Published in final edited form as:

Disaster Med Public Health Prep. 2019 June ; 13(3): 547–554. doi:10.1017/dmp.2018.114.

Provider Delivery of Emergency Preparedness Education in Home Based Primary Care

Tamar Wyte-Lake, DPT, MPH,

Veterans Emergency Management Evaluation Center (VEMEC), Office of Patient Care Services, U.S. Department of Veterans Affairs (VA), 16111 Plummer St. MS-152, North Hills, CA 91343, P: (818) 891-7711 ext. 36100 F: (818) 895-5838

Claudia Der-Martirosian, PhD,

Veterans Emergency Management Evaluation Center (VEMEC), Office of Patient Care Services, U.S. Department of Veterans Affairs (VA)

Maria Claver, PhD, MSW, CPG,

Veterans Emergency Management Evaluation Center (VEMEC), Office of Patient Care Services, U.S. Department of Veterans Affairs (VA), Gerontology Program, California State University, Long Beach, CA

Darlene Davis, MHA,

Geriatrics and Extended Care, Home and Community Based Care, U.S. Department of Veterans Affairs (VA)

Aram Dobalian, PhD, JD, MPH

Veterans Emergency Management Evaluation Center (VEMEC), Office of Patient Care Services, U.S. Department of Veterans Affairs (VA), Division of Health Systems Management and Policy, School of Public Health, University of Memphis, Memphis, TN

Tamar Wyte-Lake: Tamar.Wyte@va.gov; Claudia Der-Martirosian: Claudia.Der-Martirosian@va.gov; Maria Claver: Maria.Claver@csulb.edu; Darlene Davis: Darlene.Davis7@va.gov; Aram Dobalian: Aram.Dobalian@va.gov

Abstract

Introduction: Home health agencies have been tasked to improve their patients' disaster preparedness. Few studies have evaluated the robustness of tools to support preparedness in home health. Through evaluation of the Home-Based Primary Care (HBPC) Patient Assessment Tool ("Tool"), we conducted a survey to identify strengths and challenges in supporting the preparedness of patients served by home health programs such as the Veterans Health Administration's HBPC program.

Corresponding Author: Veterans Emergency Management Evaluation Center (VEMEC), Office of Patient Care Services, U.S. Department of Veterans Affairs (VA), Tamar.Wyte@va.gov, 16111 Plummer St. MS-152, North Hills, CA 91343, P: (818) 891-7711 ext. 36100 F: (818) 895-5838. Author contributions: T. Wyte-Lake drafted the article and led the writing. Both T. Wyte-Lake and M. Claver led the conceptualization of the research, development of the Assessment Tool, collection of the data and the interpretation of the data. C. Der-Martirosian supported the statistical analyses and interpretation of the data. D. Davis supported the survey design and data collection. A. Dobalian had ongoing involvement in the design of the study. All authors read, edited, and approved the final article.

Methods: Practitioners from 10 HBPC programs fielded the Tool with all patients during a three-week period. Logistic regression and bivariate analyses were used to identify patient characteristics associated with the delivery of preparedness education.

Results: 754 Patient Assessment Tools were returned. The educational item most likely to be covered was how to activate 911 services (87%). The item least likely to be discussed was information on emergency shelter registration and emergency specialty transportation (44%). When compared to the “low” risk group, HBPC patients in the “high/medium” risk group were more likely to receive preparedness education materials for six of the nine educational preparedness items (p 's<0.05).

Discussion: Practitioners are relaying preparedness education to their most vulnerable patients, suggesting that home health agencies can provide disaster preparedness in the home. Nonetheless, there is room for improvement.

Keywords

Disasters; Home Health Agencies; Veterans health

INTRODUCTION

As stated by the U.S. Federal Emergency Management Agency (FEMA), efforts to build community resilience can be complicated because communities must tailor outcomes to the individual needs of their residents.¹ Older adults (i.e. individuals 65 years of age) make up one of the fastest growing segments of many communities in the United States.² Therefore, their unique needs and vulnerabilities, including physiological, psychological, and socioeconomic factors, have been the topic of discussion in several studies of disasters.^{3–9}

The growth of the older adult population combined with an increased awareness of the economic viability of providing care in patients' homes has led to an increased growth in home health care delivery. The U.S. Centers for Disease Control and Prevention (CDC) estimated the presence of 12,400 Home Health Agencies (HHAs) in the United States in 2014,¹⁰ with over one million individuals receiving home health care each day.¹¹ HHAs have an opportunity to play a unique role in community mitigation and preparedness efforts, as they work directly with some of the most vulnerable members of the population directly in their homes.^{12–16}

Veterans served by the U.S. Veterans Health Administration (VHA) have poorer health status compared with that of older people enrolled in Medicare managed care.¹⁷ The VHA's Home Based Primary Care (HBPC) program, which serves 53,000 older Veterans (mean age 76.5) throughout the United States,¹⁸ is a subset of home health care programs. In providing care to older Veterans who present with complex, chronic conditions, the VHA HBPC program serves a subset of the most vulnerable members of the U.S. population, including during disaster situations. However, little research has been conducted to better characterize the needs of and resources available to HBPC veterans during times of emergency or disaster. Although HBPC programs, like all HHAs, are tasked with supporting the

preparedness efforts of their patients, there is a wide range of practices in the field¹⁹ and practitioners often desire guidance on how to best approach these efforts.¹²

A recent Medicare ruling, in its expansion of HHA emergency preparedness requirements, explicitly states that HHA activities and resources are necessary for effective community emergency preparedness planning.²⁰ Accordingly, home health agencies could be tapped as a resource to maximize patient resiliency and be key players in local community resilience. This ruling discusses a general expectation that HHA practitioners assist their patients in preparedness planning. Although this may be true for a certain percentage of practitioners, research shows that the degree to which a practitioner covers preparedness with his or her patient depends on how comfortable that practitioner is with his or her own knowledge about the topic.¹² We are unaware of any literature evaluating the extent to which disaster preparedness is covered with patients in home health programs.

Through the testing of an HBPC Patient Assessment Tool for Disaster Preparedness, baseline characteristics of Veterans served by the HBPC program were collected. Additionally, this study aimed to conduct an in-depth examination of the types of disaster preparedness education provided to HBPC veterans and how their characteristics might be associated with whether they receive information.

DESIGN AND METHODS

The HBPC Patient Assessment Tool was created by the authors to address the lack of a systematic assessment tool for disaster preparedness among HBPC patients.²¹ The assessment tool is based on best practices identified through a review of current assessment items and Standard Operation Procedure (SOP) documents from HBPC sites. It contains items regarding veteran characteristics (e.g., bed-bound, cognitive impairment, communication difficulties), oxygen use and safety, use of medical equipment, use of safety equipment, and patient preparedness education provided during the home visit. Practitioners were instructed to derive patient characteristics per the patient's medical records. The provision of patient preparedness education was the primary outcome measure for this study and includes nine education-related items. These items fall into two categories; (1) Primary or "life essentials" resources, including ability to evacuate, how to activate 911 services, and education on the importance of working carbon monoxide and smoke detectors; and (2) Secondary or "good to have" resources, including discussion of emergency plan, emergency kit present, advanced directive/ Physician Orders for Life-Sustaining Treatment (POLST) available, copies of important documents in one place, and information on emergency shelter registration and special transport.

VA HBPC Program Managers from 10 sites in eight states designated specific practitioners (e.g., Nurse Practitioner, Social Worker, Physical Therapist) to field the Assessment Tool with all patients seen over the course of a three-week period (April-October, 2017). At the conclusion of the three-week data collection period, the completed Assessment Tools were deidentified and sent back to the project team. The project team inputted the collected data from the Patient Assessment Tool and generated site-specific infographic reports that were presented to the sites via a brief follow-up interview approximately one-month post data

collection. In addition to site-specific data analysis, aggregate data from all sites were analyzed.

From the 10 participating HBPC program sites, 757 patient assessments were returned. The number of patients from individual sites ranged from 29 to 155. Three patients were dropped because of unclear responses. The analytic sample size for this study is 754, except for the risk classification data which is 567 due to one site failing to complete this section of the Tool.

Descriptive statistics, including mobility levels, cognitive issues, and behavioral issues, were used to understand patient profiles. Bivariate analysis using chi-square tests was conducted to test the significance of the association between patient preparedness education provided and patient risk category. To test the association between patient characteristics and preparedness education items, for each education item, nine separate logistic regression analyses were conducted where all eight patient characteristics were entered into each regression model as independent variables. The results of all nine logistic regression analyses are presented in this paper. The significance level was set at $p < 0.05$. All quantitative statistical analysis was performed using STATA v.12 (Stata Corp, College Station, TX).

The VA Greater Los Angeles Healthcare System Institutional Review Board approved this study as a quality improvement initiative, and the study was therefore exempt from human subject approval.

RESULTS

Patient characteristics and health conditions

Table 1 shows the characteristics of the patient population included in the analysis. Note that identifiers such as age, sex, and race were not collected. Sites were directed to use their own risk classification system to rate each patient “high,” medium,” or “low” based on how much support he/she would require in case of an emergency or a major disaster. About 40% were rated “low,” 44% “medium,” and 16% “high” risk. Practitioners were then instructed to check off a series of yes/no statements about patient characteristics derived from the day’s evaluation as well as the patient’s medical records. As noted in Table 1, these characteristics ranged from questions such as “Patient is chair/bed bound” to “Social support readily available.” Eighty five percent of the patients had mobility issues, where 30% were chair bound (unable to ambulate), while 55% required assistive device (to ambulate). Results also showed 25% were oxygen dependent and 40% did not have social support readily available. In terms of cognitive functioning, the most commonly noted issue was general cognitive impairment (33%), followed by communication limitations (20%), mental illness (11%), and evidence of behavioral disturbance (7%).

Disaster preparedness education

Various types of disaster preparedness education were discussed with patients and their caregivers. Overall, the most commonly discussed items included: how to activate 911 services (87%), the ability to evacuate from home by identifying the number of exits (86%),

having an emergency plan (83%), and received instructions that emergency preparedness recommendations were included in the patient's HBPC handbook (79%). Items such as education about an Advanced Directive/POLST (66%), the importance of working CO and smoke detectors (66%), and having important documents in one place (66%) were discussed with patients with decreased frequency. The items least likely to be discussed were: the importance of having an emergency kit (56%) and the provision of information on emergency shelter registration and emergency specialty transportation (44%) (data not shown).

Patient risk category and disaster preparedness education

The nine preparedness education items discussed with HBPC patients were compared by patient risk category where patients in the high or medium risk category were grouped together to distinguish from HBPC patients who needed less support during disasters (i.e., rated as "low" risk). Table 2 displays the results of these comparisons in the order of the preparedness education most likely received by the high/medium risk patients. The percentages for the two groups (high/medium vs. low) for all nine items are listed in Table 2. When compared to the low risk group, HBPC patients in the high/medium risk group were *more* likely to receive preparedness education materials for six items: how to activate 911 (90% high/medium vs. 80% low, $p<.001$); emergency plans (87% high/medium vs. 76% low, $p<.001$); importance of working CO and smoke detectors (68% high/medium vs. 56% low, $p<.01$); having copies of important documents in a safe place (60% high/medium vs. 53% low, $p<.05$); emergency kit (56% high/medium vs. 46% low, $p<.05$); and information on emergency shelter registration and emergency specialty transportation shelter (51% high/medium vs. 33% low, $p<.001$).

Patient characteristics and disaster preparedness education

For the next set of comparisons, the nine preparedness education items were grouped into two categories: primary ("life essentials") and secondary ("good to have") resources. The primary resources include three items: ability to evacuate, how to activate 911, and education on the importance of working CO and smoke detector (see Table 3), and the secondary resources include the remaining six items (see Table 4). Table 3 presents results from three logistic regression analyses for the primary resources. For the first education item, only one patient characteristic showed significant association. The results indicate, after controlling for all eight patient characteristics, patients with mental illness were *more* likely to receive education on how to evacuate (OR: 2.7239, $p<.05$). For the second education item, three items showed significant association: patients dependent on oxygen (OR: 2.3218 ($p<.05$)) and patients with mental illness (OR: 2.8210, $p<.05$) were *more* likely to learn how to activate 911 whereas patients with cognitive impairment were *less* likely to receive education on how to activate 911 (OR: 0.5678, $p<.05$). For the last primary resource item, four patient characteristics showed significant associations. Chair/bed bound patients (OR: 1.5593, $p<.05$), and oxygen dependent patients (OR: 1.9356, $p<.01$) were *more* likely to receive educational information on having working CO and smoke detectors, whereas patients with communication limitations (OR: 0.6379, $p<.05$) and patients with social support (OR: 0.6247, $p<.01$) were *less* likely to receive educational information on CO and smoke detectors.

Table 4 presents results from six logistic regression analyses – one for each of the six secondary, “good to have,” preparedness items. For the most part, the results show a similar pattern where HBPC chair/bed bound patients and oxygen dependent patients were *more* likely, whereas patients with social support were *less* likely to receive secondary preparedness educational resources. For example, after controlling for the effects of all eight patient characteristics, chair/bed bound (OR: 1.5585, $p < .05$) and oxygen dependent patients (OR: 1.5502, $p < .05$) were *more* likely, whereas patients with social support were *less* likely (OR: 0.6534, $p < .01$) to receive information on emergency kits. For advanced directive/POLST education item, however, there is a reverse pattern, where patients with social support, which was the only significant patient characteristic, were *more* likely (OR: 1.6154 $p < .01$) to receive the directive/POLST education. For patients with mental illness and patients with cognitive impairment the findings are mixed. In the case of having copies of important documents in one place, patients with mental illness were *less* likely (OR: 0.5843, $p < .05$) to receive this education item. On the other hand, for the last secondary resource item, patients with mental illness (OR: 2.4403, $p < .05$), and patients with cognitive impairment (OR: 1.5728, $p < .05$) were *more* likely to receive instructions that emergency preparedness recommendations are located in the HBPC handbook.

DISCUSSION

In this study, we sought to examine the association between patient characteristics and whether disaster preparedness education was provided by practitioners in the VHA Home Based Primary Care program. As noted by Gamble et al,⁴ the increase in managed care has led to more elderly individuals remaining in their homes, and a corresponding increase in the need for appropriate, accurate, and trusted information about disaster preparedness. The new Medicare and Joint Commission policy guidelines recognize the need for home health agencies to increase their involvement in improving mitigation and preparedness amongst their patients,²⁰ yet research has found that program staff and leadership desire more direction in how to make their preparedness protocols more robust.^{15,19} Few articles have evaluated the robustness of tools developed or adopted to support preparedness in home health programs,⁵ and none that we are aware of have evaluated the extent to which disaster preparedness is actually covered with patients. Through evaluation of the HBPC Patient Assessment Tool, this survey provides an opportunity to begin to identify strengths and challenges in supporting the preparedness activities of patients served by home health programs such as the VHA’s Home-Based Primary Care program.

There is strong evidence that older adults, particularly those served by home health agencies, are more vulnerable in times of disaster due to a series of chronic co-morbidities, as well as poor social support.^{4–6,14} Veterans receiving care at the VHA’s Home Based Primary Care program are a subset of the aging American population. Our results highlight the need for understanding how to best support these individuals, as well remembering the role of the home health program as a preparatory entity, but not a responder.¹² Nonetheless, HBPC programs, like other home health programs that engage with patients in their homes, have a potential unique advantage to prepare patients for disasters. Having the opportunity to provide direct education, and the ability to tailor the message to the patient’s home environment, home health practitioners can act as trusted advisors, a role that has been

shown to provide more valued messaging to vulnerable populations such as homebound patients.^{22,23}

There are marked inconsistencies in the comprehensiveness and type of preparedness education disseminated by home health programs.^{15,19} Practitioners in the field can often feel they have an enormous amount of information to cover with patients in a very short amount of time. One of the proposed benefits of the Patient Assessment Tool is to provide a user-friendly but quick and comprehensive checklist of preparedness items to be reviewed by the practitioner with the patient. Our results show that certain items on this list are more frequently discussed. This finding might be due to the fact that certain education topics are easier to discuss or more easily remembered by patients. For example, most adults are aware of 911, and therefore a simple review of how to activate 911 services is not much more than a straightforward reminder. Similarly, reviewing how to evacuate a home or the importance of having an emergency plan require few additional resources from either the patient or the practitioner. These are not complicated action items on the part of the patient. The study findings indicate some preparedness topics such as putting together a home emergency kit, which for this population is often an economic challenge, and information on emergency shelter registration and emergency specialty transport, which may not be readily available to the practitioner in the field, were less likely to be discussed. Previous research has shown that not knowing where to evacuate to and challenges with transportation were primary barriers to evacuation in large scale natural disasters.²² Improved provision of this information to home health programs, which can then be disseminated to patients by practitioners, could support mitigation efforts for this vulnerable segment of the population.

Three associations between patient characteristics and dissemination of preparedness items stand out in our study as noteworthy to help create a better understanding of how HBPC practitioners can effectively provide preparedness education to some of their most vulnerable patients. Previous studies have shown risk categorization systems play an important role in how programs triage their patients in the case of an emergency.²⁴ Our results show that a patient's risk category was associated with the likelihood of receiving disaster preparedness education, and could possibly influence a practitioner's decision making process when it comes to providing key pieces of preparedness information. As previously mentioned, during an average medical visit, practitioners often find themselves pressed for time to cover emergent medical concerns. For patients presenting with multiple, complex problems, such as is found in the HBPC population, covering items outside of the immediate medical issue becomes even more challenging.²⁵ And yet, for six of the nine educational topics, preparedness education was actually more likely to be disseminated to the more complex, higher risk patients. Examining vulnerability from another perspective, the results also show that when a patient presents with a physical limitation, such as severe ambulation limitation or oxygen dependence, there is an increased association with receiving preparedness education. Once again, we see the practitioner highlighting the importance of sharing preparedness education with their most complex patients. Both sets of associations highlight the unique role of the home health practitioner in supporting the care for individuals identified to be some of the most vulnerable members of our society. It is possible that, compared to less complex patients, the relatively greater vulnerability of these patients brings preparedness to the forefront of practitioners' concerns and makes them more

likely to discuss these actions with these patients. Lack of social support, sometimes seen as social isolation, is an additional vulnerability common among the elderly.²² Our findings, which suggest that patients with no social support were more likely to receive preparedness education, underscore one of the unique values of home health programs, specifically connecting with individuals who have limited community networks and providing them with resources and support not otherwise available.

On the other hand, three items were not associated with risk category. Two of these, reminding patients of the HBPC handbook and reviewing the need for an Advanced Directive/POLST, are educational items covered irrespective of the fact that they are also related to preparedness education. The ability to evacuate the home, the third item not associated with risk category, could perhaps be considered one of the most basic and fundamental pieces of preparedness when considering the homebound population, as it was one of the topics most frequently covered with all patients, having no association with risk category or patient characteristics. One of the main tenants of this population is having difficulty leaving the home, so addressing this underlying risk factor is critical in providing appropriate preparedness education.

One of the most important preparedness challenges for the homebound elderly population is the number of comorbidities with which they present, including the growing presence of cognitive impairment.^{8,26} There is a growing body of literature addressing the unique needs of individuals presenting with cognitive impairments such as dementia, which can carry with it symptoms such as communication limitations and behavioral disturbances.²⁷ Our findings are mixed for these patients. In some cases, education is more likely to be disseminated to patients with cognitive impairments, while in others it is less likely to be shared. Some of these items, such as reminding patients that the preparedness recommendations are in the VHA HBPC handbook, may seem more straightforward for much of the population but are possibly more of a challenge for patients with cognitive impairment. For those items where practitioners are less likely to disseminate preparedness education (e.g., education on importance of CO and smoke detectors and copies of important documents in one place), our findings underscore the challenges of caring for this population and providing information effectively to either them or their caregivers. There are limited number of studies that discuss the creation of specific resources for individuals (and the families caring for them) who present with dementia,^{8,26} but organizations such as the Alzheimer's Association, Red Cross, and the U.S. Administration on Aging have developed tools and resources to specifically support disaster preparedness activities for people with dementia and their caregivers, as well as training modules for first responders to be better aware of how to work with individuals with dementia at the time of an emergency or a disaster. Many items overlap with standard preparedness practices such as putting together emergency kits and having family emergency plans in place. Recommendations unique to this population include insuring the person with dementia is enrolled in a program to assist with identification and reunification if a person becomes lost or separated from his or her family, and making sure to pack calming objects in the emergency kit to help a disoriented person with dementia feel calmer in unfamiliar circumstances.²⁸ Training home health practitioners about these resources, as well as including the specific resources, tips, and tools in the

disaster preparedness materials home health programs distribute, would be a crucial step in supporting the preparedness of a growing segment of our population.

Limitations

Pilot sites were asked to assess every patient seen during a three-week period. This may be a relatively random sample, because the data collection took place over a three-week period with patients that happened to be scheduled during that period. However, it is possible that the sample may be slightly skewed toward inclusion of high-need patients that are seen more frequently (such as those with Foley catheters or needing wound care). Although practitioners were instructed to use patient medical records to derive patient designation, variability exists regarding how practitioners assessed these characteristics in particular with cognitive functioning items. Moreover, the risk categorization item within the Assessment Tool instructed practitioners to defer to the sites' own categorization system. Prior research has shown that risk categorization systems are not systematic between HBPC programs, nor arguably within HBPC programs.²¹ Therefore, there is no consistent definition for how patients were identified as "high," "medium," or "low." Our study was conducted with VHA HBPC providers, and the extent to which our findings generalize outside VHA is unknown. Although VHA facilities are not covered under Medicare, all VHA facilities must be certified by The Joint Commission. Thus, it is likely that our findings would not markedly differ for non-VHA home health organizations.

CONCLUSIONS

Arguments have been made that home health programs should be increasingly engaged in community resilience efforts and the results of this study support a need for more extensive education to homebound patients concerning disaster preparedness. Our findings, which demonstrate that practitioners are covering basic preparedness education to some of their most vulnerable patients, underscore the unique opportunity for home health agencies to support populations cared for in the home regarding disaster preparedness. It is unlikely that homebound patients are receiving this information elsewhere. Home health agencies, with the aid of a tool such as the HBPC Patient Assessment Tool, can play an important role in their patients' preparedness.

Acknowledgements and disclosures:

The authors would like to thank Roger Wasserman and Alexis Gequillo for their extensive support with data cleaning. This material is based upon work supported by the by the U.S. Department of Veterans Affairs (VA), Veterans Health Administration, Office of Patient Care Services. The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the VA or the United States government.

References

1. Mitigation Framework Leadership Group (MitFLG). Draft Interagency Concept for Community Resilience Indicators and National-Level Measures. 2016; https://www.fema.gov/media-library-data/1466085676217-a14e229a461adfa574a5d03041a6297c/FEMA-CRI-Draft-Concept-Paper-508_Jun_2016.pdf. Accessed January 9, 2018.
2. United States Census Bureau. An Aging Nation: The Older Population in the United States. 2014; <https://www.census.gov/prod/2014pubs/p25-1140.pdf>. Accessed January 9, 2018.

3. Aldrich N, Benson WF. Disaster preparedness and the chronic disease needs of vulnerable older adults. *Preventing Chronic Disease* 2008; http://www.cdc.gov/pcd/issues/2008/jan/07_0135.htm. Accessed January 9, 2018.
4. Gamble JL, Hurley BJ, Schultz PA, Jaglom WS, Krishnan N, Harris M. Climate change and older Americans: state of the science. *Environ Health Perspect*. 2013;121(1):15–22. [PubMed: 23033457]
5. Al-Rousan TM, Rubenstein LM, Wallace RB. Preparedness for natural disasters among older US adults: a nationwide survey. *American journal of public health*. 2014;104(3):506–511. [PubMed: 24432877]
6. Dostal PJ. Vulnerability of Urban Homebound Older Adults in Disasters: A Survey of Evacuation Preparedness. *Disaster medicine and public health preparedness*. 2015;9(3):301–306. [PubMed: 25906972]
7. Fernandez LS, Byard D, Lin CC, Benson S, Barbera JA. Frail elderly as disaster victims: emergency management strategies. *Prehospital and disaster medicine*. 2002;17(2):67–74. [PubMed: 12500729]
8. Toner JA. *Geriatric Mental Health Disaster and Emergency Preparedness*. New York, New York: Springer Publishing Company; 2010.
9. Wang C Bracing For Hurricanes: A Qualitative Analysis of the Extent and Level of Preparedness Among Older Adults. *Gerontologist*. 2018;58(1):57–67. [PubMed: 29253132]
10. National Center for Health Statistics. Fast Stats Home Health Care. 2014; <https://www.cdc.gov/nchs/fastats/home-health-care.htm>. Accessed January 9, 2018.
11. National Center for Health Statistics. Characteristics and Use of Home Health Care by Men and Women Aged 65 and Over. Centers for Disease Control and Prevention;2012.
12. Claver ML, Wyte-Lake T, Dobalian A. Disaster Preparedness in Home-based Primary Care: Policy and Training. *Prehospital and disaster medicine*. 2015;1–7. [PubMed: 25658123]
13. Laditka SB, Laditka JN, Cornman CB, Davis CB, Chandlee MJ. Disaster preparedness for vulnerable persons receiving in-home, long-term care in South Carolina. *Prehospital and disaster medicine*. 2008;23(2):133–142. [PubMed: 18557293]
14. Khorram-Manesh A, Yttermyr J, Sörensson J, Carlström E. The Impact of Disasters and Major Incidents on Vulnerable Groups: Risk and Medical Assessment of Swedish Patients With Advanced Care at Home. *Home Health Care Management & Practice*. 2017;29(3):183–190.
15. Wyte-Lake T, Claver M, Der-Martirosian C, Davis D, Dobalian A. Developing a Home-Based Primary Care Disaster Preparedness Toolkit. *Disaster medicine and public health preparedness*. 2016;11(1):56–63. [PubMed: 27839522]
16. Daugherty JD, Eiring H, Blake S, Howard D. Disaster preparedness in home health and personal-care agencies: are they ready? *Gerontology*. 2012;58(4):322–330. [PubMed: 22487755]
17. Selim AJ, Berlowitz DR, Fincke G, et al. The health status of elderly veteran enrollees in the Veterans Health Administration. *Journal of the American Geriatrics Society*. 2004;52(8):1271–1276. [PubMed: 15271113]
18. Karuza J, Gillespie SM, Olsan T, et al. National Structural Survey of Veterans Affairs Home-Based Primary Care Programs. *Journal of the American Geriatrics Society*. 2017;65(12):2697–2701. [PubMed: 28960236]
19. Wyte-Lake T, Claver M, Dalton S, Dobalian A. Disaster Planning for Home Health Patients and Providers: A Literature Review of Best Practices. *Home Health Care Management Practice*. 2014;1–9.
20. Centers for Medicare & Medicaid Services. Medicare and Medicaid Programs; Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers. In: Department of Health and Human Services, ed2016.
21. Wyte-Lake T, Claver M, Dobalian A. Assessing Patients' Disaster Preparedness in Home-Based Primary Care. *Gerontology*. 2016;62(3):263–274. [PubMed: 26812437]
22. Eisenman DP, Cordasco KM, Asch S, Golden JF, Glik D. Disaster planning and risk communication with vulnerable communities: lessons from Hurricane Katrina. *American journal of public health*. 2007;97 Suppl 1:S109–115. [PubMed: 17413069]
23. Federal Emergency Management Agency. Personal Preparedness in America: Findings from the 2012 FEMA National Survey. In: Security USDH, ed2013.

24. Zane R, Biddinger P. Home Health Patient Assessment Tools: Preparing for Emergency Triage. Rockville, MD: Agency for Healthcare Research and Quality; 2011.
25. Fiscella K, Epstein RM. So much to do, so little time: care for the socially disadvantaged and the 15-minute visit. Arch Intern Med. 2008;168(17):1843–1852. [PubMed: 18809810]
26. Oliva N, Wexler B, Gullickson G, et al. Disaster Preparedness for Veterans With Dementia and Their Caregivers. Federal Practitioner. 2013;7:29–34.
27. Aging NIO. Alzheimer's Disease & Related Dementias. <https://www.nia.nih.gov/health/alzheimers>. Accessed January 10, 2018.
28. Alzheimer's Association, RTI International, U.S. Administration on Aging. Disaster Preparedness: Home and Community-Based Services for People with Dementia and their Caregivers. http://www.une.edu/sites/default/files/Toolkit_2_Disaster_Preparedness.pdf. Accessed May 31, 2018.

Table 1.

Patient Characteristics. (n=754): VA HBPC Patient Assessment Tool for Disaster Preparedness Study, United States, 2017

	Frequency	%
Patient Risk Category		
High	94	16%
Medium	248	44%
Low	225	40%
Mobility level		
Chair/bed bound	228	30%
Assistive device	416	55%
On oxygen	187	25%
Social support available	450	60%
Cognitive issues		
Cognitive impairment	252	33%
Communication limitation	147	20%
Mental illness	85	11%
Behavioral disturbance	56	7%

Table 2.

Patient risk category and preparedness education. (n=567): VA HBPC Patient Assessment Tool for Disaster Preparedness Study, United States, 2017

	<i>High/Medium Risk</i> Patients who received the education	<i>Low Risk</i> Patients who received the education	p-value
How to activate 911 services	307 (90%)	180 (80%)	P=0.001
Discussed emergency plan. Included Family, Friends, & Neighbors as appropriate.	298 (87%)	172 (76%)	P=0.001
Ability to evacuate the home	298 (87%)	184 (82%)	P=0.066
Instructed that emergency preparedness recommendation hand-outs are located in HBPC hand book	279 (82%)	171 (76%)	P=0.093
Educated patient/caregiver on importance of working CO and smoke detectors	231 (68%)	125 (56%)	P=0.003
Advanced Directive/POLST readily available	219 (64%)	142 (63%)	P=0.788
Copies of important documents in a safe place	205 (60%)	116 (52%)	P=0.044
Emergency Kit: 1 week supply of Food/Water/Medication/First Aid Kit/Flashlight	191 (56%)	104 (46%)	P=0.023
Provided information on emergency shelter registration and emergency specialty transportation	173 (51%)	75 (33%)	P=0.000

Table 3.

Patient demographics and preparedness education. Primary Resources (i.e., life essentials). Odds Ratio of those patients with the specific patient characteristic receiving the education. (n=754): VA HBPC Patient Assessment Tool for Disaster Preparedness Study, United States, 2017

	Ability to evacuate	How to activate 911 services	Educated patient/caregiver on importance of working CO and smoke detectors
Veteran requires assistive device:	1.048489	1.50455	.9643978
Veteran is chair/bed bound:	1.233139	1.642668	1.559268*
Veteran is dependent on oxygen:	1.592399	2.321845*	1.93563**
Veteran presents with mental illness:	2.723895*	2.821039*	.7340014
Veteran presents with cognitive impairment:	1.001561	.567776*	.9674273
Veteran presents with communication limitations:	1.841981	.7579861	.6372936*
Veteran can present with behavioral disturbance:	1.569228	.5733636	.6485745
Social support readily available:	.9779319	.8940926	.6247067**

*
p<0.05

**
p<0.01

Note: Bold presents significant associations. Bold and italics present significant associations, where presence of the characteristic makes it *less likely* to receive the preparedness education. All logistic regression models were significant (p<.01), except for Ability to Evacuate (p=.0514).

Table 4.

Patient demographics and preparedness education. Secondary Resources (i.e., good to have). Odds Ratio of those patients with the specific patient characteristic receiving the education. (n=754): VA HBPC Patient Assessment Tool for Disaster Preparedness Study, United States, 2017

	Discussed emergency plan	Emergency Kit present	Advanced Directive/POLST readily available	Copies of important documents in one place	Provided information on emergency shelter registration and special transport ²	Instructed that emergency preparedness recommendation hand-outs are located in HBPC hand book
Veteran requires assistive device	1.411614	1.026403	.943003	1.055129	.7592314	1.23407
Veteran is chair/bed bound	2.142555**	1.558516*	1.240588	1.626893*	1.278498	1.528289
Veteran is dependent on oxygen	1.650477	1.550223*	1.362382	1.984763***	1.397518	1.673453*
Veteran presents with mental illness:	.6094859	.6226017	.986759	.5843198*	1.174159	2.440277*
Veteran presents with cognitive impairment:	.887181	.7629639	1.12879	.7441139	1.187111	1.572843*
Veteran presents with communication limitations:	.8659177	.7698442	1.508979	1.042293	1.044026	1.067787
Veteran can present with behavioral disturbance:	1.191466	.8919059	1.380336	.8412709	1.024982	1.976909
Social support readily available:	.8083875	.6534357**	1.615402**	.7611424	.5407714***	.9453238

* p<0.05

** p<0.01

*** p<0.001

Note: Bold presents significant associations. Bold and italics present significant associations, where presence of the characteristic makes it *less likely* to receive the preparedness education. All six logistic regression models were significant (p<.01).