Ketogenic Diet During Natural and Man-Made Disasters
GLUT1-DS Parent Perspective during the February 2021 Winter Storm and Power Grid Failure in Texas
Hailey Sinclair, MSN, RN-BC

GLUT1-DS
Glucose Transporter Type 1 Deficiency Syndrome (GLUT1-DS) is an ultra-rare genetic condition which impairs brain metabolism. It is caused by a mutation in the SLC2A1 gene and impacts the ability of glucose to cross the blood brain barrier and supply the brain with energy. GLUT1-DS has a wide spectrum of phenotypes but most frequently causes seizures, movement episodes, and speech and developmental delays. The standard of care for GLUT1-DS is a ketogenic diet which provides an alternate energy sources for the brain – ketones.

Ketogenic Diet
- Low carb
- Mod protein
- High fat
The ketogenic diet utilizes ketone bodies which the liver produces from stored fat.

Disaster
February 13-17, 2021, Texas experienced an unprecedented winter storm. The ice and subfreezing temperatures overwhelmed the state’s electricity infrastructure and over 75% of homes and business were without power and nearly half of all Texans did not have access to water (Texas Tribune). Roads were impassable, businesses were closed, and people were confined to their homes. This created unique hardships for people on a ketogenic diet to ensure they remained in ketosis with limited food options or inability to rely on electrical power.

2021 Texas Winter Storm
2/11 – Isolated sleet and freezing rain, first Winter Weather Advisory (WWA) issued
2/12 – WWA continues, Winter Storm Watch (WSW) issued for 2/14
2/13 – WSW area expands, Wind Chill Watch (WCW) and Hard Freeze Watch (HFW) issued for 2/14-2/16
2/14 – WSW continues and expands, sleet and snow fall, WCW and HFW in effect
2/15 – WCW and HZW continue, coldest night occurs, rolling blackouts start
2/16 – Another WSW issued for significant ice storm during the night, water disruptions start
2/17 – WWA issued for the night
2/18 – WWA, food shortages announced
2/19 – Last HFW issued
2/20 – HFW expires (weather.gov)

Texas Power Outage

Parent Perspective
My son (4years) was diagnosed with GLUT1-DS September 2020 and had only been on a ketogenic diet for 5 months when the winter storm occurred. It was shocking to realize we needed to prepare to be trapped at home for a week with the likelihood of losing power. We had a real fear of not being able to maintain the diet and remain seizure free if we lost power because of food spoiling or not having access to means of cooking. As parents we also needed to consider how we could get to a hospital in case of emergency and if we did need to go to a shelter, would they be able to provide for a ketogenic diet?

Implications
People on medically supervised diets are at increased risk during natural and man-made disasters. Climate change and cyber hacking have jeopardized and halted the energy and food supply in the US. Treating a seizure disorder with food makes people especially vulnerable during disruptive times because it is not as simple as having a supply of medications.

Recommendations
- Ketogenic clinics need to include information for disaster preparedness
- Shelter providers need to consider how they can support ketogenic diets
- Further research is needed on the needs of GLUT1-DS during a disaster including temperature intolerance

Preparations in Advance
Keto Shopping List
- Medications, water
- Wood, charcoal, lighter fluid
- Aluminum foil, cleaning supplies
- Keto protein shakes and bars, heavy cream, butter, mayonnaise, string cheese
- Hot dogs, jerky, sausage, pepperoni, broth, pork rinds, almond butter, nuts

Support Network
Identifying individuals who have access to:
- Generator
- Gas stove
- Deep freeze with perishable items
- Four-wheel drive vehicle

Strategies During Event
- Adhere to medication schedule
- Monitor food and water supply
- Ensure adequate sleep
- Maintain contact with friends and neighbors who may be able to help in case of emergency

Cold Review – College Station
Cold Temp: 5°F at 7:30am on the 16th
Coldest Wind Chill: -8°F at 8:30am on the 15th
Longest Stretch of Freezing Temperatures: 86 consecutive hours from 5:10pm on 2/13 to 5:12pm on 2/17

References
Texas Tribune: https://www.texastribune.org/series/winter-storm-power-outage/
Weather: https://www.weather.gov/hgx/2021ValentineStorm

“Let thy food be thy medicine and medicine be thy food” – Hippocrates