

IMPACT PROFILE

Advancing Stroke Care: Translating Evidence on Weather-Related Disruptions into Improved Outcomes for Rural Populations

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The Challenge

Stroke is a leading cause of death and disability worldwide. Treatment of acute ischemic stroke (AIS) is extremely time sensitive. One emerging threat to timely treatment is the increasing frequency of major disruptive events (MDEs), such as hurricanes. Little is known regarding the impact of weather-related MDEs on stroke incidence, treatment, and outcomes, particularly in rural areas. This lack of information limits our ability to plan for future disasters.

The Approach

In this nationwide study of people covered by Medicare, we aimed to:

- See how often strokes happened before, during, and after hurricanes, and compare this to places not affected by hurricanes.
- Evaluate differences in severity, care (stroke treatment), and outcomes (length of stay, discharge, death) across the same periods.
- Compared results for people living in cities and rural areas.

The Impact

The main idea of this project is to measure how severe weather affect stroke care and patient outcomes, especially in rural areas. By doing this, we can find important gaps and weak spots in health care during these events and build the evidence needed to create better plans for future emergencies.

This work will also create a clear and repeatable approach that others can use to study different disruptive events (such as blizzards or wildfires) and other urgent health problems (such as heart attacks). This will help us learn what protects patients and improve emergency planning and response.

RESEARCH HIGHLIGHTS

- **Quantifies the effect of hurricanes on stroke** incidence, care, and outcomes nationally, including urban–rural differences.
- **Establishes a scalable claims-based framework** to evaluate MDEs across time-sensitive diseases and inform preparedness.

Key Benefits

Understanding the effect of MDE in stroke care utilization will result in **Clinical**, **Community**, **Economic** and **Policy** benefits.



Clinical

Guidelines: Preserves time-sensitive stroke care during MDEs by identifying disruptions in revascularization use and outcomes. (*Potential*)



Community

Health care delivery: Improve distribution of health services to rural populations by quantifying disaster-related changes in stroke incidence and access . (*Potential*)



Community

Healthcare quality: Improve stroke care effectiveness by identifying urban–rural disparities in stroke care and outcomes during MDEs. (*Potential*)



Economic

Societal & financial cost of illness: Establishes a scalable, claims-based framework to evaluate MDE impacts across diseases and inform resource planning. (*Potential*)



Policy

Health for all through policy: Informs disaster preparedness and health system response for time-sensitive conditions using national evidence. (*Potential*)

The team:

- Co-Primary Mentors: Brad A. Racette, MD - Department of Neurology, Barrow Neurological Institute.
- Co-Primary Mentors: Karen Joynt Maddox, MD, MPH - Department of Cardiology, Washington University School of Medicine.
- Full Team in links below.

Find out more about disruption related work:

- <https://karger.com/ned/article/doi/10.1159/000550344/943184/Change-s-in-Healthcare-Utilization-Patterns-and>
- <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2847221>

Contact:

Oswaldo J. Laurido-Soto, MD, Assistant Professor of Neurology
Cerebrovascular Disease/Neurocritical Care Section
Washington University School of Medicine
e-mail: ojlaurido-soto@wustl.edu