public Health Network assists an emergency preparedness training attendee subscribe to NH Alerts at Bentley Commons in Keene, NH.

BACKGROUND

The Greater Monadnock Public Health Network contracted with Southwest Region Planning Commission (SWRPC) and Antioch University New England (AUNE) to work directly with the Public Health Advisory Council (PHAC) for the Monadnock Region (Council for a Healthier Community) to develop the Climate and Health Adaptation Plan (CHAP). SWRPC and AUNE assisted the CHC Executive Committee and Greater Monadnock Public Health Network (GMPHN) staff on a monthly basis from April 2016 to October 2016, with presentations to the full PHAC on two occasions. In 2017, CHAP participants continued to meet with the Executive Committee (January and May) and Full Council of the Public Network (January). Continuing into the Intervention Phase of the project, AUNE, SWRPC, and Public Health Network staff met with the Emergency Preparedness Regional Coordinating Committee (RCC) in February to discuss health hazards and possible interventions focused on protecting health before, during, and after extreme precipitation events (Table 1).

Table 1 - Overview of extreme precipitation events as part of an “environmental scan” of climate-related impacts and their related health hazards (e.g. lengthening growing season, degraded air quality, rising temperatures, increased frequency of extreme precipitation events, shifts in ecological conditions, increased frequency of droughts, and disruptions to the food system)

Climate/Health Indicator	Health Impacts		Vulnerable Populations
	Primary	Secondary	
Increased extreme precipitation and occurrence of extreme weather events	<ul style="list-style-type: none"> Physical injury, death, or displacement Flooding, contaminated water supplies, and mold Disruption of essential infrastructure 	<ul style="list-style-type: none"> Loss of heating Carbon monoxide poisoning Lost work days Increase in waterborne and foodborne disease Mental health impacts Inability to provide or access health care and emergency response services 	<ul style="list-style-type: none"> Persons living in manufactured housing and flood-prone areas Emergency response personnel Socioeconomic status Social/ physical isolation Homeless Older adults and those with existing health conditions

As a result of discussions with the RCC, the CHC Executive Committee, and Public Health Network Staff, four potential intervention strategies and related performance measures were developed:

Strategy 1: Engage up to three municipalities and/or social service agencies with a campaign to increase participation in existing emergency alert systems (including optional flash flood and severe thunderstorm warnings) through New Hampshire’s CodeRED emergency notification system

Strategy 2: Work with up to three communities and/or social service agencies to distribute practical information to assist residents/clients in protecting their health before, during, and after an extreme precipitation event.

Strategy 3: Work with one or more communities to implement a “block captain”/“neighborhood warden” program to assist residents (especially older adults) before, during, and after an extreme precipitation event.

Strategy 4: Work with one or more communities to enhance their ability to identify and assist older adults, especially those with serious health needs, through the use of memorandums of understanding or other data sharing agreements.

Several key criteria were used when evaluating intervention options. A comparison of the top two strategies chosen for the pilot intervention are shown below (Table 2).

Table 2 - Summary presentation of top intervention strategies abbreviated from 1/27/17 PHAC Executive Council presentation

	Strategy 1	Strategy 2 (Selected)
Likely outcomes of intervention	<ul style="list-style-type: none"> Increased use of existing registries to warn vulnerable populations of upcoming extreme precipitation events Reduction in injuries and requests for assistance Reduction in property damage 	<ul style="list-style-type: none"> Create and implement trainings for elderly populations on what to do during an extreme precipitation event. Include Best practices, recommendations for home emergency kits, important phone numbers, etc. Prevention of injury Reduction in amount of care needed
Evidence base	<ul style="list-style-type: none"> Strong peer-reviewed evidence base 	<ul style="list-style-type: none"> Large base of best practices
Previous implementations	<ul style="list-style-type: none"> Implemented as Code Red, NH Alerts, and Nixle by the State and municipalities 	<ul style="list-style-type: none"> Existing capability of the GMPHN and Medical Reserve Corps
Measurement	<ul style="list-style-type: none"> Number of subscribers Hospital admissions following an extreme precipitation event 	<ul style="list-style-type: none"> Number of trainings given Number of attendees Secondary/follow-up surveys to confirm behavior change
Potential Partners	<ul style="list-style-type: none"> State of New Hampshire Department of Safety 	<ul style="list-style-type: none"> Local police and fire departments Monadnock@Home FEMA and CDC Nursing Homes Community centers
Feasibility	<ul style="list-style-type: none"> Feasible 	<ul style="list-style-type: none"> Feasible
Cost	<ul style="list-style-type: none"> Low 	<ul style="list-style-type: none"> Low

To learn additional information about Code Red and NH Alerts, a notification system designed to provide messaging related to emergencies (including expected flash floods and severe weather), the GMPHN approached New Hampshire Homeland Security and Emergency Management (HSEM) to learn more. As

the operators of the statewide alert system, they maintain printed outreach and sign-up materials that were eventually used during the pilot intervention. CHAP participants also arranged for a webinar with OnSolve (formerly ECN), the developers of the Code Red/NH Alerts systems, to understand the ability of the GMPHN to leverage existing local subscriptions and other existing outreach methods. The system is highly relevant to the Region's priority climate hazard due to the system's ability to provide advance warning of extreme precipitation events (via a Flash Flood Warning issued by the National Weather Service). Further, the system was already in place and would incur no additional cost to the State or subscribers. The intervention as described above was not selected due to the time and effort required to manually "opt-in" existing and new subscribers to the optional weather alert.

However, elements of Strategy 1 (above) were incorporated into Strategy 2, the selected intervention. Emergency preparedness trainings are well-established in the Monadnock Region. Staff and volunteer resources familiar with the subject matter already exist in the form of the Medical Reserve Corps and GMPHN staff. CHAP participants customized an existing training curriculum with additional information about regional changes in weather patterns as well as the specific health hazards associated with extreme precipitation events and flooding. Of the numerous agencies and groups approached, the Keene Senior Center (serving older adults in the Monadnock Region) and Bentley Commons (a senior living facility and community meeting space) had the ability to host the training opportunities as part of a pilot within the specified timeframe. As part of outreach related to the training opportunities, an invitation was provided to all Meals on Wheels recipients served by Home Healthcare, Hospice & Community Services (HCS), over 400 individuals.

The ability to create and implement a "neighborhood warden" or similar program was investigated (Strategy 3). It was determined that with only one example of a successful program in the region, and no other known examples in the State, this would not be a viable pilot to address the Region's climate-related health hazards as part of this project. Finally, working with a community to implement memorandums of understanding with relevant healthcare or social service agencies was not selected as part of the pilot as the only known champion for this effort (Town of Peterborough) was still in the early phases of development and adoption.

METHODS

An increase in the number of intense precipitation events within the Monadnock region can lead to a disruption in health services, or prevent residents from receiving the care they need. Extreme precipitation events are also responsible for injuries during and after a flooding event, and even death. Educating the community about the need for an emergency preparedness plan can be an effective method for reducing the number of storm related injuries and reduce the number of residents seeking medical attention during the height of extreme precipitation events. CHAP participants recommended that educational events be held at local community centers, such as public libraries in areas that scored highest on the Social Vulnerability Index (SVI). These events would be used to encourage residents to create an emergency preparedness kit, review the hazards that extreme precipitation events represent, and learn from trained staff familiar with emergency planning and protecting health. Before taking part in the event, residents completed a survey on their knowledge of what actions they should take during an extreme precipitation. A subsequent or “post-test” survey after engaging in the presentation measured the presentation's effectiveness. An optional survey not developed could be used to determine if residents who participated in the training created an emergency preparedness kit, adopted early warning technologies, and identified key health-related needs like medication and transportation prior to the emergency.

CHAP participants in the Monadnock Region collaborated with DHHS staff, as well as other State (Homeland Security and Emergency Management) and private-sector stakeholder (OnSolve) to development an effective pilot intervention. This collaboration included the identification and adoption of existing outreach materials.

The evidence-base of the selected intervention was primarily demonstrated by the historical success of similar family emergency preparedness trainings hosted in the Monadnock Region, and around the nation. Both the Centers for Disease Control and the Federal Emergency Management Agency offer extensive resources to emergency response personnel to prepare populations in their service areas.

EVALUATION OF IMPACT

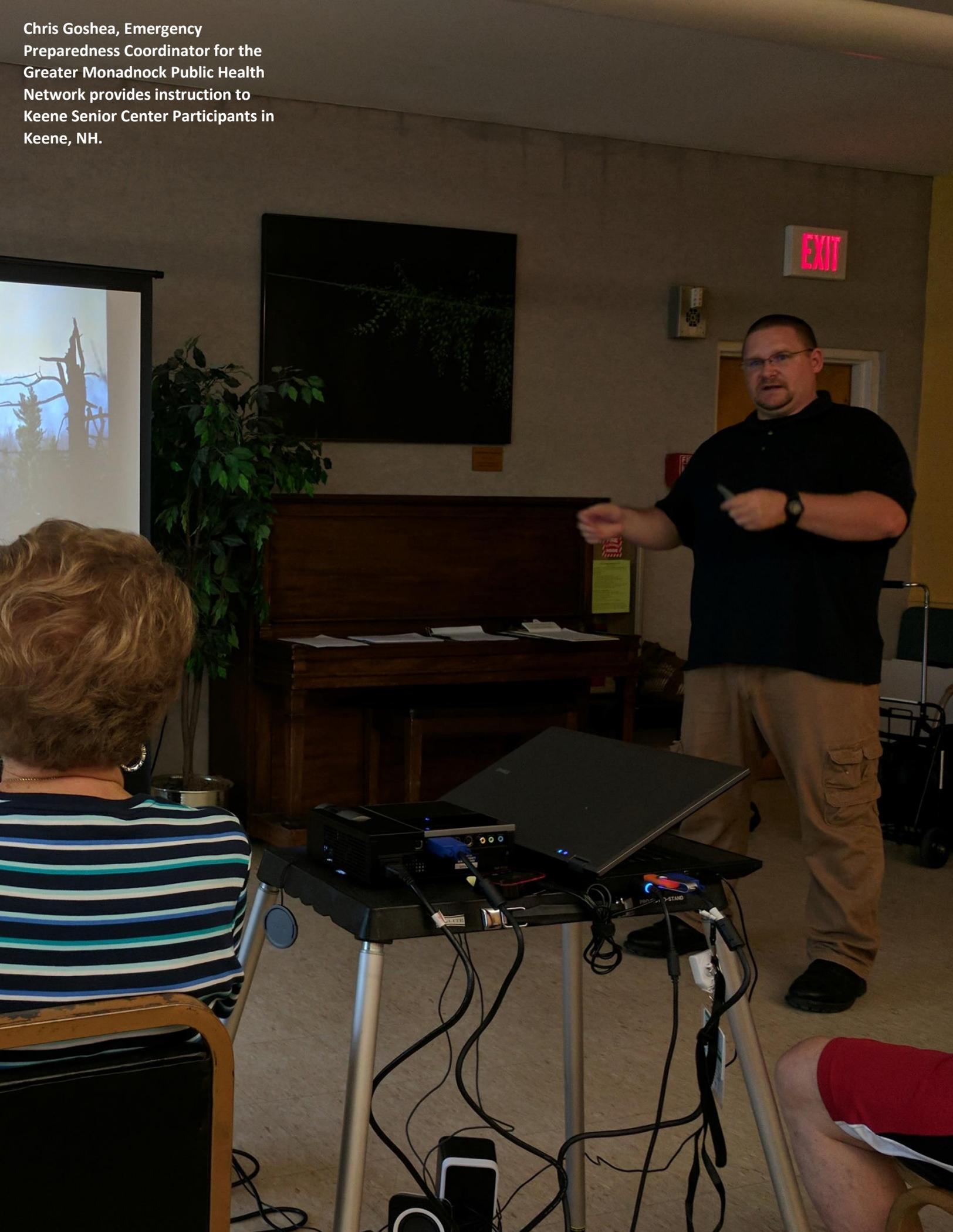
Two emergency preparedness training opportunities were held on June 12, 2017 and June 19, 2017 at Bentley Commons (Keene, NH) and Keene Senior Center (Keene, NH), respectively. A total of nineteen participants attended the two events. They were comprised of older adults as well as staff members assisting with their daily needs. The presentation and instruction featured background findings from the Region's "environmental scan" of climate-related health hazards. The increase in extreme precipitation events was highlighted, as was the ability to take advantage of existing early warning systems. Chris Goshea, Emergency Preparedness Coordinator for the GMPHN, provided all instruction. Several key resources were provided and explained as part of the training:

- An emergency contact list template
- A NH Alerts sign-up sheet entitled "Keeping Residents of New Hampshire Informed" provided by the New Hampshire Homeland Security and Emergency Management
- A variety of "Ready.gov" brochures, including "Preparing Makes Sense for Older Americans" and "Preparing Makes Sense for People with Disabilities and Special Needs"
- An "Emergency Preparedness Planning Form for Special/Medical Needs" from ReadyNH
- A selection of shopping lists to prepare an adequate emergency preparedness kit

Both "pre-test" and "post-test" surveys were administered to test the effectiveness of the instruction, provide feedback on instructional materials for future events, and assess the relative preparedness level of participants. One desired outcome measure, the number of emergency department visits following an extreme precipitation event, was not evaluated.

The number of NH Alerts subscribers, which features an optional severe weather notification, was tracked between the end of May and the end of June to gauge trends in enrollment. Since the training opportunities were not limited to residents from Keene, data for the region was selected as the performance measure. There were 107 new subscribers within the GMPHN area during this time.

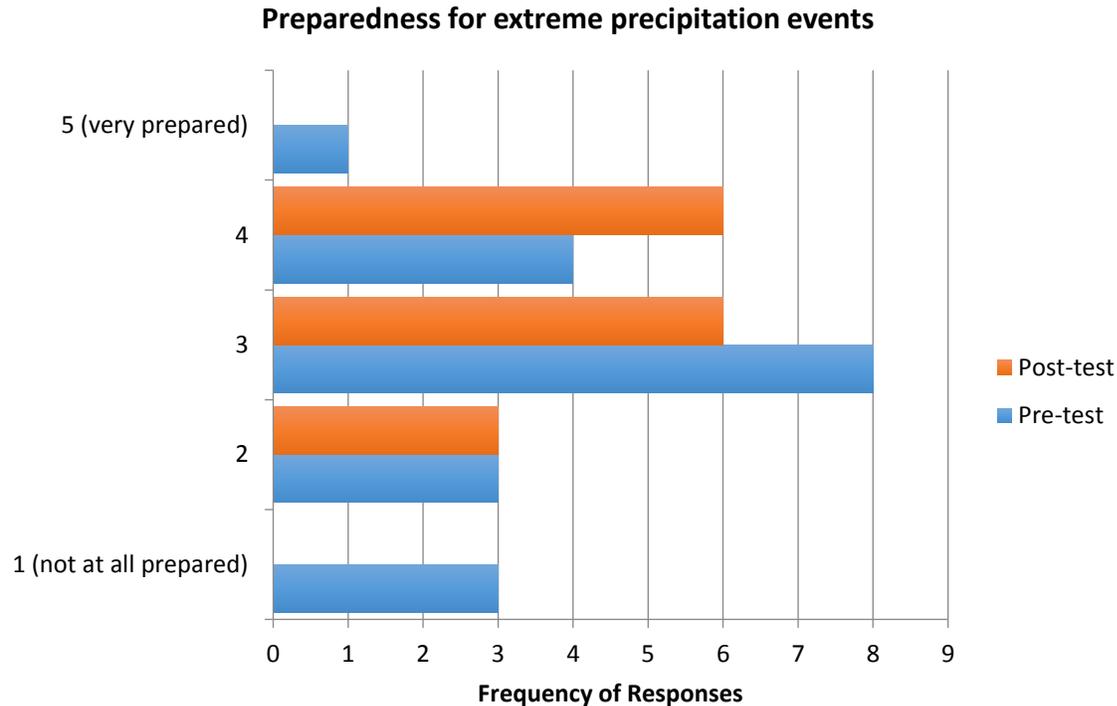
Chris Goshea, Emergency Preparedness Coordinator for the Greater Monadnock Public Health Network provides instruction to Keene Senior Center Participants in Keene, NH.



FINDINGS

Comparable questions from the “pre-test” (prior to instruction) and “post-test” (following instruction) surveys are shown below. And, the host organizations (Bentley Commons and Keene Senior Center) were selected due to their focus on serving older adults in and around Keene. The survey questionnaires are included in the appendix to this report. The total number of participants (19) made it difficult to perform a statistical comparison with confidence. However, the responses suggest that the training opportunity influenced the perception of exposure to an extreme precipitation event. For example, through interactive “question and answer” portions of the training, participants were observed to underestimate the time someone may need to shelter in place following an emergency (such as widespread flooding following an extreme precipitation event). Subjectively, participants felt more prepared following the training than they did prior to the training. Of the 15 respondents to the “post-test,” 6 (or 40%) rated their preparedness at the level of 4 out of 5 or higher. Prior to the training, 5 out of 19 participants (or about 26%) rated their preparedness at a level of 4 out of 5 or higher (Figure 1).

Figure 1 - Response to question: "On a scale of 1 to 5, how prepared to you feel for an extreme precipitation event?"



Participants also appeared to leave the training feeling that an extreme weather event was more likely to occur in the next year (9 out of 19 or about 53% of respondents to the “pre-test” selected 1 or 2, where 1 meant “not at all likely”). In the “post-test,” 5 out of 15, or about 33% of respondents marked it 1 or 2 (Figure 2). There did not appear to be an obvious trend in how participants responded to questions related to their plans during an emergency. Other questions, which were not repeated in the shorter “post-test,” asked about reliance on others during an emergency, access to an emergency preparedness kit, and health-related issues that could influence their plans following an extreme weather event like a flood (pgs. 10-11).

Figure 2 - Response results to question: "On a scale of 1 to 5, how likely do you believe an extreme precipitation event will affect you in the next year?"

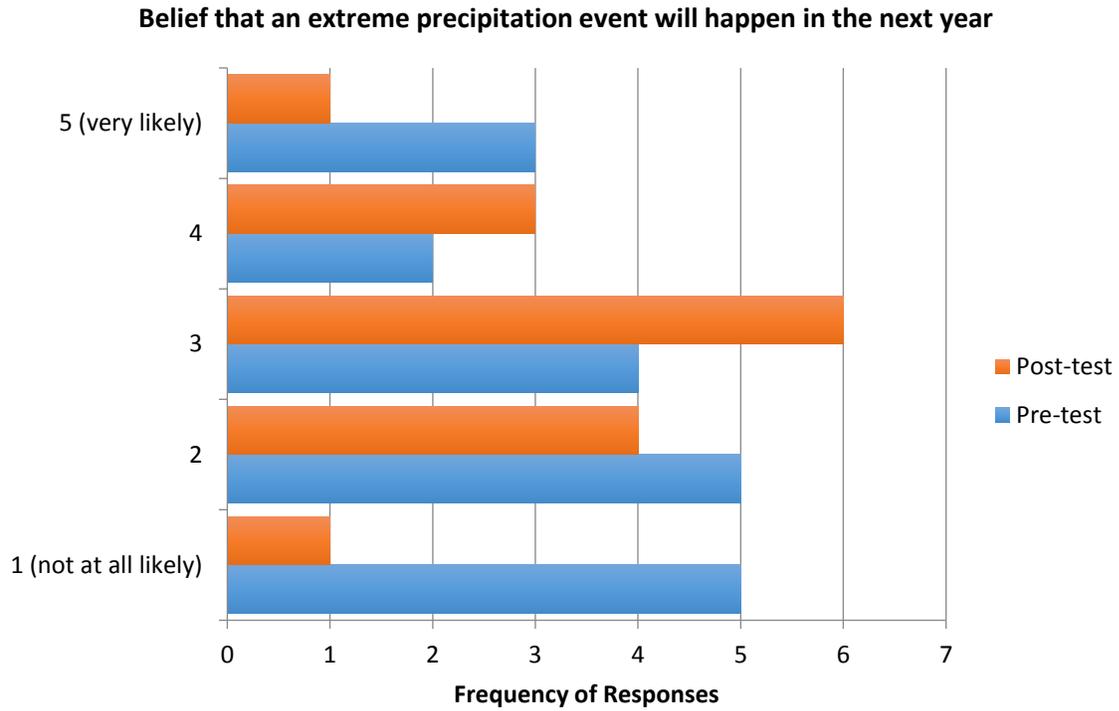


Figure 3 - Response results to question: "On a scale of 1 to 5 with 5 being the highest, how certain are you that you have an alternative place to go in the event of an emergency?"

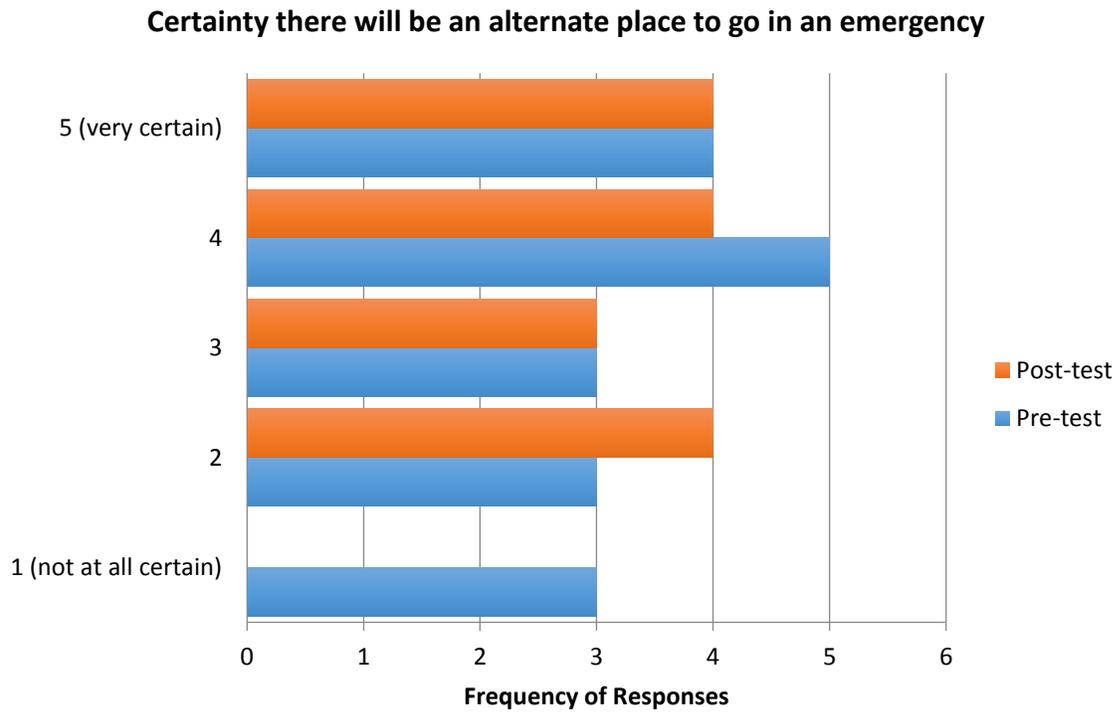


Figure 4 - Response results to question: "On a scale of 1 to 5 with 5 being the highest, how comfortable are you with reaching out to emergency services personnel?"

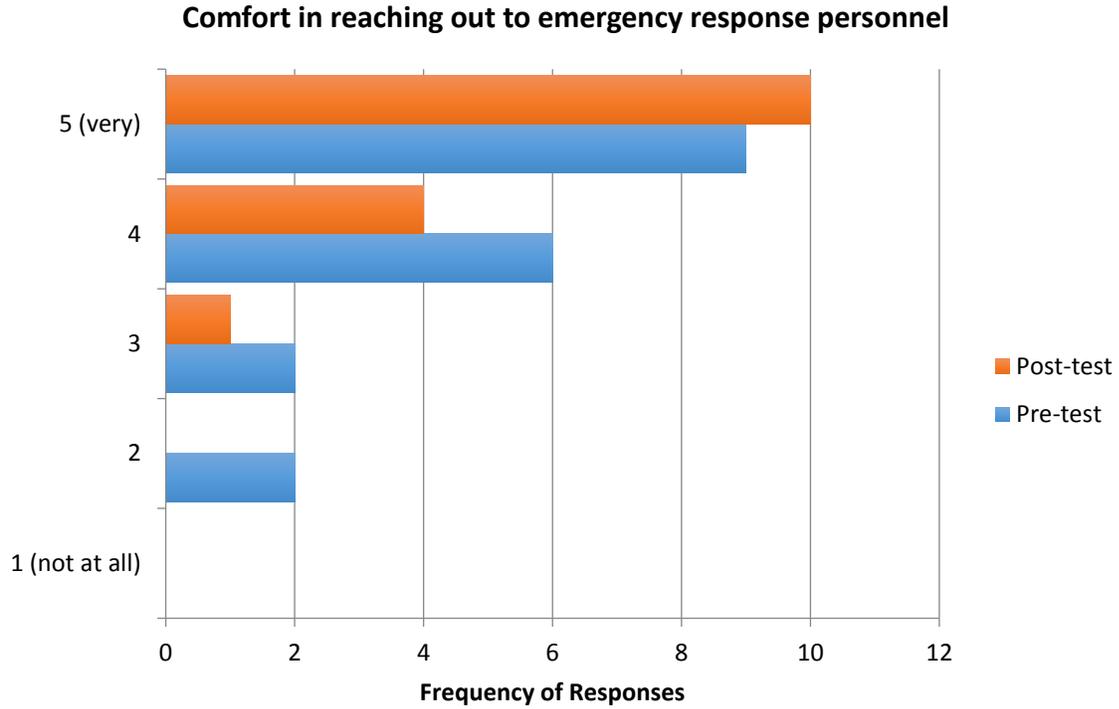
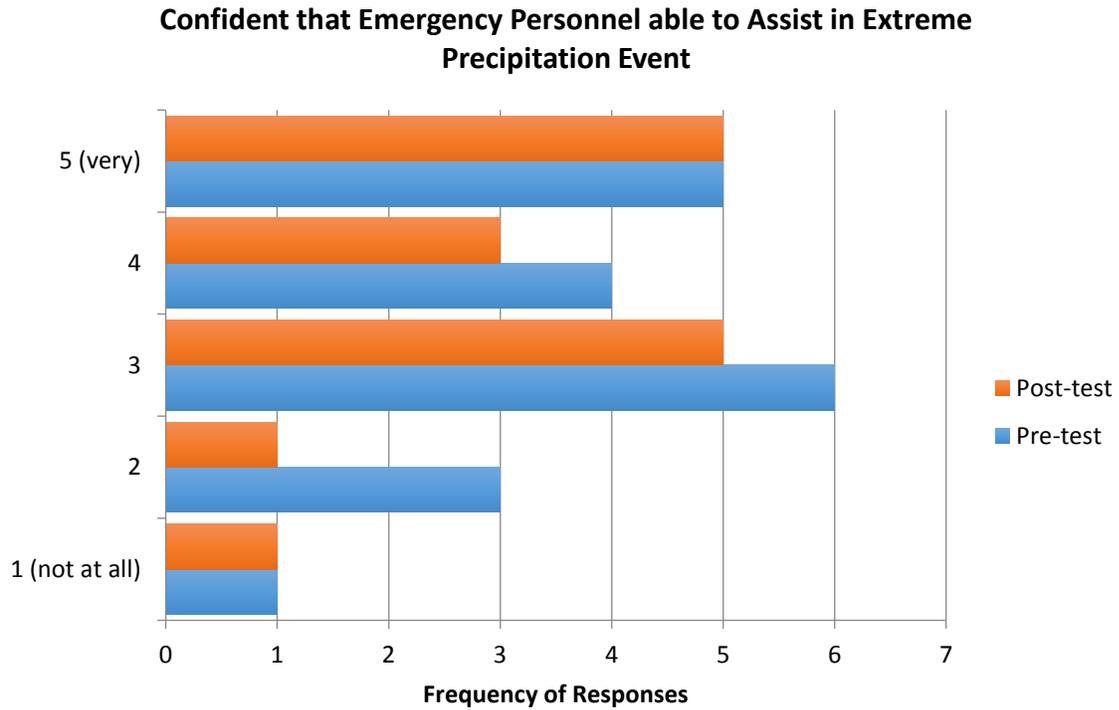


Figure 5 - Response results to question: "On a scale of 1 to 5 with 5 being the highest, how confident are you that emergency personnel will be able to assist you in an extreme precipitation event?"



Several questions not comparable with the “post-test” provided additional insight into desired best practices. These response are listed below.

Figure 6 - Response results to "pre-test" question: "What is the best way to contact you during an emergency (such as a flood)?"

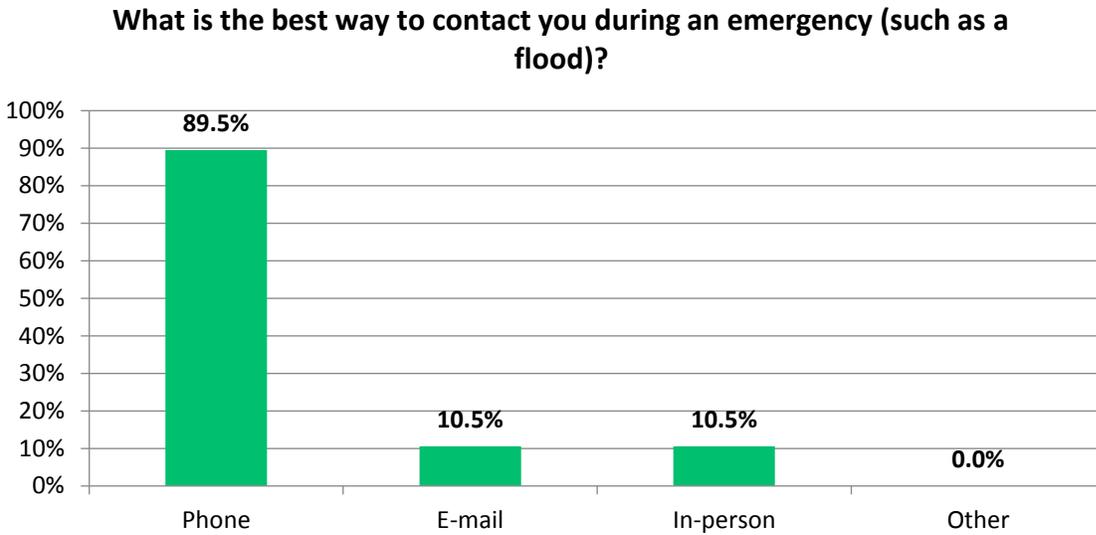


Figure 7 - Response results to "pre-test" question: "How large is your household (including yourself)?"

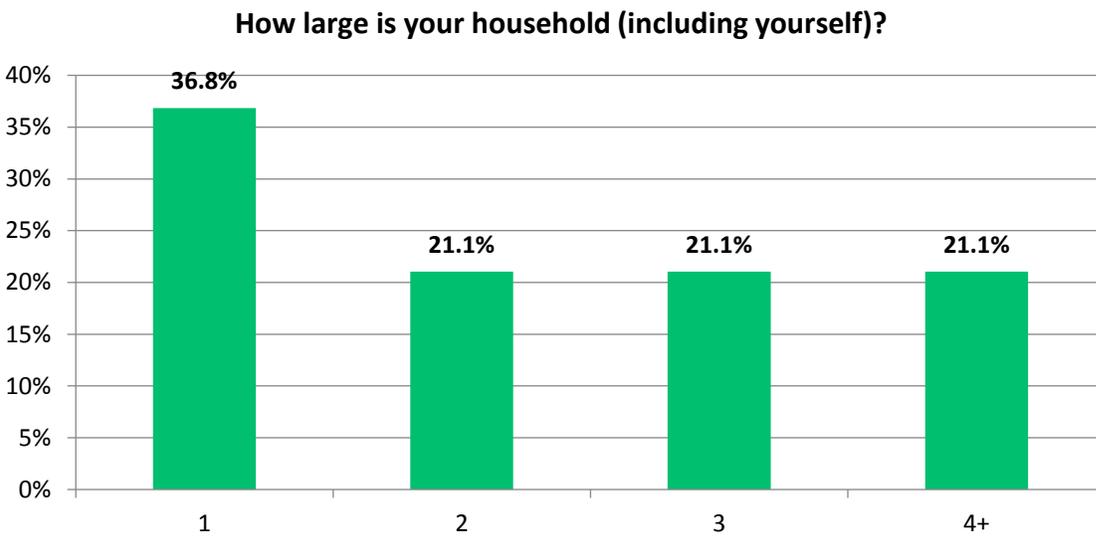


Figure 8 - Response results to "pre-test" question: "How many people can you rely on to help you during an emergency such as an extreme precipitation event?"

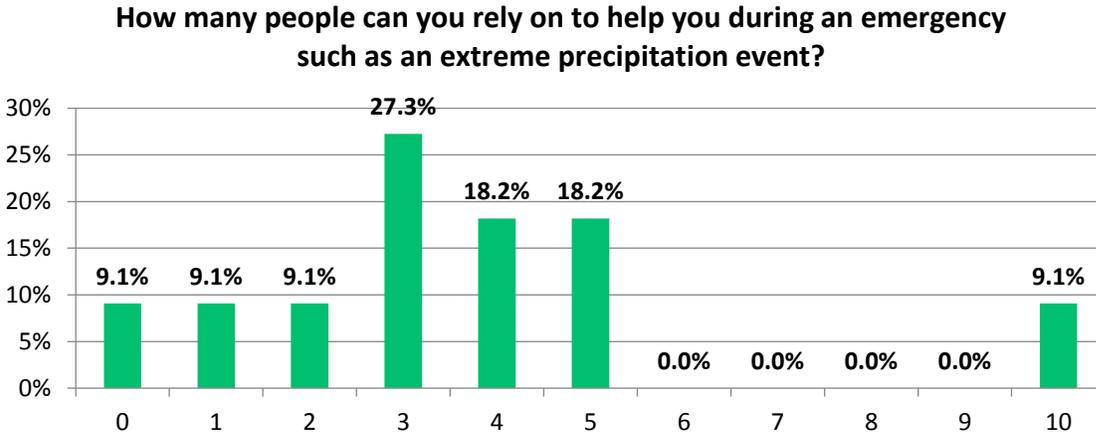


Figure 9 - Response results to "pre-test" question: "How many people can you rely on to help you during an emergency such as an extreme precipitation event?"

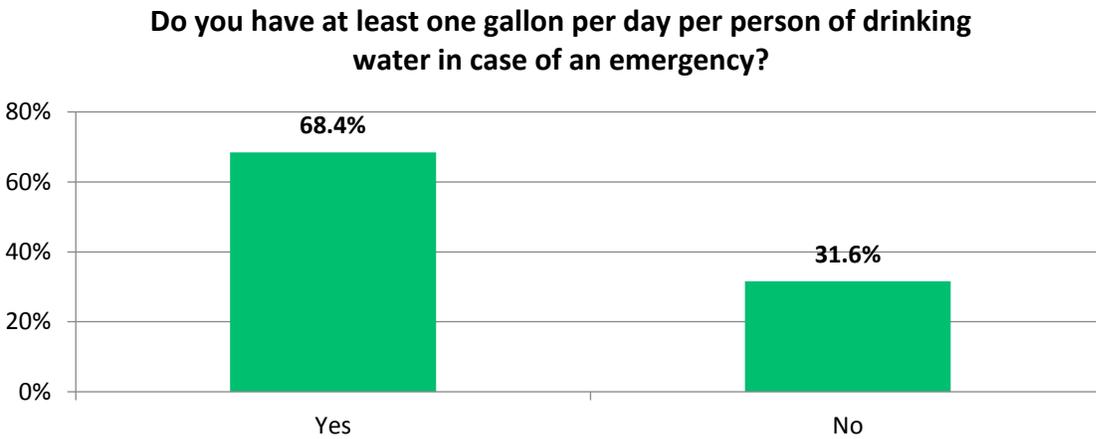


Figure 10 - Response results to "pre-test" question: "Do you have an emergency preparedness kit?"

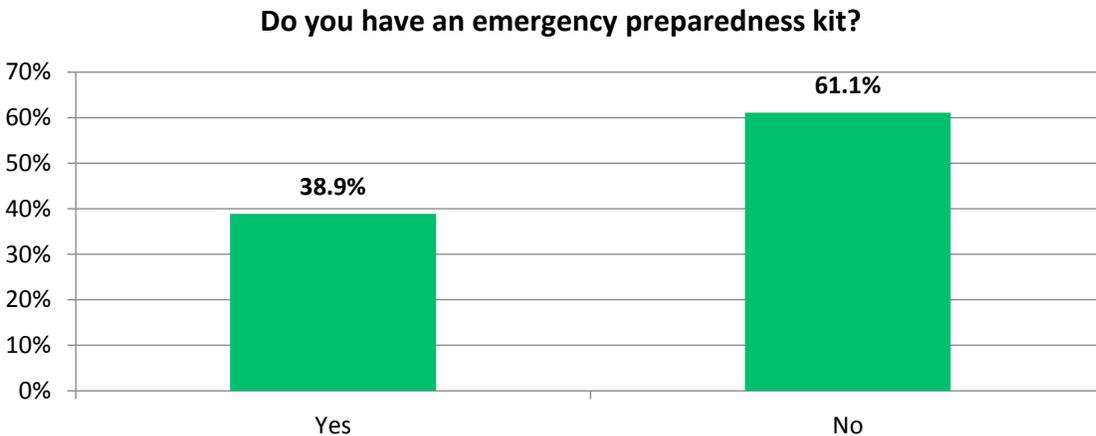


Figure 11 - Response results to "pre-test" question: "Do you have three days' worth of food that is ready to eat and not quickly perishable?"

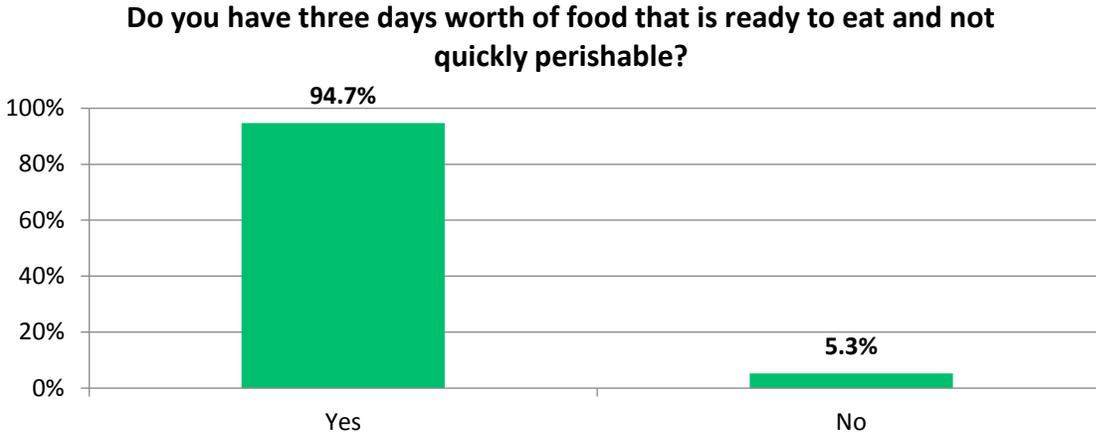
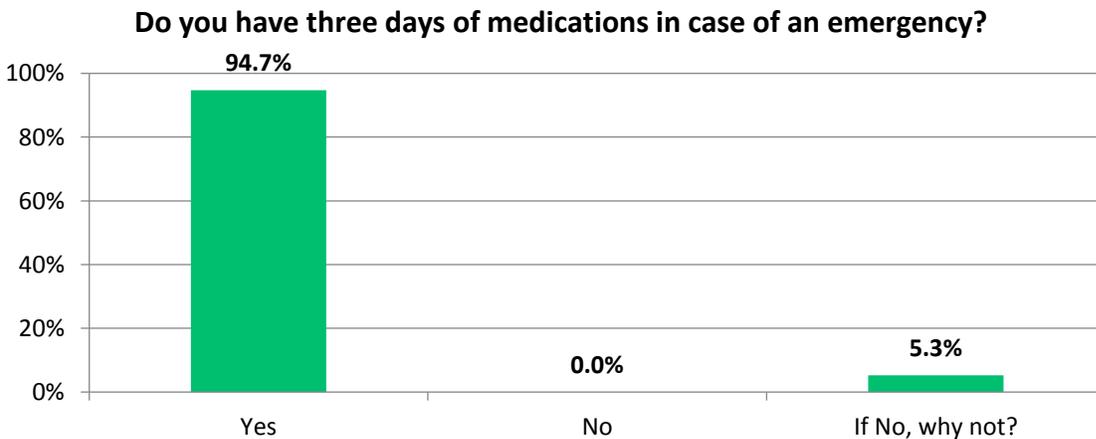
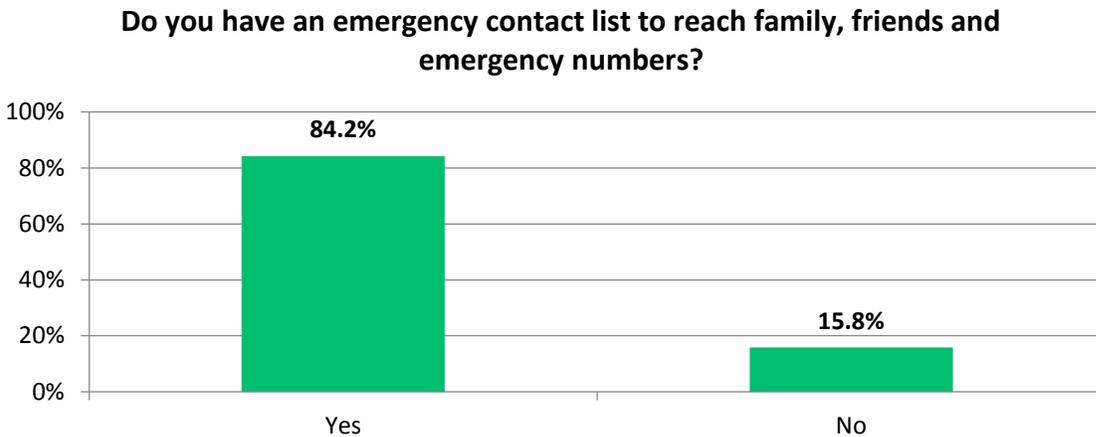


Figure 12 - Response results to "pre-test" question: "Do you have an emergency contact list to reach family, friends and emergency numbers?"



CONCLUSIONS AND LESSONS LEARNED

The project provided an impact in the Monadnock Region beyond the pilot intervention. One manifestation of this was the increased number of new partnerships with municipalities and their staff, State partners, as well as private sector.

Overall Impact

Throughout the CHAP initiative, the Public Health Advisory Council and others clearly demonstrated their interest in having conversations around climate and health, and to continue these efforts. Through the regular and thorough meetings with this group alone, over forty participants were educated on this topic. The project was a valuable exercise of the function of the Executive Committee, in the form of leadership, decision-making, and leveraging existing relationships in the region. To that end, the project enhanced the Region's existing goals around emergency preparedness as a health priority listed in the Community Health Improvement Plan (specifically the number of education and awareness trainings). Further, the partnership leveraged and furthered the contributions of Antioch University of New England through a vignette submitted to the Journal of Public Health, as well as an educational video hosted at the Center for Climate Change and Community Resilience [website](#). Monadnock Region participants were also connected to a variety of resources through the DHHS Division of Public Health Services that will enable the region to refine the Climate and Health Adaptation Plan, and continue to develop and measure the impact of desired interventions.

Challenges and Successes

Identifying measures for the selected health hazard were complicated somewhat by the variety of health impacts associated with extreme precipitation events, which made them difficult to prioritize. There is a lack of monitoring associated with these events to address the multitude of impacts, from contaminated water supplies, to mold exposure, to injury and death. There was interest in further research into these impacts, such as the relationship between such events and mental well-being and overall resiliency. It is expected that steps taken to address preparedness for extreme precipitation have benefits to other weather-related hazards. There were major barriers to developing other desirable strategies. However, the initiative served a valuable purpose in exploring these options.

Engaging the target vulnerable population of older adults proved to be a complex logistical task which was challenging to identify, plan, and accomplish within the time period. Certainly, there are barriers to reaching the population as a whole, apart from centralized educational opportunities. However, groups with the capabilities to reach these groups demonstrated interest in assisting with this effort.

The length of the planning process and involvement of regional groups provided valuable input into a subject not yet explored in the region. However, attempting to compress the time needed for planning may be beneficial to future groups undertaking similar initiatives.

Existing relationships through the GMPHN RCC made getting input and ideas related to intervention options much easier. They also provided valuable feedback on "what works" based on their collective experiences throughout the region.

Integration of Climate and Weather Issues

The selected intervention provided both descriptive statistics about changes in precipitation patterns, as well as historical photos and opportunities to share lived experiences related to weather-related hazards.

REFERENCES

Centers for Disease Control. *Planning for an Emergency: Strategies for Identifying and Engaging At-Risk Groups. A Guidance Document for Emergency Managers.* Atlanta, 2015.

Rhoades, Jason L. "Enhancing the Resilience of Vulnerable Groups Through Participatory Climate Change Adaptation Planning: A Case Study with the Elderly Community of Bridgeport, Connecticut." PhD Dissertation, Department of Environmental Studies, Antioch University New England, 2016.

University of New Hampshire Institute on Disability. *Including People With Disabilities in Emergency Planning & Preparedness.* 2015.

PUBLICATIONS

The GMPHN intervention relied primarily on pre-existing best-practice handouts and other education and outreach materials. Workshop flyer templates and presentation slides created for use during the intervention training opportunities are available by request.

APPENDICES

LIST OF GOAL, OBJECTIVE, AND STRATEGIES

Goal

Reduce the number of injuries and the need for emergency care during extreme precipitation events by creating an education program to empower vulnerable individuals

Objective

By June 30, 2017, promote the use of registration databases, emergency notification systems, “block captains”/“neighborhood wardens”, and other resources to prepare residents of three communities or neighborhood groups for health hazards associated with extreme precipitation events

Strategy 1

Engage up to three municipalities and/or social service agencies with a campaign to increase participation in existing emergency alert systems (including optional flash flood and severe thunderstorm warnings) through New Hampshire’s CodeRED emergency notification system

Activities	Short-term Performance Targets	Intermediate Performance Targets
<ul style="list-style-type: none"> • Work with CodeRED representatives to determine existing outreach methods • Meet with EMD’s to determine best way to reach municipal residents to encourage “opting in” to CodeRED emergency notifications and optional severe weather warnings (i.e. “severe thunderstorm” and “flash flood”) • Create content (including instructions) and messaging for local newsletter articles, websites, e-mail lists, and announcements • Document existing coverage (# of current subscribers) and gaps to participation 	<ul style="list-style-type: none"> • Contact State of New Hampshire about strategy and any existing outreach materials • Establish contact with three EMD’s who can make decisions about implementing strategy 1 (e.g. Dublin, Westmoreland, Keene, Peterborough) • Get commitment to participate in Strategy 1 and interest level in Strategies 2-4 	<ul style="list-style-type: none"> • Number of subscribers before and after initiative • Number of toolkits • Number of downloads of toolkit resources • Increase in awareness of value/utility of CodeRED • Increase capacity of communities to make effective use of CodeRED during extreme precipitation events

Strategy 2

Work with up to three communities and/or social service agencies to distribute practical information to assist residents/clients in protecting their health before, during, and after an extreme precipitation event.

Activities	Short-term Performance Targets	Intermediate Performance Targets
<ul style="list-style-type: none"> • Identify target guidance/checklist for residents and homeowners specific to older adults (e.g. Ready.gov, American Red Cross, FEMA, DisasterAssistance.gov, CDC “Ready Now!”, APHA) in partnership with one or more communities and the RCC/GMPHN 	<ul style="list-style-type: none"> • Establish contact with up to three faith-based communities to gauge interest in hosting a presentation, resources and materials, or discussion at a church supper or standalone event 	<ul style="list-style-type: none"> • Before and after surveys with target older adult participants as well as emergency response staff, local officials, or first responders

<ul style="list-style-type: none"> Identify target guidance/checklist for responders or others working with older adult populations Provide best practices, including an emphasis on protecting older adults before, during, and after an extreme precipitation event 	<ul style="list-style-type: none"> Convene group to select and customize fact sheet from available options Determine outlets to implement social messaging campaign versions of guidance (listed in activities), changes to messaging, and methods to promote additional subscription Develop baseline questions to measure existing awareness 	<ul style="list-style-type: none"> Number of fact sheets or toolkits delivered Any other climate and health preparedness materials relevant to older adults delivered (i.e. extreme heat)
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Strategy 3

Work with one or more communities to implement a “block captain”/“neighborhood warden” program to assist residents (especially older adults) before, during, and after an extreme precipitation event.

Activities	Short-term Performance Targets	Intermediate Performance Targets
<ul style="list-style-type: none"> Develop toolkit to create a block captain/neighborhood warden program in community or neighborhood; or, work with one community to enhance their existing activity (Westmoreland or Dublin) by sharing best practices Supplement formation of program with best practices, including an emphasis on protecting older adults before, during, and after an extreme precipitation event 	<ul style="list-style-type: none"> Identify communities and reach out to their EMD to discuss interest Evaluate and add resources conveying critical information about protecting health before, during, and after an extreme precipitation event Identify “co-benefit” content (such as other climate change and health preparedness materials) to deliver 	<ul style="list-style-type: none"> Feedback from EMDs and neighborhood participants Number of older adults “covered” through these programs

Strategy 4

Work with one or more communities to enhance their ability to identify and assist older adults, especially those with serious health needs, through the use of memorandums of understanding or other data sharing agreements.

Activities	Short-term Performance Targets	Intermediate Performance Targets
<ul style="list-style-type: none"> Approach Monadnock at Home to understand their ability and willingness to share data with other emergency management directors that assist their members Work with 1-3 communities to start the process of implementing an MOU Create regional survey directed to EMDs with respect to 	<ul style="list-style-type: none"> Obtain relevant samples and information about MOU being utilized by the Town of Peterborough Identify 1-3 communities that would benefit from data sharing MOUs Identify and reach out to SCS, MDS, MFS, Worksource, or others to coordinate activities 	<ul style="list-style-type: none"> Interviews or survey responses from EMDs with interest in MOU Survey of clients of Monadnock at Home or other social service agencies Number of communities and

<p>registries (i.e. what is the most important information is inaccessible or not available currently)</p> <ul style="list-style-type: none"> • Create regional survey for social service agencies (for clients or themselves as an organization) to prioritize their needs during a flash flood (i.e. what is the most important information to share with EMDs via an MOU) 	<ul style="list-style-type: none"> • Survey responses from EMDs and social service agencies • Identify registry best practices from <u>CDC guidance</u>, <u>State Emergency Operations Plan Support Annex</u>, and other sources 	<p>agencies with MOUs</p>
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SURVEY QUESTIONNAIRE (PRE-TEST)



Greater Monadnock Public Health Network

580 Court Street

Keene, NH 03431

603-354-5454 x2113

WELCOME!

Please take a moment to complete the following questionnaire. It's important we learn how prepared you are for an emergency or hazard that could negatively affect your health.

Thank you for your participation!

General Information

Select the most appropriate category for your age:

- | | | |
|-----------------------------------|--------------------------------|----------------------------------|
| <input type="checkbox"/> Under 65 | <input type="checkbox"/> 65-70 | <input type="checkbox"/> 71-75 |
| <input type="checkbox"/> 76-80 | <input type="checkbox"/> 81-85 | <input type="checkbox"/> Over 85 |

What is the best way to contact you during an emergency (such as a flood)?

- Phone E-mail In-person Other _____

How large is your household (including yourself)?

- 1 2 3 4+

Do you have any mobility issue that would prevent you from evacuating your home in the event of an emergency?

- Yes No

If Yes, please describe:

Please list any challenges you might face during or after a flooding event that relate to your health:

Preparedness

How many people can you rely on to help you during an emergency such as an extreme precipitation event?

On a scale of 1 to 5, how prepared to you feel for an extreme precipitation event?

1 (not at all prepared) 2 3 4 5 (very prepared)

On a scale of 1 to 5 with 5 being the highest, how likely do you believe an extreme precipitation event will affect you in the next year?

1 (not at all likely) 2 3 4 5 (very likely)

On a scale of 1 to 5 with 5 being the highest, how certain are you that you have an alternative place to go in the event of an emergency

1 (not at all certain) 2 3 4 5 (very certain)

On a scale of 1 to 5 with 5 being the highest, how comfortable are you with reaching out to emergency services personnel?

1 (not at all) 2 3 4 5 (very)

On a scale of 1 to 5 with 5 being the highest, how confident are you that emergency personnel will be able to assist you in an extreme precipitation event?

1 (not at all) 2 3 4 5 (very)

Do you have at least one gallon per day per person of drinking water in case of an emergency?

Yes No

If No, why not?

Do you have an emergency preparedness kit?

Yes No

If No, why not?

Do you have three days' worth of food that is ready to eat and not quickly perishable?

Yes No

If No, why not?

Do you have an emergency contact list to reach family, friends and emergency numbers?

Yes No

If No, why not?

Do you have three days of medications in case of an emergency?

Yes No

If No, why not?

Personal Information

Providing the following information is optional.

_____	_____	_____	_____
First Name	Last Name	Gender	Age
_____	_____	_____	_____
Address	City	State	ZIP Code
_____	_____		
Email	Phone		

SURVEY QUESTIONNAIRE (POST-TEST)



Greater Monadnock Public Health Network

580 Court Street

Keene, NH 03431

603-354-5454 x2113

THANK YOU!

Please take a moment to complete the following questionnaire before you leave today.

Please list any challenges you might face during or after a flooding event that relate to your health:

On a scale of 1 to 5, how prepared to you feel for an extreme precipitation event?

1 (not at all prepared) 2 3 4 5 (very prepared)

On a scale of 1 to 5 with 5 being the highest, how likely do you believe an extreme precipitation event will affect you in the next year?

1 (not at all likely) 2 3 4 5 (very likely)

On a scale of 1 to 5 with 5 being the highest, How certain are you that you have an alternative place to go in the event of an emergency

1 (not at all certain) 2 3 4 5 (very certain)

On a scale of 1 to 5 with 5 being the highest, how comfortable are you with reaching out to emergency services personnel?

1 (not at all) 2 3 4 5 (very)

On a scale of 1 to 5 with 5 being the highest, how confident are you that emergency personnel will be able to assist you in an extreme precipitation event?

1 (not at all) 2 3 4 5 (very)

TRAINING HANDOUTS



DISASTERS CAN HAPPEN ANYWHERE...ANYTIME

GET READY TO RESPOND:

SIGN UP FOR EMERGENCY ALERTS

MAKE A PLAN

BUILD AN EMERGENCY KIT

GET EMERGENCY CONTACT CARDS

Visit ReadyNH.gov to get the tools you need! **Be Safe!**



ReadyNH.gov
TAKE ACTION. BE SAFE.

**HOMELAND SECURITY
EMERGENCY MANAGEMENT**
ENSURING SAFETY. PROTECTING COMMUNITIES.



FAMILY EMERGENCY PLAN

Make sure your family has a plan in case of an emergency. Before an emergency happens, sit down together and decide how you will get in contact with each other, where you will go and what you will do in an emergency. Keep a copy of this plan in your emergency supply kit or another safe place where you can access it in the event of a disaster.

Primary Out-of-town Contact Name:	Primary Phone Number:
Email:	Additional Contact Number:
Secondary Out-of-town Contact Name:	Secondary Phone Number:
Neighborhood Meeting Place:	Regional Meeting Place:
Evacuation Location:	

Fill out the following information for each family member and keep it up to date.

Name:	Social Security Number:
Date of Birth:	Important Medical Information:
Name:	Social Security Number:
Date of Birth:	Important Medical Information:
Name:	Social Security Number:
Date of Birth:	Important Medical Information:
Name:	Social Security Number:
Date of Birth:	Important Medical Information:
Name:	Social Security Number:
Date of Birth:	Important Medical Information:

Write down where your family spends the most time: work, school and other places you frequent. Schools, daycare providers, workplace and apartment buildings should all have site-specific emergency plans that you and your family need to know about.

WORK LOCATION ONE:	SCHOOL LOCATION ONE:
Address:	Address:
Phone Number:	Phone Number:
Evacuation Location:	Evacuation Location:
WORK LOCATION TWO:	SCHOOL LOCATION TWO:
Address:	Address:
Phone Number:	Phone Number:
Evacuation Location:	Evacuation Location:
WORK LOCATION THREE:	SCHOOL LOCATION THREE:
Address:	Address:
Phone Number:	Phone Number:
Evacuation Location:	Evacuation Location:
OTHER PLACE YOU FREQUENT:	OTHER PLACE YOU FREQUENT:
Address:	Address:
Phone Number:	Phone Number:
Evacuation Location:	Evacuation Location:

IMPORTANT INFORMATION:	NAME:	TELEPHONE NUMBER:	POLICY NUMBER:
Doctor(s):			
Other:			
Pharmacist:			
Medical Insurance:			
Homeowners/Rental Insurance:			
Veterinarian/Kennel (for pets):			

Dial 911 for Emergencies | For more information visit ReadyNH.gov



EMERGENCY PREPAREDNESS GO-BAGS



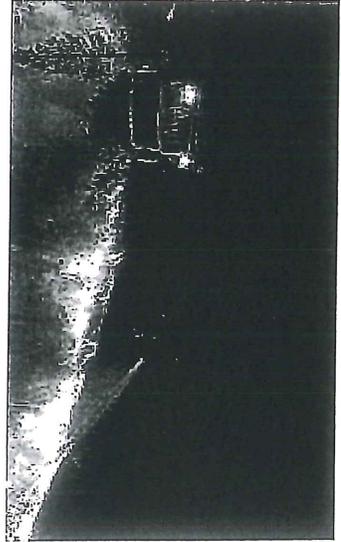
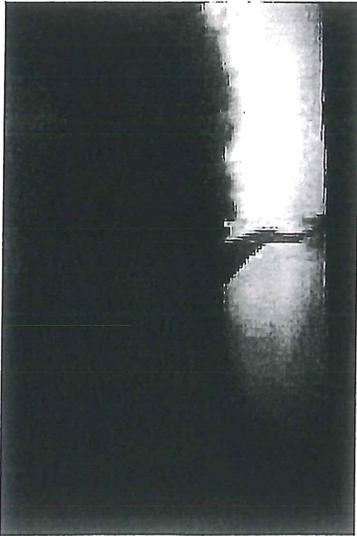
In the case of your home or neighborhood being evacuated, having a GO-BAG packed and ready to go can help to make a stressful situation less stressful.

You may be evacuated for a number of reasons, environmental (gas leak, toxic chemical spill, fire) or for a natural hazard (flood, tornado, forest fire or any type of severe weather hazard)

There are countless resources on-line to use for assembling a GO-BAG or if you do not have access to the internet, there are resources at your local library, town hall or Emergency Management office.

Assemble the GO-BAG according to your household with items you may need if you are away from your home for an extended period or if you need to re-establish your household.

You can pack one large bag for the whole family or individual bags for each family member.



SUGGESTED CONTENTS OF A GO-BAG

Complete change of clothes for each person in the household

Folders:

Medical Info

Doctors Names and Addresses

Copies of vaccinations

Copies of prescription information

Copies of birth certificates

Copies of Social Security Cards

Copies of Life Insurance Coverage

Passport/Visa information

Past Bills

Copies of all past bills including electric, water/sewer, credit cards, phone/internet (Helps with proof of residency)

Car Info

Old Registrations/copies of current registration

Insurance cards and policy

Mortgage/Rental & Insurance Info

Mortgage Bill, Rent Statements and

agreements, Home or Apartment Insurance

Financial Info

Bank statements, deeds, contracts, stocks, bonds

Children's School Contact Info
Name, Address, Phone # of school

FAMILY COMMUNICATION PLAN

All of this information can also be stored on CD's, thumb drives, etc. but it's a good idea to have hard copies also as access to a computer and printer may be difficult during an emergency. If you do copy the information to a CD or thumb drive, make several copies and store them in various locations such as work or a safety deposit box. Also consider giving a copy to family member or friend.

Other items to consider: Personal products, infant/toddler supplies such as diapers, formula, bottles, wipes. A small address book and small photo album with current photos of your family. Blankets or towels may come in handy.

Medications

Try keeping them in one area of you home so they are easy to gather if you have to leave in a hurry. Keep an ice pack in the freezer at all times and an insulated lunch bag on hand in case any of your medications need to be refrigerated.

INCIDENTAL ITEMS

Include small games, cards, crayons, coloring books, crossword puzzles, etc. If you have children they will have something to occupy themselves with and you may also enjoy some of the items.

String, needle/thread, small assortment of tools, whistle, emergency candles and matches, scissors, different types of tape, flashlights and extra batteries, light sticks.

Garbage bags, folding knife, rain poncho, hats, mittens or any other seasonal items.

Personal items: shampoo, soap, toothbrushes, toothpaste, personal wipes, swabs, comb or hairbrush.

DON'T FORGET YOUR PETS

If you have pets, consider creating a GO-BAG for them as well. Items to include could be leash, collar, vaccination records, license records, food, water, dishes, toys, treats, towel, pet wipes, plastic bags, pet medication and a current photo of your pet.

EMERGENCY KIT SHOPPING LIST:



BOTTLED WATER



NON-PERISHABLE FOODS



NOAA RADIO



FLASHLIGHT & BATTERIES



PERSONAL HYGIENE



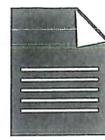
FIRST AID KIT



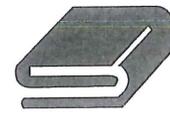
WHISTLE



MANUAL CAN OPENER



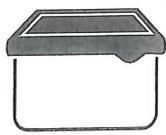
COPIES OF IMPORTANT DOCUMENTS



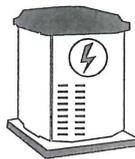
BLANKET/TOWEL



CHANGE OF CLOTHES



DURABLE WATERPROOF CONTAINER



GENERATOR



PRESCRIPTION MEDICATION



FOOD FOR YOUR PET



DOWNLOAD THE STATE'S
FREE EMERGENCY
ALERTS APP

Visit: ReadyNH.gov and download NH Alerts.



ReadyNH.gov
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EMERGENCY MANAGEMENT**
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TAKE ONE

HOME EMERGENCY SUPPLY CHECKLIST

FOOD

- Bottled Water
- Canned Meats
- Canned Fruits and Vegetables
- Canned Juice
- Nuts and Crackers

HOUSEWARES

- Garbage Bags
- Paper Cups and Plates
- Plastic Utensils
- Plastic Tablecovers
- Non-Electric Can Opener
- Paper Towels
- Aluminum Foil
- Plastic Storage Bags/Containers
- Toilet Paper
- Plastic Buckets
- Sponges
- Disinfectants
- Chlorine Bleach
- Flashlights
- Batteries
- Scissors

HARDWARE

- Pliers
- Duct Tape
- Utility Knife
- Plastic Sheeting

HEALTH/FIRST AID

- Personal Hygiene Items
- Vitamins
- Sunscreen Lotion
- Latex Gloves
- Cleansing Agent/Soap
- Antibacterial Towelettes
- Antibacterial Ointment
- Antiseptic Ointment
- Adhesive Bandages
- Tweezers
- Petroleum Jelly
- Aspirin/Non-Aspirin Pain Reliever
- Cotton Balls
- Baby Bottles
- Baby Wipes

MISCELLANEOUS

- Paper
- Pencils/Pens
- Whistle
- Pet Food and Bowls
- Leash and Collar
- Emergency Ponchos



All Items Available At

DOLLAR TREE

Checklist items as recommended
by United States Department
of Homeland Security

EMERGENCY CONTACTS CARD





 TAKE ACTION. BE SAFE.
 HOMELAND SECURITY
 EMERGENCY MANAGEMENT
 ENSURING SAFETY. PROTECTING COMMUNITIES.

EMERGENCY CONTACTS

FILL OUT THIS CARD AND GIVE ONE TO EVERY FAMILY MEMBER.

EMERGENCY CONTACT NAME:	TELEPHONE:
OUT-OF-TOWN CONTACT NAME:	TELEPHONE:
NEIGHBORHOOD MEETING PLACE:	TELEPHONE:

DIAL 911 FOR EMERGENCIES





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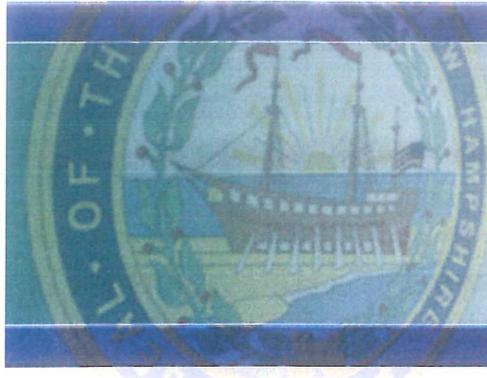
DIAL 911 FOR EMERGENCIES




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KEEPING RESIDENTS OF New Hampshire informed

Community Notification Enrollment

Please take a moment to fill in the appropriate information below to receive public safety notices issued by the State of New Hampshire and severe weather warnings directly from the National Weather Service. This form may be used as the single enrollment portal to enroll in your local New Hampshire community's CodeRED emergency notification system. Additionally, New Hampshire residents are asked to download the NH Alerts mobile application from the App Store and Google Play to receive emergency and severe weather notifications from state officials.

Location Details

*required field

*Address to be monitored PLEASE NO P.O. BOXES Apt/Suite/Unit

*City *State *Zip Code

*This address is residential business Is this address a mobile or manufactured home?

Contact Information

*Name FIRST AND LAST OR BUSINESS

*Phone 1

Phone 2

Mobile MOBILE PROVIDER

Mobile MOBILE PROVIDER

TDD/TTY device TONE DELIVERY, FOR HEARING IMPAIRED

TDD/TTY device TONE DELIVERY, FOR HEARING IMPAIRED

Email EMAIL ADDRESS

Text Message MOBILE PHONE NUMBER AND PHONE PROVIDER

Brought to you by:

The New Hampshire Department of Safety
Division of Homeland Security and Emergency Management



Alert Types

Emergency Notifications General Notifications Severe Weather Warnings

Raising the bar in public safety, Weather Warning is a unique service that automatically calls citizens in the path of severe weather just moments after a warning has been issued by the National Weather Service. Weather Warning is available to you at no cost. To receive these alerts, check the warnings you are interested in from the list below.

Phone 1 Call:	<input type="checkbox"/> Tornado	<input type="checkbox"/> Severe Thunderstorm	<input type="checkbox"/> Flash Flood	
Phone 1 Text:	<input type="checkbox"/> Tornado	<input type="checkbox"/> Severe Thunderstorm	<input type="checkbox"/> Flash Flood	<input type="checkbox"/> Winter Storm Warnings [†]
Phone 2 Call:	<input type="checkbox"/> Tornado	<input type="checkbox"/> Severe Thunderstorm	<input type="checkbox"/> Flash Flood	
Phone 1 Text:	<input type="checkbox"/> Tornado	<input type="checkbox"/> Severe Thunderstorm	<input type="checkbox"/> Flash Flood	<input type="checkbox"/> Winter Storm Warnings [†]
Email:	<input type="checkbox"/> Tornado	<input type="checkbox"/> Severe Thunderstorm	<input type="checkbox"/> Flash Flood	<input type="checkbox"/> Winter Storm Warnings [†]

[†] Winter Storm Warnings will only be sent through email or text messages

Data Privacy

The State of New Hampshire has requested the information you provide on this page be released to their authority. Accordingly, this information may be subject to local public information rules and requests.

Terms and Conditions

By adding your phone number you agree to receive telephone calls that deliver messages from the State of New Hampshire or your local municipality that are pre-recorded and sent by Emergency Communications Network.

Download the NH Alerts app

New Hampshire residents are asked to download the NH Alerts mobile application from the App Store and Google Play to receive emergency and severe weather notifications from state officials.



www.ReadyNH.gov



TRAINING SLIDES

Stay, Leave, Connect: A Personal Plan for All Emergencies

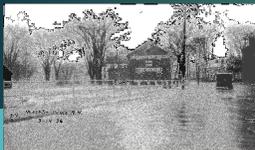


KEENE SENIOR CENTER 6/19/17

Learning Objectives

- ▶ After this workshop, participants will be able to:
 - ▶ Understand the importance of personal preparedness
 - ▶ Identify health hazards relating to disasters
 - ▶ Identify personal barriers to planning
 - ▶ Assess their level of preparedness
 - ▶ Identify steps they can take to develop or improve their emergency plan

What type of disasters have we seen here?



Flood



Landslide



Ice Dam



Hurricane

Not just a thing of the past



Severe Weather and Health

Since 1970 in Southern New Hampshire

Warmer

- ▶ Average annual maximum temperatures have warmed 1.1 to 2.6 F
- ▶ Days below freezing have decreased and coldest winter nights have warmed
- ▶ Number of snow covered days has decreased (by 27 days in Durham)
- ▶ Length of the growing season is 2-4 weeks longer

Wetter

- ▶ Annual precipitation has increased 12 to 20 percent
- ▶ Extreme precipitation events have increased made evident in the several large floods that have occurred across NH in the last decade

Severe Weather and Health

Projections

Warmer

- ▶ Increase in **extreme heat days**, and the **hottest days will be hotter**, raising concerns regarding the impact of extreme, sustained heat on human health, infrastructure, and the electrical grid

Wetter

- ▶ Annual average precipitation is projected to **increase 17 to 20 percent** by end-of-century, primarily in winter and spring, exacerbating concerns regarding rapid snowmelt, **high peak stream flows**, and **flood risk**
- ▶ More **extreme precipitation** events

Why extreme precipitation and flooding?

Past history in NH has shown a prevalence in extreme precipitation events.

New England is typically wetter than the rest of the country.

Flooding is most common and happens during most events:

- Snow melt
- Thunderstorms
- Hurricanes
- Drought (run off of rains)

Watch vs Warning



Flood Watch or Flash Flood Watch
 Flooding or flash flooding in your area is possible. Pay attention to changing weather and flood conditions, and be prepared to move to higher ground.



Flood Warning
 Flooding is occurring or about to occur. Avoid low lying areas and if necessary, evacuate.

Flash Flood Warning
 A flash flood is occurring or about to occur. Seek higher ground immediately.

Severe Weather and Health

Primary Health Impacts

- ▶ Physical injury, death, or displacement
- ▶ Flooding, contaminated water supplies, and mold
- ▶ Disruption of essential infrastructure

Secondary Health Impacts

- ▶ Loss of heating
- ▶ CO poisoning
- ▶ Lost work days
- ▶ Increase in waterborne and foodborne disease
- ▶ Mental health impacts
- ▶ Inability to provide health care and emergency response services

BE READY! FLOODS

DURING

- Unplug appliances to prevent electrical shock when power comes back on.
- Do NOT drive or walk across flooded roads. Cars and people can be swept away.
- ALERT: If you see a downed power line, call 911.

RECOGNIZE FLOOD RISK

- Identify flood-prone or landslide-prone areas near you.
- Know your community's warning signs, evacuation routes, and emergency shelter locations.
- Know flood evacuation routes near you.
- When power lines are down, water is in your home, or before you evacuate, TURN OFF gas, power, and water.
- Throw away items that cannot be disinfected, like wall coverings, cloth, rug, and drywall.

AFTER

PRACTICE SAFE HYGIENE

- Wash hands with soap and water to help prevent germs.
- Listen for information from your local officials on how to safely use water to drink, cook, or clean.
- Use bins, air conditioning units, and dehumidifiers to dry things.
- For cleanup, wear rubber boots and plastic gloves.
- Clean walls, third floors, and other surfaces with one cup of bleach, one gallon of water, and 3 gallons water to disinfect.
- Caution! Flood water may contain trash.

For more information visit <http://emergency.cdc.gov/disasters/floods/>

Severe Weather and Health

If you are experiencing a storm or flood

DO

- ▶ **Do** listen to local radio or TV channels for emergency advisories and instructions.
- ▶ **Do** unplug electrical appliances and shut off electric circuits if authorities tell you to leave your home. If authorities tell you to, shut off gas service as well.
- ▶ If your car stalls during a flood, **do** get out of it immediately and leave it where it is

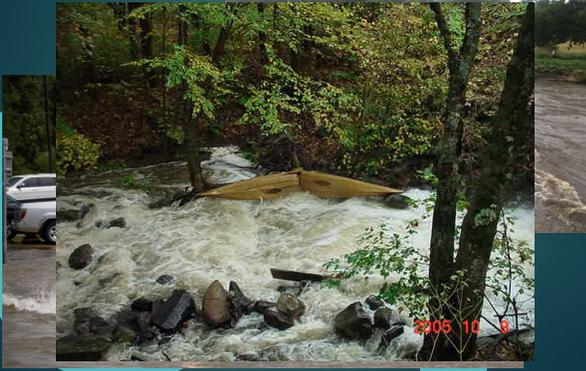
Severe Weather and Health

If you are experiencing a storm or flood:

DO NOT

- ▶ **Do not** walk through water that has entered your basement or garage.
- ▶ **Do not** try to drive over a flooded road.
- ▶ **Do not** walk through moving water. If you need to walk through water, make sure it is not moving, and check how deep it is with a stick.
- ▶ **Do not** go near water that is in contact with downed power lines.
- ▶ **Do not** allow children to play around high water, storm drains, or any flooded areas.

DO NOT...



Hazards on flooded city's streets

One of the many uncertainties facing the people of New Orleans is what effect the polluted flood waters and the stress of their ordeal will have on their later health.

In the air

- Airborne viruses
- Evaporated oil products
- Carbon monoxide in enclosed places near gasoline motors
- Mold spores (hazard for people with mold allergy, asthma)
- Mosquito-borne infections, such as West Nile fever
- Smoke from fires

Potential skin problems

- Wound infection with Staphylococcus, other bacteria
- Dermatitis in skin that has been sunburned, exposed to irritating chemicals
- Herpes-like foot (or trench) foot, an inflammation of skin that stays wet for long periods

How germs, contaminants enter body

- Inhaled into lungs
- Ingested in contaminated water or food
 - Common route for: E. coli, Giardia, Toxoplasmosis, Norovirus (stomach flu), Leptospirosis, Cryptosporidium
- Through broken skin, into bloodstream

Floating on water

- Gasoline and fuel oil from vehicles, storage tanks
- Crude oil

Dissolved in water

- Pesticides, herbicides
- Lead, chromium and other heavy metals
- Benzene and similar carcinogens

Hazards under water

- Sharp objects cannot be seen in murky water
- Dropoffs and holes can cause falls, drowning
- Fallen electric lines may be charged

© 2005 NH

Source: Centers for Disease Control and Prevention, Federal Emergency Management Agency, and the American Red Cross, Life Saving

Preparedness in NH

How well prepared do you feel your household is to handle a large-scale disaster or emergency?

- Well-prepared
- Somewhat prepared
- Not prepared

How long do you think it would take first responders to respond and handle your call for assistance in a large-scale disaster or emergency?

- Under 30 minutes
- Within an hour
- 2-5 hours
- 12+ hours

Approach to Preparedness Success

- ▶ Have plans in place to:
 - ▶ Shelter-in-Place
 - ▶ Evacuate
 - ▶ Connect with loved ones

Plans should be dynamic and everyone should know what it is in advance of the event.

Barriers for Preparing

- Denial: It can't happen to me or here
- Expensive: Buy in small increments; rotate stock of supplies
- What to buy: Buy practical items that you need

ANY OTHERS?

Emergency Response: What took so long?



Preparing a Family Emergency Kit



Preparing a Family Emergency Kit in Plain English

Plan to Shelter-in-Place

Food & Water

Have a 3-day supply of food and water for each person in your home. Remember individual diet needs and plan for your pets.



At least 1 Gallon per person per day

First Aid

Have a first aid kit with health products and prescription medicine.



Tools & Special Items

Don't forget a flashlight, extra batteries and important documents.



Plan to Evacuate

Evacuation Kit

Have supplies ready in your car or in a backpack in case you must leave your home. Pack lightly and include basic supplies for 24-48 hours.



Workplace Preparedness

- ▶ Shelter-in-place
- ▶ Evacuate
 - ▶ Alternative work arrangements
- ▶ Emergency phone tree or other alert system for employees
- ▶ Other ideas?

Tips for Preparing on a Budget

- ▶ Have your preparedness shopping list ready and watch for sales
- ▶ Check the dollar store
- ▶ Set a preparedness budget and purchase items slowly
- ▶ Rotate stock of food items
- ▶ Stockpile tap water before the storm
- ▶ Use the water in your home water heater

So now what?

ARE YOU PREPARED?

Additional Resources

- Greater Monadnock
- NH Alerts
- medical reserve corps
- ReadyNH.gov
- FEMA
- American Red Cross
- do1thing.com

Questions?

Thank you for participating!

Please complete your evaluation!

Chris Goshea
Emergency Preparedness Coordinator for the
Greater Monadnock Public Health Network
cgoshea@cheshire-med.com
603-354-5454 x2113

AMERICAN JOURNAL OF PUBLIC HEALTH VIGNETTE

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April 1, 2017

Alfredo Morabia, MD, PhD
Editor-in-Chief
American Journal of Public Health
Queens College, City University of New York & Mailman School of Public Health, Columbia
University
New York, NY

Dear Dr. Morabia:

I am pleased to submit the accompanying vignette for consideration in AJPH's supplement issue, Climate Change and Health: Research, Translation, Policy, and Practice.

This issue of AJPH was brought to my attention by A. Pinheiro Privette, PhD, USG Manager, Partnership for Resilience and Preparedness, with the U.S. Global Change Research Program. Dr. Privette was aware of our work on this local Climate and Health Adaptation Plan for the Greater Monadnock Region of New Hampshire.

Adverse climate change impacts are affecting the health of local communities across the United States. **Adaptation is best tailored to the site-specific climate impacts and particular vulnerabilities of a community and integrated into local planning and management processes.** This frontline decision-making includes protecting vulnerable populations and public health. Understanding how climate change will stress public health and identifying actions to prevent or minimize impacts are logical steps for local health departments. Sharing the process by which communities plan for climate change and health adaptation may inform replication elsewhere.

Our paper examines the local decision process in identifying community risk factors, and creating a climate and health adaptation plan through one of the 18 CDC-funded and state-supported Building Resilience Against Climate Effects (BRACE) projects nationally. The paper describes the benefits and challenges of using the BRACE model in decision making, the need to identify local climate change impacts, and the process of identifying, implementing and evaluating interventions. We find that local decision makers may prioritize the ease of evaluation when selecting evidence-based interventions rather than interventions most likely to have the greatest positive impacts.

Thank you for your consideration.

Sincerely,

A. Abrash Walton

A. Abrash Walton, PhD
Faculty, Department of Environmental Studies
Co-Director, Center for Climate Preparedness and Community Resilience

Community Preparedness: Climate and Health Adaptation Planning at the Local Scale

1 **Abstract**

2 This paper examines the decision process in creating a local climate and health adaptation plan
3 through one of the 18 CDC-funded and state-supported Building Resilience Against Climate
4 Effects (BRACE) projects. The paper describes benefits and challenges of using the BRACE
5 model and the process of identifying, implementing and evaluating interventions. Findings
6 include that local decision makers may prioritize the ease of evaluation when selecting evidence-
7 based interventions rather than interventions most likely to have the greatest positive impacts.

8 **Introduction**

9 Adverse climate change impacts are affecting the health of local communities across the United
10 States (Frumkin, Hess, Luber, Malilay, & McGeehin, 2008; USGCRP, 2016). Adaptation is best
11 tailored to the site-specific climate impacts and community vulnerabilities and integrated into
12 planning and management processes (Few, Brown, & Tomkins, 2007; NRC, 2010; Winsvold,
13 Stokke, Klausin, & Saglie, 2009). Understanding how climate change will stress public health
14 and identifying adaptation actions are logical steps for local health departments. Sharing the
15 process by which communities plan for climate change and health adaptation may inform
16 replication elsewhere.

17 **Purpose**

18 The Centers for Disease Control and Prevention (CDC) have recognized the need to
19 prepare for climate impacts. This vignette describes one such initiative: the Greater Monadnock
20 Climate and Health Adaptation Plan (CHAP), which was supported by the CDC’s Climate-
21 Ready States and Cities Initiative as one of 18 projects nationally to create plans based on site-
22 specific climate and health data and modeling. The 14-month Greater Monadnock CHAP

23 planning process began in May 2016, with New Hampshire Department of Health and Human
24 Services support.

25 Three entities collaborated to create the Greater Monadnock CHAP: Greater Monadnock
26 Public Health Advisory Council (PHAC), Southwest Regional Planning Commission (SWRPC),
27 and Antioch University New England (Antioch). PHAC was the decision-making body and
28 provided public health expertise, SWRPC led the planning process and provided regional data,
29 and Antioch provided climate preparedness research expertise.

30 The CHAP process followed the CDC Building Resilience Against Climate Effects
31 (BRACE) framework. The five-step framework included: 1) assessing the region's climate
32 change impacts and vulnerabilities; 2) modeling disease burden from these impacts; 3) assessing
33 possible public health interventions; 4) developing the adaptation plan, and 5) selecting one
34 intervention to implement.

35 **Place**

36 The Greater Monadnock Region encompasses 33 municipalities in Cheshire County,
37 New Hampshire and exemplifies the more than 90% of U.S. municipalities with populations less
38 than 25,000 people (National League of Cities, 2016). The region's climate since 1970 has
39 become warmer and wetter, with average maximum temperature increase 0.5 to 2.6 degrees
40 Fahrenheit and precipitation increase 7 to 20 percent (Wake, Bucci, & Aytur, 2014). Modeling
41 predicts more extreme weather events and flooding, increased exposure to high heat conditions
42 and poor air quality, increased exposure to allergens and vector-borne disease, and increased
43 levels of food insecurity (Wake, Bucci, & Aytur, 2014).

44 **Person**

45 The BRACE framework emphasized identifying vulnerable populations by geographic
46 location and demographics so that interventions reach those with greatest need. Vulnerability is a
47 function of a population’s exposure and sensitivity to climate-change-related health risks and
48 capacity to respond. The CHAP team investigated direct and indirect exposures predicted to
49 affect public and individual health during the decade ending in 2026. The team identified
50 sensitivity by investigating known risk factors: socioeconomic status, pre-existing conditions,
51 and infrastructure. The team evaluated adaptive capacity by examining community-based
52 behavioral, institutional, and technological responses.

53 **Process**

54 The BRACE framework does not prescribe a decision-making process for prioritizing
55 climate impacts, health burdens and interventions. The CHAP team used a two-phase process.
56 Phase one included three planning sessions with the PHAC Executive Committee. At sessions
57 one and two, the team presented research on regional weather and climate hazards and
58 preparedness resources in local, regional, and state plans. At session three, the PHAC Executive
59 Committee prioritized the top three climate impacts with the associated health burdens and
60 vulnerable populations. The full PHAC then selected top intervention priorities.

61 Two factors influenced CHAP priority-setting: the region’s predicted increase in
62 frequency and intensity of extreme precipitation events, and percentage of Cheshire County’s
63 population above age 65 (N=15%). Based on these factors, PHAC directed the CHAP to focus
64 on building resilience among the region’s elderly population, concentrating on extreme
65 precipitation events, which have the potential to cause severe injuries and substantial property
66 damage.

67 Phase two focused on identifying interventions that: a) conferred long-term benefits to
68 residents, b) built resiliency, c) created new partnerships and communication pathways, and d)
69 were sustainable after the CHAP project ended. There was a four-step process for selecting the
70 intervention: 1) literature review of evidence-based interventions that lessened the effects of
71 extreme weather events; 2) PHAC Executive Council first-tier selection of 5 interventions, based
72 on CHAP team research; 3) CHAP team needs assessment with region’s Emergency
73 Management Directors; and 4) PHAC Executive Council final intervention selection.

74 **Intervention**

75 The team investigated two types of interventions and created a matrix containing a
76 summary of each intervention, evidence of successful implementation, associated health
77 outcomes, potential metrics to gauge intervention success, estimated costs of the intervention,
78 and questions regarding how to customize the intervention for application in the Greater
79 Monadnock region.

80 The first type of interventions were infrastructure improvements: replacing roads in flood
81 vulnerable areas with permeable pavement, installing rain gardens in flood vulnerable areas, and
82 adding “green” or “blue” infrastructure to existing buildings.

83 The second type of interventions were capacity-building initiatives: trainings for elderly
84 residents on extreme precipitation event preparedness, trainings for emergency responders on
85 best practices for interacting with elderly residents, an audit and enhancement of registries of
86 elderly residents, and encouragement for municipalities to use NH state-funded emergency alert
87 systems.

88 PHAC and SWRPC staff determined that physical infrastructure projects, although
89 supported by the literature, exceeded available funding. PHAC focused instead on interventions

90 that combined registries, emergency alert systems, and trainings. Four specific interventions
91 were identified: a) **increasing participation in existing emergency alert systems**; b)
92 **distributing practical information** to assist residents in protecting their health before, during,
93 and after an extreme precipitation event; c) **implementing a “neighborhood warden” program**
94 to assist residents before, during, and after an extreme precipitation event; and d) working
95 with communities to identify and assist older adults, especially those with serious health needs,
96 through **using registries and data-sharing agreements**. The final intervention consisted of
97 working with three towns and targeting three senior events to deliver trainings and information
98 regarding registering for early alert systems, and Federal Emergency Management Agency and
99 CDC-approved best practices for preparing for extreme precipitation events, as well as to gauge
100 interest in participating in a neighborhood warden program.

101 **Evaluation**

102 Evaluation methods and metrics for CHAP interventions included: a) measuring number
103 of total new subscribers and total new subscribers above age 65 to emergency alert systems
104 during project outreach campaign; b) administration of pre- and post-test survey instruments to
105 elderly participants in extreme weather event preparedness trainings; and c) administration of
106 survey to elderly residents to measure number of residents covered under neighborhood warden
107 programs.

108 **Discussion**

109 The process of creating a Climate and Health Adaptation Plan will vary considerably for
110 communities across the country. One potential challenge, especially for smaller municipalities, is
111 access to data necessary to make informed decisions about local climate impacts and prevalence
112 of certain diseases and conditions. Local decision makers may prioritize the ease of evaluation

113 when selecting evidence-based interventions rather than interventions most likely to have the
114 greatest positive impacts. There is potential for creating new approaches to program evaluation.

115 **Public Health Significance**

116 This vignette describes one model for addressing climate change hazards to public
117 health. Climate change is already affecting health, with effects projected to increase in the
118 future. Understanding current and projected climate change impacts can inform planning and
119 implementation of interventions by local public health agencies.

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