Diabetes Disaster Management Manuscript

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Abstract

Katrina taught medical providers a valuable lesson in diabetes management; preparation is essential, not just for the short term, during the disaster, but for the long term, in the aftermath of the devastation. Primary provider instruction on the importance of maintaining an adequate supply of and storage strategies for medications in addition to an emergency supply of diabetic safe foods and water is essential to the individual emergency plan and key in diabetes patient education plans to reduce the vulnerable population risk in the aftermath of a disaster. The Diabetes Disaster Plan will outline a project plan to reduce vulnerability of patients with diabetes in disaster situations by using Federal Emergency Management Agency [FEMA] publications and standards to educate patients with diabetes on how to prepare for emergency situations. The plan will outline a primary practice change including disaster training in at risk populations with diabetes in the rural clinic, a patient centered class on diabetes specific disaster kit preparation and inclusion of the primary care site in preparation activities.

Keywords: disaster preparation, diabetes, emergency, rural, and vulnerable populations.

Abstract is 170 words (Journal limit is 200)

Keywords 5 Phrases (Journal specs 3-5 words or phrases)

Manuscript 1503 word (Journal limit 2000)
Introduction

Recent natural disasters have spotlighted the need for emergency preparation in America. With Hurricane Katrina in 2005, preceded by Hurricane Charley in 2004, the Kashmir earthquake in 2005, and the devastating California Heat Wave in 2006, public health officials began to recognize a need for targeted and focused disaster preparation training for vulnerable populations, including those with diabetes. Recognizing primary providers of healthcare have a duty to complete disaster education as part of health education plan for patients. The community of Madisonville, Tennessee represents one of many rural communities to recently suffer the consequences of a natural disaster and who have the greatest need for personal preparation training due to lack of community resources and long term implications for wellness and life expectancy, especially in patients with chronic care needs. Every individual needs an emergency preparedness plan tailored to the specific needs of the individual, for the patient with diabetes, the emergency preparedness plan must include diabetic specific instructions to minimize short and long term impacts of the disaster experience. This project was approved as a Quality Improvement Project (QIP) by the Institutional Review Board at the University of South Alabama and given an exempt status. The QIP project explores the special needs in primary and tertiary level emergency prevention for rural patients, specifically for patients with diabetes, and aims to demonstrate decreased vulnerability of community participants who prepare for disasters.

This QIP was designed to integrate diabetes self-management education (DSME) and diabetes self-management support (DSMS) to empower patients and families in disaster readiness preparation and promote internalization of the need for preparation.
Primary providers serve two essential roles in the preparation process, as both an example of preparedness and a patient resource for creating a personal preparedness plan for diabetes. Diabetic patients are particularly vulnerable during disasters due to the need for daily medications and diet control. Current shortages of medications in daily supply will further complicate the ability of patients with diabetes to acquire needed medications during disaster situations. Diabetes self-management education (DSME) and diabetes self-management support (DSMS) at diagnosis is needed to empower patients and families in disaster readiness preparation and promote internalization, for both the provider and patients, of need for preparation. Patients with diabetes have increased vulnerability during and after disaster situations based on the need for daily medication and a specialized diet. Provider instruction on importance of diabetes self-management and how to prepare a personalized emergency plan is essential to internalization of the need for preparation prior to a disaster. Patient education and support for maintaining an adequate supply of diabetic medication, an emergency supply of diabetic foods and water, and overall self-management of diabetes is an essential component to the specialized individual emergency plan.

Methods

The QIP project began with an introduction of the project to clinic staff and support personnel on the importance of disaster preparation, maintenance and preparation of personal disaster kits, submission to the project organizer of pledge cards committing staff members to prepare a personal kits for home and clinic use, and review of the clinic disaster plan in preparation for annual practice drills, the first of which took place, within three months of practice change. Introduction of the QIP included advertisement fliers...
distributed in the local rural community, by project organizer in conjunction with design of the clinic disaster plan modeled after plans by FEMA and reviewed by the office manager. Project fliers were completed to advertise the new clinic and the provision of the free Diabetes Disaster Kit Project class in conjunction with the QIP. The project progressed to provision of disaster education with existing and new patients by the project organizer using a patient questionnaire to establish baseline levels if preparation awareness, FEMA brochures for introduction of the concept of preparation, distribution and collection of pledge cards for commitments to prepare disaster kits and participating patient identification, including the first 25 participants who registered for the free course on disaster preparation. All patients presenting to the clinic for care were given the initial questionnaire in conjunction with registration paperwork, patients electing to complete the voluntary questionnaire were given FEMA brochures and pledge cards to review with the provider during the visit. Patients and clinic staff who self-identified with diabetes or risk factors for diabetes were asked to join the QIP. Limitations were placed only by age, patients and staff 18 years of age and over were included in the project; patients under 18 years of age were excluded. During check out the front desk staff asked patients to complete the pledge card and sign up for the disaster class prior to leaving the clinic. Pledge cards were returned to the project organizer at the close of each clinic day.

Finally the QIP conducted a class including the projected 25 participants who submitted pledge cards to attend the diabetes specific disaster preparation class presented by the project organizer, lasting approximately 1 hour with participant questions, using the Kentucky Diabetes Prevention and Control Program Curriculum. The course was offered to this statistically similar community for no cost, facilitated by the project
organizer and took place in the clinic education room. The completion of the QIP included a Tornado/Severe Weather Procedures drill for the clinic and follow up for completed patient preparation kits.

**Results**

Data collected by the project organizer and clinic staff pre and post class was compared using SPSS software. All invited course participants were diagnosed with diabetes prior to course invitation and all patients responded they had never received information regarding disaster preparation from their primary provider (Chart 1). Using a frequency table 60% of participants responded in post class interviews they had prepared a disaster kit for diabetes including diabetic medications (Table 1). Project is considered effective education since more than 50% of participants reported preparation of a kit including more than 3 days of diabetic supplies.5

A Tornado/Severe Weather Procedures drill was completed since this is the highest rated disaster probability for the rural area.4 Staff and the project organizer completed the drill evaluation form included with planning packet and consider the project successful since each procedure listed in the Tornado/Severe Weather Procedures drill was accomplished safely and in a timely manner. Changes will be sustained by continuing to reinforce preparation with patients, by distributing FEMA brochures and by additional clinic drills.

**Discussion**

The American Diabetes Association (ADA) recognizes the need for development of a diabetes specific disaster preparation kit in the published preparedness guidelines.9 Failure to meet the standard of education by primary providers and lack of support
concerning disaster preparation for diabetics has led to significant deficits in diabetic control during and after disasters.\textsuperscript{5,9,10} Assessment of the practice need for quality improvement is evidenced by exam of diabetic patients after Hurricane Katrina in New Orleans.\textsuperscript{6} Need for change is further supported in the research by Carameli et. al,\textsuperscript{5} stating half to two thirds of patients presenting to disaster shelters do not have medications needed and by Baruah and Kumar\textsuperscript{2}, proving diabetic patients are not only particularly vulnerable during disasters due to need for daily medications and diet control but also face a lack of education for diabetes specific planning as evidenced by the project patient responses of 0% having previously received education regarding disaster preparation. This project identifies a gap in primary provider education concerning disaster preparation for diabetes where the Doctor of Nursing Practice is uniquely prepared to spearhead a practice change to promote the need for clinic disaster preparation and specialized education on disaster preparation for patients with diabetes from the perspective of the practice of healthcare fulfill a feedback loop from research to practice and produce meaningful improvements in healthcare delivery.\textsuperscript{10}

Failure to meet the standard of education and support concerning disaster preparation for diabetics has led to significant deficits in diabetic control during and after natural disasters.\textsuperscript{5,9,1} Patients do not internalize the need for preparation and establishing a reserve of medications related to chronic conditions.\textsuperscript{5} Advanced practice nurses hold the public trust and can convey the needed education to meet preparation needs. Estimated lifetime cost for loosing diabetic control of at risk populations during Katrina is $504 million dollars.\textsuperscript{6} Advanced practice nurses have a strong foundation in health
promotion and stand at the forefront of focused disease prevention and disaster preparation.  

**Conclusion**

Preparation of families for disasters synergistically aligns with the rural clinic mission and vision by strengthening the overall family and empowering the most vulnerable family members to repel the stresses of an acute disaster situation. Given the weather history of the rural area, adherence by providers to the FEMA guidelines for disaster preparation education is essential in stabilizing this rural community before, during, and after additional weather events. Providers focusing general preparation education toward all families while strengthening the most vulnerable members of the community through preparation education focused toward diabetic needs will reduce the immediate and long term impacts of future weather events in the rural area.

**Clinical Relevance**

This QIP increases the knowledge base, empowers providers and advances primary care practice in the rural setting to meet the need of vulnerable populations. The QIP suggests investment in individual disaster preparation education and example will positively result in preparation by vulnerable patients and decrease vulnerability in times of disaster.
References


Table 1

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I prepared a disaster kit after the class

My doctor provided education related to disaster preparation for diabetes.