Disasters, Diabetes, and Decisions

Disclosure to Participants

- Notice of Requirements for Successful Completion
  - Please refer to learning goals and objectives
  - Learners must attend the full activity and complete the evaluation in order to claim continuing education credit/hours

Objectives:

- Learn how man-made and natural disaster can adversely impact people with chronic medical conditions such as diabetes
- Learn about partnerships that address the preparedness issues of people with chronic conditions
- No disclosures.

The more things change: Have we learned anything?

- The Great Quake: 1906-2006
  - Thousands celebrate centennial of disaster
  - April 18, 2006

- The Moore tornado occurred on the afternoon of Monday, May 20, 2013. The EF5 tornado, with peak winds estimated at 210 miles per hour (340 km/h).
Hurricane Katrina brought forward the plight of people with chronic conditions


- Katrina evacuees: Adult Health responses by Housing Type: Trailer, Private, Hotels
- DIABETES: 14.6-17.3%
- Percentage of adults with chronic conditions: 46.3-58.8%
- www.childrenshealthfund.org

In Louisiana and Mississippi, diabetes is an important public health problem.
- Mississippi: 7.9% or 225,000 have diabetes
- Over 700,000 persons in Mississippi are at increased risk of undiagnosed diabetes because of being overweight and/or having a sedentary lifestyle.
- Louisiana: 7%-10.9% depending on ethnicity
- Louisiana had highest death rate due to diabetes in the US
- BRFSS 2004

Old Disease, Old Disasters
- The word diabetes is from the Greek for siphon, the clinical description 2nd century AD by Aretaeus the Cappadocian
- They say that Noah survived a disaster called the Flood but nobody asked if he had a chronic disease. We only hear about the animals.
- Many descriptions of disasters: CDC, natural, man-made etc.

Chronic Disease in Health Emergencies: In the Eye of the Hurricane: CDC Study
- Establish a comprehensive understanding of the medical and chronic disease needs of communities using BRFSS as a model
- This information should arm public health professionals with the critical information needed to prepare for medical care of people with chronic diseases after a disaster.
- Prev Chronic Dis April 2006

Unfortunately, disasters happen everywhere and often
- Natural Disasters: Earthquakes, Tsunamis
- Man Made Disasters: War, Terrorism, Bombs
- Combination Disasters: Radiation accidents, Bioterrorism
Why are we talking about disasters and diabetes?
- Epidemic of chronic disease; diabetes is a model
- Training in disaster preparedness for professional organizations
- Preparedness website and conference
- Early decisions and plans can help decrease later exacerbations of chronic conditions after a man-made or natural disaster
- The challenge of teaching people to be prepared: Similar barriers in teaching people self-management skills for any chronic condition; Diabetes educators play a role

More reasons
- Conditions created by disasters such as lack of access to health care, food, water and sanitation, psychological distress, exposure to infection can contribute to rapid worsening of a chronic illness that was under control before the event
- People with chronic diseases need long-term medication and follow-up which may be interrupted or stopped as a result of disasters
- Intermittent medication regimens and needed medical assistance can exacerbate underlying conditions and increase the risk of morbidity and mortality

Persons at risk from disaster
Definitions of “Vulnerable”, “At Risk” and “Special” Populations
- Potential for loss” or “susceptibility to poor health or lack of access to health care
- Population-based
- Locate and enumerate populations
- Functionally-based: Whole community
- National Response Framework (“special needs”) and HHS (“at risk”) definitions
- Additional needs in five (5) areas: independence, communication, transportation, supervision and medical care

BUT People with chronic conditions fall through the classification cracks so fall through the planning and policy cracks as well:
Definition of “Vulnerable Pandemic and All-Hazards Preparedness Act (PANPA) “at-risk populations”:
- People who are physically or mentally disabled (e.g., blind, deaf, hard-of-hearing, have learning disabilities, mental illness or mobility limitations)
- People with limited English language skills
- Geographically or culturally isolated people
- Homeless people
- Senior citizens
- Children

Where is the 28-year-old with diabetes or the 65-year-old with seizures; people who are not disabled until they are without meds?

Aftermath of a disaster
- Environmental destruction
- What don’t we have: Power, food, clothing and shelter
- What do we have: Destruction of environment, destruction of people, acute conditions that lead to infections, disability, possible toxins in environment
- How do these things affect chronic conditions such as diabetes?
What have we learned from past disasters?

- Some documentation of worse diabetes control
- Recommend that anti-disaster programs address psychological interventions in people with chronic conditions
- Since diabetes is considered a chronic disease, treatment is delayed until things become more serious and need emergency help
  - Arch Int med 158 (1998) 274-278
  - Diab res and clin prac 36(1997) 193-197

What have we learned from past disasters?

- Shelter problems that could exacerbate problems with glucose control: infection, lack of water, diet high is simple carbs
- Cases of gangrene, DKA reported in shelters
- Propose every government develop special program that would teach basic diabetes information to emergency personnel
  - Diabetes care 18 1995 1313-1311

Lessons learned from Hurricanes Andrew & Charley

- Older adults experienced disruptions in quality of life status and medical care for pre-existing chronic conditions such as CVD, diabetes
- Make assessments 3-5 days post hurricane rather than 10-14 days so appropriate meds and supplies could be deployed to help the chronic conditions in older adults
- Hurricane Andrew: Insulin supplies depleted
  - MMWR 53:837-840 2004

Earthquakes and Diabetes: Kobe

- Higher A1c levels in Kobe, worse health quality
- Other factors such as disruption of lifestyle, diet, access to meds looked at
- Role of acute and chronic stress in people with diabetes
- Recommend that anti-disaster programs address psychological interventions in people with chronic conditions such as diabetes, kidney failure
  - Arch Int med 158 (1998) 274-278

Learning Objectives

- Compare the history of Katrina disaster with current disaster practices
- Develop community disaster action plans
- Encourage persons with diabetes to plan a kit for disaster preparedness
Diabetes Special Needs and Challenges

- Medication
- Nutrition
- Monitoring
- Activities
- Foot care
- Vision
- Mental health
- Ongoing Support

Medication Challenges

- Medication schedules not being followed
- Inability to locate, purchase, re-fill Rx due to pharmacies and MD offices being demolished
- Power failure causing inability of pharmacies to open
- Lack of refrigeration

Insulin Guidelines

- Never omit taking your insulin unless doctor tells you
- All insulin that comes in a vial can stay at room temperature (59-86 degrees Fahrenheit) for 28 days. At the end of 28 days, an open vial of insulin must be thrown away, even if some insulin is left in the vial
- Once an insulin vial is opened, it is only good for 28 days even if it is refrigerated
- Insulin must be kept from: Bright light, Extreme heat, Extreme cold

Insulin Pens

- Insulin Pens that are not in use and are refrigerated are good until they have reached their expiration date.
- Some Insulin pens only have a shelf life of 10-14 days

Insulin Switching Guidelines

- Insulin may be made available, but may not match patient’s
- Switching should be made under the advise of a physician, however if not possible, consider the following recommendations

Short & Rapid-Acting Insulins

- Regular insulin may be substituted for rapid-acting insulins on a unit-per-unit basis.
- Remember to inject Regular insulin approximately 30 minutes prior a meal
Intermediate and Long-Acting Insulins

• One intermediate-acting insulin product (NPH) may be substituted for long-acting insulin product on a unit-per-unit basis.
• Remember when substituting NPH for glargine or determir insulin, the dose should be given half in the morning and half in the evening.

Insulin Mixes

• Patients using pre-mixed insulin products (e.g., 70/30 split)
  – One insulin mix product may be substituted for another on a unit-per-unit basis (70/30 can be used for 75/25)
  – or substitute 70% of the dose to NPH insulin and 30% to regular insulin

Insulin Mixes (continued)

• If regular or rapid-acting insulins are available, give the other 30% of the total dose before a main meal

Insulin Pumps

• Patients using insulin pumps who must switch to injected insulin may substitute intermediate or long-acting insulin for the 24-hour total basal dose of infused insulin on a unit-per-unit basis
  – Make sure the total dose of NPH insulin is split between morning and evening doses.
  – If regular or rapid acting insulin is also available, patients should administer mealtime insulin according to their previous system for calculating their bolus insulin doses.

Nutrition Challenges

• Contaminated or spoiled food and water
• Limited food supply
• Skipped or delayed meals or snacks
• Inability to cook due to power failure
• High carb meals at shelter or mobile meal van sites
Glucose Monitoring Challenges
- Lost meter and supplies
- Inability to obtain new supplies
- Forgetting or not taking time to test

Activity Challenges
- Over-exercise when doing cleanup and repair work (hypoglycemia)
- Disruption of regular activity patterns while living in a shelter (hyperglycemia)

Foot Care Challenges
- Lost footwear
- Inadequate foot protection, unsafe conditions-nails
- Inadequate foot first aid resulting in infected lacerations
Vision Challenges
- Lost eye wear
- Broken eye glasses

Mental Health Challenges
- Lack of sleep causes increase in stress levels
- Separation from family and support systems
- Isolation due to communication breakdown and lack of transportation as roads not cleared
- Coping skills impaired-causing anger, depression, anxiety, frustration, grief, fear, resentment, and/or insecurity

Psychological Phases of a Disaster
- Heroic
- Honeymoon
- Disillusionment
- Reconstruction

Heroic Phase
(Emergency or Acute Phase)
- Occurs immediately after the disaster
- Consists of the heroic rescue efforts of the community
- Individuals aroused physically and emotionally, preoccupied with thoughts about their experience, discussing their anxieties
Honeymoon Phase
- Occurs one week to 3-6 months after the disaster
- A time of sharing and helping
- Social attachment is high
- Some may have social withdrawal

Disillusionment Phase
- Occurs 2 months to 1-2 years afterward
- Feeling of anger, disappointment, resentment, and bitterness if/when expectations for recovery and support are not met

Reconstruction or Adaptation Phase
- May occur several years after the disaster
- Physical as well as emotional reinvestment takes place
- Troubling health symptoms disappear

Post-traumatic Stress Response
- May occur anytime after the rush of the disaster
- Emotional effects (anger, despair, worry, guilt, grief, helplessness, impaired concentration and decision making, confusion, intrusive thoughts, headaches, GI problems, nervousness, nightmares, flashbacks)

Role of the Diabetes Educator
- Pre-planning and preparation are the keys to survival- do the "leg work" ahead of time.
- Review Disaster Planning with your clients before the disaster actually happens!
- Encourage problem-solving skills and preventive thinking.

Components of a Disaster Plan
- Important Disaster Information
- Key Emergency Information
- Food and Medication Storage
- Diet Considerations During a Disaster
- Sick Day Rules
- Medical Supplies
Have a “Be Prepared” List:

- Emergency information (copy)
- Insurance information (copy)
- Prescriptions (copy)
- Insulin and/or pills (include OTCs)

Diabetes ‘Disaster Kit’

- Syringes
- Alcohol swabs
- Cotton balls and tissues
- Glucometer and diary
- Insulin Pump supplies (if on a pump)
- Glucometer & urine ketone strips
- Lancing device and lancets
- Quick acting CHO (glucose tabs, OJ)
- Longer lasting CHO source (cheese & crackers)
- Glucagon Emergency Kit (if on insulin)
- Empty hard plastic bottle with cap (for used lancets and syringes)

Other supplies

- Flashlight with extra batteries
- Whistle/noisemaker
- Extra pair of glasses
- Female sanitary supplies

- Heavy work gloves
- Tools
- Food

Key Emergency Information

- Local emergency contacts
- Out-of-town contacts
- Medical providers
- Medication list, including allergies
- Extra copies of prescriptions
- Medical equipment needs

References

American Diabetes Association
www.consumermedsafety.org/insulin-safety-center 2014
www.fda.gov/Drugs/EmergencyPreparedness/UCM085213.htm
https://training.fema.gov/emweb/downloads/is10
Kissane, Kathleen and Rogan Deborah, Diabetes Forecast
Are You Prepared for a Disaster? Feb. 2006
Have we made progress?

- Chronic conditions now on the radar screen of the preparedness world
- Public Health Emergency Preparedness courses
- Issues identified
- Now addressing one of the BIG issues: med access
- Post disaster policies often in place: Emergency meds refills

What are our messages?

- Improving access to medications for chronic medical conditions pre, during and post disasters
- CDC Office of Public Health Preparedness and Response (OPHPR);
- CDC National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP);
- and the University of California, Los Angeles, Center for Public Health and Disasters

Why did we do it?

- Gathering of special skills, connections
- Working together to improve resiliency
- Avengers 2012: Less effective working individually: Unite to avert nuclear disaster
- First time groups are at table
- Acknowledge competition among stakeholders
- Make new friends
- Exchange business cards
- Goal: Increase resiliency
Participants from many sectors

- Preparedness
- Consumers with chronic conditions (including advocacy groups and groups with large burdens of chronic conditions)
- Community and public health agencies
- Pharma manufacturers
- Distribution networks
- Health plans
- Professional societies
- Academia involved in disaster prep

Medication access: NPR article from November 14, 2012

How come a sweater ordered on October 28 and shipped from lower Manhattan could be delivered Nov 7? We have got to do better!

Identify barriers and possible solutions:

- For patients to access a stockpile of prescription medications prior to a disaster
- For patients to access replacement prescription medications following a disaster
- For insurers to help consumers to individually stockpile prescription medications
- For retail pharmacies and manufacturers to help consumers individually stockpile prescription medications.

How come a sweater ordered on October 28 and shipped from lower Manhattan could be delivered Nov 7? We have got to do better!

Points to ponder

- Develop a “disaster over-ride” policy like the “vacation over-ride” policy
- Possible formulary
- Link distribution networks
- Focus on system changes
- What about other partners? BCLC (Business Civic Leadership Center) Disaster Assistance and Recovery program or UPS
- CDC Meta-Leadership Summit for Preparedness, bringing communities together to improve emergency preparedness and build community resilience.
- Goal: develop several possible scenarios/strategies/policies for pilot testing

Current Solutions like RX Response

Recommendations

- Education campaign to patients, healthcare providers, and planners on currently available options
- Establish strong connections between state and private sector groups
- Promote funding, program, and planning collaboration between preparedness and chronic disease programs at all levels
- Develop and disseminate a tool kit to implement planning, response, and recovery actions and resources
- Ensure that preparedness activities like “Hazard Vulnerability Assessments” include a health hazard vulnerability assessment that has chronic medical conditions as a component
- Result = The Prescription Medication Preparedness Initiative (PMPI) from ASPR (Assistant Secretary for Preparedness and Response)
## What can we do?
- Make new friends
- Partner with Red Cross, IDF, WHO, ADA, Insulin for Life etc.
- Each state has a disaster preparedness team AND a chronic disease team
- Joint training: Give survival skills diabetes 101 talk
- Joint conferences: KY Diabetes Educators + Medical Reserve Corps
- Coordinate educational planning and programs

## Other Partners
- NACCHO Medical Reserve Corps: Emergency preparedness and other aspects of public health (obesity, cancer, hypertension, HIV)
- Universities
- Volunteer and other advocacy organizations (American Diabetes Association, American Lung Association, American Heart Association etc)

## Planning for the Whole Community: Addressing Access and Functional Needs Before, During and After Disasters
- Describe burden of functional needs within the community
- Obtain a baseline assessment of the community’s preparedness status and knowledge level
- Guidance on Planning for Integration of Functional Needs Support Services in General Population Shelters

## Summary
- Be prepared
- Know your population
- Chronic conditions happen and don’t blow away
- Work with multiple public and private sectors to teach others about disasters and chronic conditions
- Don’t loose the forest for the trees except in the case of hurricanes, tornados, earthquakes and tsunamis

## References
- American Association of Clinical Endocrinologists [www.aace.com](http://www.aace.com)
- [Insulin for Life www.insulinforlife.org](http://www.insulinforlife.org)
- World Health Organization [www.who.int](http://www.who.int)
- International Diabetes Foundation [www.idf.org](http://www.idf.org)
- [www.redcross.org](http://www.redcross.org)
- [ID Diabetes: Emergencies & Disasters](http://www.cliniciansguide.com/diabetes/health/diabetes/emergencies/)
- [www.childrenshealthfund.org](http://www.childrenshealthfund.org)
- [MMWR 53:837-840 2004](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5349a4.htm)
- [www.redcross.org](http://www.redcross.org)
- [BD Diabetes - Emergencies & Disasters](http://www.bddiabetes.com/ca/english/healthyliving/emergencies.asp)

## What has been published: Defining the problem
- **Hurricane Charlie**: Older adults experienced disruptions in quality of life status and medical care for pre-existing chronic conditions. Deploy and make assessment 3-5 days past hurricane rather than 10-14 days as appropriate meds and supplies could be destroyed to help the chronic conditions in older adults
- **Medication Demands of Hurricane Katrina Evacuees**: A substantial demand for drugs used to treat chronic medical conditions. Medical relief pharmacy supplies did not consistently reflect the actual demands of evacuees. Percentage of adults with chronic conditions: 46.3-58.8%.
- **Chronic Disease in Health Emergencies: In the Eye of the Hurricane**: Establish a comprehensive understanding of the medical and chronic diseases needs of communities using BRFSS as a model to arm public health professionals with the critical information needed to prepare for medical care of people with chronic conditions after a disaster.
- **Shelters**: Acute exacerbation of chronic medical problems especially since >50% were over >60 years old

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**Note:**
- [www.cdc.gov/mmwr/preview/mmwrhtml/mm5349a4.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5349a4.htm)
What has been published: Defining the problem

- **2004 tsunami in Aceh, Indonesia**: Health centres did not have chronic disease medications and staff were not trained to diagnose or treat chronic health conditions.
- **Sichuan earthquake in May 2008**: Frontline medical teams found that up to 30% of survivors needed clinical management of their preexisting chronic medical conditions before further surgical interventions could be performed for their physical trauma.
- **Evidence-based approach for disaster preparedness**: ER visits post disaster reflect chronic conditions. Work with authorities to inform the contents of repositories for prescription medications for chronic disease management and control.
- **UCLA**: To strengthen prescription drug continuity in disasters: create flexible drug-dispensing policies to help patients build reserves, train professionals to inform patients about disaster planning, and build collaborative partnerships among system stakeholders.
- **Japan 2011**: Most patients complained of exacerbation of pre-existing chronic conditions rather than medical problems specifically related to the tsunami.

Referenced sources: