

## ASPR TRACIE Technical Assistance Request

**Request Receipt Date (by ASPR TRACIE):** 27 March 2019

**Response Date:** 5 April 2019

**Type of TA Request:** Standard

### Request:

The requestor asked for assistance in locating scholarly articles that could help answer the following questions:

- From a local public health department perspective, what are the benefits and needs associated with having coordinated emergency planning and response efforts (e.g., return on investment) and working closely with the healthcare coalition (HCC) and other partners?
- How do dialysis and other patients with access and functional needs impact the utilization of hospital emergency department (EDs) pre-, during- and post-disaster, and how could these ED visits been prevented (e.g., planning efforts with their regular physicians for a forecasted hurricane)?

For the second question, the requestor also noted that it would be helpful if we could provide materials, specific to individuals and their healthcare providers, that would assist patients with access and functional needs be better prepared for disasters.

### Response:

The ASPR TRACIE Team reviewed existing materials; namely the [Access and Functional Needs](#), [Coalition Administrative Issues](#), [Coalition Models and Functions](#), and [Dialysis Centers](#) Topic Collections. We also searched online for related articles, and reached out to a Librarian who works for the National Institutes of Health (NIH) for assistance in gathering scholarly articles on the subjects previously noted in this document.

Section I includes scholarly articles on the benefits and needs associated with coordinated emergency planning and response efforts. Section II provides scholarly articles on the impact and utilization of EDs by patients with access and functional needs before, during, and after a disaster. Finally, Section III includes links to additional research studies and other disaster preparedness resources specific to individuals with access and functional needs.

## I. Articles on Coordinated Emergency Planning and Response Efforts

Acosta, J., Howards, S., Chandra, A., et al. (2015). [Contributions of Health Care Coalitions to Preparedness and Resilience: Perspectives From Hospital Preparedness Program and Health Care Preparedness Coalitions](#). *Disaster Medicine and Public Health Preparedness*. 9(6): 690-697. (**NOTE:** The abstract is the only portion of this article currently available online; the full text article is attached.)

The authors conducted a literature review and interviews with leaders from 22 coalitions and hospital preparedness programs. They determined five dimensions of success: strong member participation, diversity of members, positive changes in members' capacity to respond to or recover from disaster, sharing of resources among members, and being perceived as a trendsetter. They also listed barriers and suggest that coalitions develop a common typology that could be used to specify coalition capabilities and functions

Priest, C., and Stryckman, B. (2015). [Identifying Indirect Benefits of Federal Health Care Emergency Preparedness Grant Funding to Coalitions: A Content Analysis](#). *Disaster Medicine and Public Health Preparedness*. 9(6):704-11. (NOTE: The abstract is the only portion of this article currently available online; the full text article is attached.)

The authors conducted interviews with regional stakeholders from several HCCs to identify the benefits of healthcare preparedness funding from the perception of recipients (current and former) of the U.S. Department of Health and Human Services (HHS) Office of the Assistant Secretary for Preparedness and Response's (ASPR) Hospital Preparedness Program (HPP). Two main categories of benefits were identified: 1) dual-use technology and programs, and 2) impact of relationships on day-to-day operations.

Stryckman, B., Grace, T.L., Schwarz, P., et al. (2015). [An Economic Analysis and Approach for Health Care Preparedness in a Substate Region](#). *Disaster Medicine and Public Health Preparedness*. 9(4): 344-8. (NOTE: The abstract is the only portion of this article currently available online; the full text article is attached.)

The authors conducted a cost-benefit analysis of information specific to the funding of the Substate Regional Emergency Response Team in Pennsylvania, and 17 real-world events that the team responded to between 2008 and 2013. Results indicated a positive return on investment after six years of coordination.

Toner, E., Ravi, S., Adalja, A., et al. (2015). [Doing Good by Playing Well with Others: Exploring Local Collaboration for Emergency Preparedness and Response](#). *Health Security*. 13(4): 281-289.

The authors researched the extent and quality of existing collaborations and identified factors that impede or facilitate the integration of the preparedness community. They discuss ways to strengthen collaboration, and use six key findings to inform the development of tools to help coalitions better assess and improve their own preparedness community integration.

Walsh, L., Craddock, H., Gulley, K., et al. (2015). [Building Health Care System Capacity to Respond to Disasters: Successes and Challenges of Disaster Preparedness Health Care Coalitions](#). (Abstract only.) *Prehospital and Disaster Medicine*. 30(2): 112-122.

The authors interviewed nine healthcare coalition leaders to identify benefits and challenges related to healthcare coalitions and their ability to augment healthcare system preparedness for disasters. The article discusses promising practices for: stakeholder engagement; communicating value and purpose; simplifying processes; formalizing connections; and incentivizing participation.

Walsh, L., Craddock, H., Gulley, K., et al. (2015). [Building Health Care System Capacity: Training Health Care Professionals in Disaster Preparedness Health Care Coalitions](#). (First page only.) *Prehospital and Disaster Medicine*. 30(2):123-30.

A semi-structured interview was conducted with a sample of leaders of nine well-established preparedness-focused HCCs to determine education and training needs, challenges, and promising practices. Training topics identified as priorities included chemical, biological, radiological, nuclear, and explosives (CBRNE), and mass-casualty incidents. The authors note that “an online resource repository would help reduce the burden on individual coalitions by eliminating the need to continually develop learning opportunities.”

## II. Articles on the Impact of Patients with Access and Functional Needs and Utilization of EDs

Anderson, A. H., Cohen, A. J., Kutner, N.G. et al. (2009). [Missed Dialysis Sessions and Hospitalization in Hemodialysis Patients after Hurricane Katrina](#). *Kidney International*. 75(11): 1202-8.

The authors interviewed dialysis patients and listed the reasons they provided for missing sessions after Hurricane Katrina. As a result, the authors stress the need for emphasizing patient awareness and activating emergency plans early in the response phase.

Arrieta, M.I., Foreman, R.D., Crook, E.D., et al. (2008). [Insuring Continuity of Care for Chronic Disease Patients after a Disaster: Key Preparedness Elements](#). *The American Journal of the Medical Sciences*. 336(2): 128–133.

The objective of this study was to address challenges and develop solutions in the provision of healthcare to those with chronic diseases. The authors focused specifically on aftermath of Hurricane Katrina in coastal Alabama and Mississippi.

Doran, K.M., McCormack, R.P., Johns, E.L., et al. (2016). [Emergency Department Visits for Homelessness or Inadequate Housing in New York City before and after Hurricane Sandy](#). *Journal of Urban Health*. 93(2): 331-44.

The objective of this study was to assess the increase in ED visits for people experiencing homelessness after Hurricane Sandy. Results indicated significant increases in ED visits by the elderly and individuals insured by Medicare for diagnosis codes of homelessness or inadequate housing in the week after the hurricane’s landfall.

Gotanda, H., Fogel, J., Levine, J.M., et al. (2015). [Hurricane Sandy: Impact on Emergency Department and Hospital Utilization by Older Adults in Lower Manhattan, New York \(USA\)](#). *Prehospital and Disaster Medicine*. 30(5): 496-502. (NOTE: The abstract is the only portion of this article currently available online; the full text article is attached.)

The authors examined emergency department (ED) visits by geriatric patients in Manhattan after Hurricane Sandy. Older patients were more likely to report to the ED than younger patients because of secondary effects of power outages (e.g., on dialysis and respiratory treatment).

Irvin, C.B., and Atas, J.G. (2007). [Management of Evacuee Surge from a Disaster Area: Solutions to Avoid Non-Emergent, Emergency Department Visits.](#) Prehospital and Disaster Medicine. 22(3): 220-3. (NOTE: The abstract is the only portion of this article currently available online; the full text article is attached.)

The authors describe a successful multidisciplinary evacuation center established after Hurricane Katrina, and identified the services offered and the center's effects on referrals to local EDs. Results indicated that during the five weeks that the center was operational, 631 of 716 evacuees (88%) requested medical evaluation, and more than 80% received prescriptions. Only four (<1%) patients were required to be transported to local EDs. The authors concluded that the evacuee evaluation center provided a convenient alternative to the ED where evacuees could have their non-emergent medical concerns addressed.

Kelman, J., Finne, K., Bogdanov, A., et al. (2015). [Dialysis Care and Death Following Hurricane Sandy.](#) American Journal of Kidney Disease. 65(1): 109-15.

The authors of this study address the variation in dialysis care patterns and mortality for patients with end stage renal disease in New York City and the State of New Jersey after Hurricane Sandy. They discuss their findings and conclude that members of the study group (those living in areas affected by Sandy) had higher rates of post-storm visits to the emergency department, hospitalizations, and 30-day mortality than members of the comparison groups.

Lin, C. J., Pierce, L.C., Roblin, P. M., and Arquilla, B. (2014). [Impact of Hurricane Sandy on Hospital Emergency and Dialysis Services: A Retrospective Survey.](#) Prehospital and Disaster Medicine. 29(4): 374-9. (NOTE: The abstract is the only portion of this article currently available online; the full text article is attached.)

The authors conducted a retrospective study on hospital dialysis services provided after Hurricane Sandy. They found challenges with: lack of dialysis documentation from transient dialysis patients (92.3%); staff shortage (50%); staff transportation (71.4%); and communication with other agencies (53.3%).

Lurie, N., Finne, K., Worrall, C., et al. (2015). [Early Dialysis and Adverse Outcomes After Hurricane Sandy.](#) American Journal of Kidney Diseases. 66(3):507-512.

The authors conducted a retrospective cohort analysis to determine the effect of early dialysis before Hurricane Sandy on outcomes for hemodialysis patients in New York and New Jersey. They found that patients who received early dialysis had significantly lower odds of having an Emergency Department visit and hospitalization in the week of the storm and of dying within 30 days.

Malik, S., Lee, D.C., Doran, K.M., and Grudzen, C.R. (2017). [Vulnerability of Older Adults in Disasters: Emergency Department Utilization by Geriatric Patients after Hurricane Sandy](#). *Disaster Medicine and Public Health Preparedness*. 12(2): 184-193. (NOTE: The abstract is the only portion of this article currently available online; the full text article is attached.)

The authors of this article assessed the levels of ED utilization in New York City by older adults (65 years and older) after Hurricane Sandy. Results indicated significant increases in ED utilization by this population three weeks after Hurricane Sandy. Primary diagnoses and medical needs among this population included dialysis, electrolyte disorders, and prescription refills. The authors also suggest providing dedicated resources and planning for older adults following a natural disaster by ensuring access to medical facilities, prescriptions, dialysis, and safe housing.

Miller, A.C. and Arquilla, B. (2008). [Chronic Diseases and Natural Hazards: Impact of Disasters on Diabetic, Renal, and Cardiac Patients](#). *Prehospital and Disaster Medicine*. 23(2):185-94.

The following study assessed the burden of chronic renal failure, diabetes, and cardiovascular disease during disasters due to natural hazards, identified impediments to care, and proposes solutions to improve disaster preparation and management of those with chronic disease.

Platz, E., Cooper, H.P., Silvestri, S., et al. (2007). [The Impact of a Series of Hurricanes on the Visits to Two Central Florida Emergency Departments](#). *Journal of Emergency Medicine*. 33(1): 39-46. (NOTE: The abstract is the only portion of this article currently available online; the full text article is attached.)

The authors analyzed the impact of three consecutive hurricanes in 2004 on two central Florida ED patient volumes and the types of patients seen. Results indicated that after the first hurricane, a significantly higher number of patients were seen with various injuries and carbon monoxide intoxications. Other reasons for increased ED visits included lack of oxygen, electricity, or the ability to receive hemodialysis.

Sasabuchi, Y., Matsui, H., Yasunaga, H., and Fushimi K. (2016). [Increase in Avoidable Hospital Admissions after the Great East Japan Earthquake](#). (Abstract only.) *Journal of Epidemiology and Community Health*. 71(3):248-252.

Early intervention may reduce avoidable hospital admissions for new acute conditions in the months following an area impacted by a natural disaster.

Sharma, A.J., Weiss, E.C., Young, S.L. et al. (2008). [Chronic Disease and Related Conditions at Emergency Treatment Facilities in the New Orleans Area after Hurricane Katrina](#). *Disaster Medicine and Public Health Preparedness*. 2(1):27-32. (NOTE: The abstract is the only portion of this article currently available online; the full text article is attached.)

This abstract of research conducted after Hurricane Katrina describes the results of a study related to chronic disease and related conditions (CDRCs) patient populations.

Tomio, J. and Sato, H. (2014). [Emergency and Disaster Preparedness for Chronically Ill Patients: A Review of Recommendations](#). Open Access Emergency Medicine. 6: 69–79.

The authors of this study reviewed reports from recent disasters in developed countries and summarized the recommendations, based on lessons learned, for disaster preparedness of chronically ill patients. These recommendations also provide practical and essential steps to prevent treatment interruption during and after a disaster.

### III. Additional Research Studies and Disaster Preparedness-Related Resources

Adalja, A. A., Watson, M., Bouri, N. et al. (2014). [Absorbing Citywide Patient Surge during Hurricane Sandy: A Case Study in Accommodating Multiple Hospital Evacuations](#). Annals of Emergency Medicine. 64(1): 66-73.e1.

The authors used a qualitative, interview-based method to study medical surge strategies used at hospitals receiving patients from evacuated healthcare facilities during and after Hurricane Sandy. One gap noted was a challenge associated with the increase in the number of dialysis patients sent to hospitals.

Aldrich, N. and Benson, W.F. (2008). [Disaster Preparedness and the Chronic Disease Needs of Vulnerable Older Adults](#). Preventing Chronic Disease. 5(1): A27.

The authors of this study discuss how planning and coordination among public health and emergency preparedness professionals and professionals who provide services for the aging are essential to meet the special needs of the elderly with chronic diseases. They note several tools and strategies already exist, and these include having professionals from diverse fields work and train in coalitions, ensuring that advocates for older adults participate in community-wide emergency preparedness, and using community mapping data to identify areas where many older adults live.

Alzheimer’s Association and RTI International. (n.d.). [Disaster Preparedness: Home and Community-Based Services for People with Dementia and Their Caregivers](#). (Accessed 4/4/2019.)

This guide provides public health officials, the Aging Services Networks, emergency management personnel, and partners at all jurisdictional levels the critical information, strategies, and resources they need to improve the planning for and protection of vulnerable older adults during emergencies. The toolkit includes lessons learned from model programs or unique examples, and key preparedness actions for states and caregivers.

American College of Obstetricians and Gynecologists' Committee on Obstetric Patients. (2017). [Hospital Disaster Preparedness for Obstetricians and Facilities Providing Maternity Care](#). ACOG Committee Opinion. 726.

This opinion paper lists recommendations hospitals that provide maternity services should consider in the development of their disaster plans, including to have a pediatric co-director for maternity services disaster planning, and maternity and pediatric nursing represented on the committee.

ASPR TRACIE. (2016). [Emergency Prescription Assistance Program \(EPAP\) Overview Fact Sheet](#). U.S. Department of Health and Human Services. Office of the Assistant Secretary for Preparedness and Response.

The Emergency Prescription Assistance Program (EPAP) is funded by the Stafford Act and designed to help disaster survivors access prescription medicines. EPAP can also be activated by the Public Health Service Act under the authority of the National Disaster Medical System (NDMS). The program utilizes normal business operations (e.g., electronic prescription claims processing, utilization of the normal pharmaceutical supply chain for distribution and dispensing) to pay for prescription medications for eligible persons.

ASPR TRACIE. (2017). [Post-Disaster Lessons Learned: Dialysis Patient Management](#).

ASPR TRACIE presents findings from resources and references related to post-disaster dialysis operations in response to numerous requests for technical assistance. A previously completed technical assistance response on the post-Sandy improvements to dialysis patient management is included for additional reference.

Centers for Disease Control and Prevention. (2017). [Disaster Information for People With Chronic Conditions and Disabilities](#).

This webpage provides links and information to several resources for people with chronic conditions, such as diabetes, high blood pressure, and blood disorders.

Centers for Disease Control and Prevention. (2012). [Emergency Preparedness for Older Adults](#).

This portal provides links to information, tools, and resources to assist in multi-sector planning for older adults in all-hazard emergencies. In addition to planning tools, this site also includes legal information and training resources.

Centers for Disease Control and Prevention. (2012). [Identifying Vulnerable Older Adults and Legal Options for Increasing Their Protection During All-Hazards Emergencies: A Cross-Sector Guide for States and Communities](#).

This planning guide for community-dwelling older adults during public health emergencies provides recommendations for developing plans, partnering with key stakeholders, building registries and using data, and integrating shelter and caregiver preparedness. The guide is written for public health officials, aging services network, emergency managements, and other partners at all jurisdictional levels.

Edgington, S. (2009). [Disaster Planning for People Experiencing Homelessness](#). National Health Care for the Homeless Council.

This publication provides an overview of important issues to consider when planning for the needs of individuals experiencing homelessness during disasters. Practical guidance is offered to local officials, emergency planners, homeless service providers and others who are involved in their community's emergency planning process. The final part of this publication encourages Health Care for the Homeless providers and others involved in homeless service provision to participate in disaster planning efforts in their communities.

Edgington, S. (2010). [No One Left Behind: Disaster Planning for People Experiencing Homelessness](#). National Health Care for the Homeless Council.

This presentation addresses ways to minimize the impact of disasters for individuals experiencing homelessness by identifying and addressing access and functional needs that may result from exposure to environmental hazards.

Fernandez, L.S., Byard, D., Lin, C., et al. (2002). [Frail Elderly as Disaster Victims: Emergency Management Strategies](#). Prehospital and Disaster Medicine. Vol.17, No.2.

The authors of this study identified the vulnerabilities of the elderly to disasters, and provide strategies for emergency management personnel to address these vulnerabilities. Results from their research indicate that the vulnerability of the elderly is related to their impaired physical mobility, diminished sensory awareness, chronic health conditions, and social and economic limitations that prevent adequate preparation for disasters, and hinder their adaptability during disasters.

Florida Department of Health. (2014). [Continuum of Care Model: Caring for Elders during Disasters: A Guide for Community-Based Planning](#).

The purpose of this project was to provide information and resources to guide and support local communities in their efforts to develop and sustain a continuum of care for older adults during disasters. This document provides a comprehensive guide to communities for engaging older adult care stakeholders in the preparedness, response, and recovery cycles of all-hazards disaster management.

Foster, M., Brice, J., Shofer, F., et al. (2011). [Personal Disaster Preparedness of Dialysis Patients in North Carolina](#). Clinical Journal of the American Society of Nephrology. 6(10): 2478-84.

The authors note that dialysis patients are particularly vulnerable to disaster and sought to study their levels of preparedness. They found that in general, dialysis patients were not prepared for critical incidents, regardless of demographic characteristics.

Gulley, K.H., Altman, B.A., Strauss-Riggs, K., and Schor, K, (Eds). (2015). [Caring for Older Adults in Disasters: A Curriculum for Health Professionals](#). National Center for Disaster Medicine and Public Health.

This curriculum is designed for educators who work with health professionals who may serve older adults before, during, and after a disaster. It can be taught in classroom settings, as a just-in-time course, within organizational training environments, or it can be used as an element of continuing education.

Haeri, S. and Marcozzi, D. (2015). [Emergency Preparedness in Obstetrics](#). (Abstract only.) *Obstetrics and Gynecology*. 125(4):959-70.

The authors emphasize the need for emergency preparedness discussions and actions among obstetric providers, tailored plans for pregnant women and their families, and all-hazards hospital planning.

Kopp, J., Ball, K., Cohen, A., et al. (2007). [Kidney Patient Care in Disasters: Emergency Planning for Patients and Dialysis Facilities](#). *Clinical Journal of the American Society of Nephrology*. 2(4): 825-38.

The authors of this article review the disaster-specific patient care recommendations that have been put forward by the Kidney Community Emergency Response Coalition. They also provide a detailed overview of the disaster planning process from the perspectives of kidney patients, dialysis facilities, and volunteer nephrology professionals who may participate in disaster relief.

Ling, S., McBee, E., and Johnson, H. (2014). [Curriculum Recommendations for Disaster Health Professionals. The Geriatric Population](#). National Center for Disaster Medicine & Public Health, Uniformed Services University of the Health Sciences.

This reference tool can help educators, program directors, and curriculum developers ensure that courses they are developing specific to older patients meet the specific needs of this population.

National Health Care for the Homeless Council. (2014). [Integrating Homeless Service Providers and Clients in Disaster Preparedness, Response, and Recovery](#).

This issue brief outlines strategies to integrate the needs of people experiencing homelessness into broader emergency preparedness efforts. It examines homeless individuals' and service providers' awareness and perception of targeted preparedness efforts, and offers recommendations for other communities looking to improve disaster assistance for people experiencing homelessness.

National Working Group for Women and Infant Needs in Emergencies in the United States. (2007). [Women and Infants Service Package \(WISP\)](#).

This report was part of an extensive review of existing state and federal emergency plans in 2006 which found that little to no specific attention was given to this population. The goal of WISP is to ensure that the health care needs of pregnant women, new mothers, fragile newborns, and infants are adequately met during and after a disaster.

New York State Department of Health, Health Emergency Preparedness Program, and Division of Family Health Office of the Medical Director. (2017). [Pediatric and Obstetric Emergency Preparedness Toolkit](#).

This revised version of a previously released toolkit is targeted to “hospitals that do not have pediatric intensive care services or obstetric or newborn services and must prepare for such patients during the time of a disaster.” The document discusses: planning guidelines; staffing considerations; training; security; infection control; hospital-based pediatric triage; decontamination; prophylaxis; transportation of pediatric patients; surge considerations; equipment considerations; disaster preparedness for childbirth; psychosocial needs of children; and family information and support centers.

Nour, N.N. (2011). [Maternal Health Considerations During Disaster Relief](#). *Reviews in Obstetrics & Gynecology*. 4(1): 22-27.

This article describes the vulnerabilities women can face before, during, and after disasters and how health practitioners can be engaged to improve women’s health outcomes.

Stanford Medicine Obstetrics and Gynecology. (2015). [Stanford Disaster Planning Toolkit](#).

This webpage contains components of a disaster planning toolkit for hospital Obstetrics and Gynecology departments, and addresses the issues of evacuation of labor and delivery and antepartum units as well as shelter-in-place for actively laboring patients. It includes generic forms hospitals may use for their plans.

UNC Center for Public Health Preparedness. (2011). [Reproductive Health Assessment After Disasters A Toolkit for US Health Departments](#).

This toolkit can help healthcare providers assess the reproductive health needs of women aged 15-44 after a disaster. It includes links to a variety of resources including checklists, training resources, and instructions for analysis.

U.S. Food and Drug Administration. (n.d.). [FDA Offers Tips about Medical Devices and Hurricane Disasters](#). (Accessed 4/4/2019.)

This website offers guidance on the general safety and operation of medical devices following hurricanes.