

# DISASTER EPIDEMIOLOGY: AN ACADEMIC PERSPECTIVE

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# Public Health Emergency Preparedness Evidence Base

- ... the science underlying the nation's system of response to public health emergencies is seriously deficient, hampering the nation's ability to respond to emergencies most effectively to save lives and preserve well-being."*

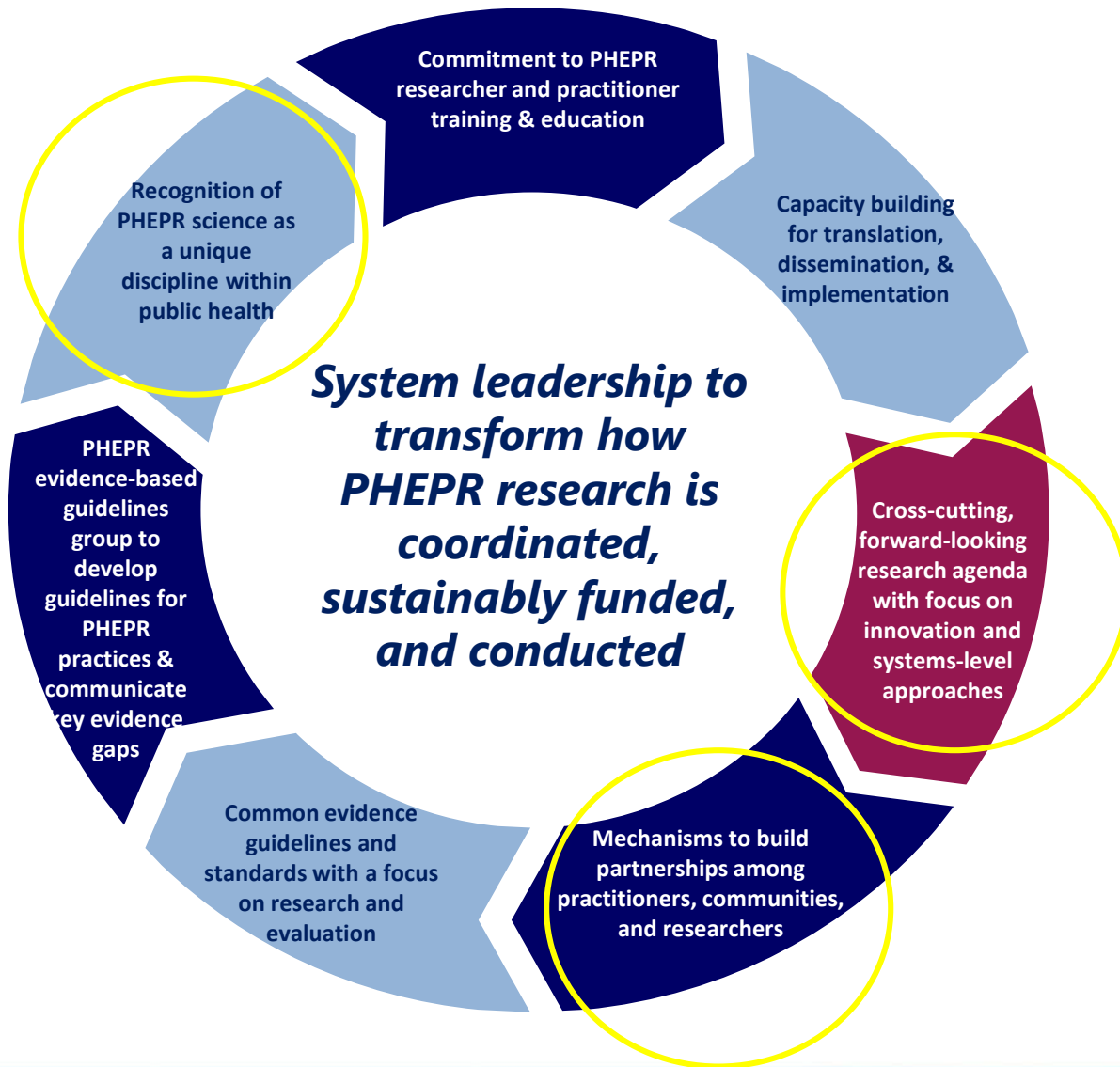
*National Academies of Sciences, Engineering, and Medicine. 2020. Evidence-Based Practice for Public Health Emergency Preparedness and Response. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25650>."*



**Figure 1:** National PHEPR Science Framework

# Challenges in Academic Disaster Epidemiology

- Timing
  - Requires existing academic / practice / community collaborations; difficult to plan for and execute rapidly; academic schedule and community burnout
- Engagement and Priority Setting
  - Authentic engagement so communities set priorities
  - Cannot measure “everything”
- Lack of Baseline Data
- Research Translation
  - Timing of data sharing; appropriate communication of acute and long-term risk

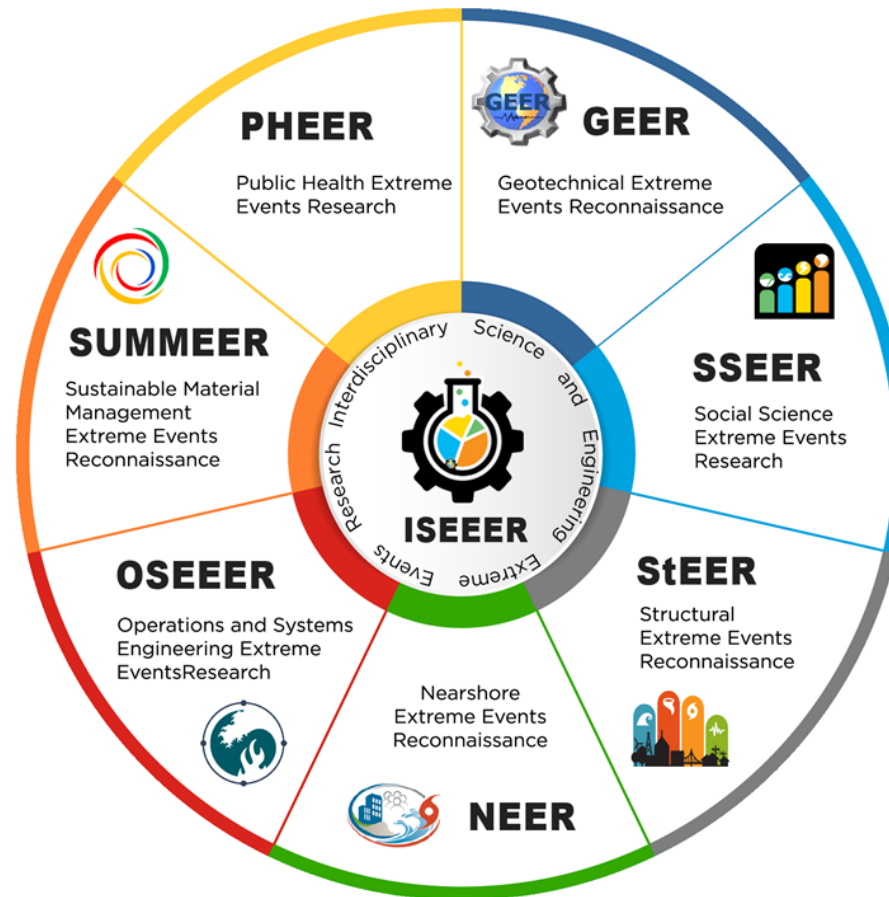


- Recognition of PHEPR as a discipline within public health
- Cross-cutting research agenda
- Mechanisms to build partnerships between practice, community, academics

# A New Approach is Needed

- The **Public Health Extreme Events Research (PHEER) Network**
  - A unique researcher-led network that can
    - mobilize rapidly
    - inform evolving disaster research agendas and funding decisions
    - advance the field of public health disaster science
  - Seed funding provided by the Center for Preparedness and Response through an Interagency Agreement with the National Science Foundation
  - Coordinated via a collaboration with four academic institutions

# Integration with Interdisciplinary Disaster Science Community funded by NSF



# Examples of two models of Extreme Event Reconnaissance or Research

- Social Science EER response to 2021 Boulder Fires
  - Coordinated platform for rapid interdisciplinary research collaborations; mechanism for researchers to find one another
  - Shared data, equipment, and other resources
  - Topical ideas generated by stakeholder community



## 4. Research Questions, Topics, or Ideas Here

*Do you have a question, topic, or idea that you would like to encourage researchers to pursue? If so, please enter that information in the table below.*

| Research Question, Topic, or Idea in BRIEF (12 words or less)                                | Brief Description of the Question, Topic, or Idea (100 words or less)                                                                                                                                                                | Contributor Name(s) and Affiliation(s) | Contact Email(s)                                                           | Are you interested in partnering in this effort? Or are you simply sharing the idea? |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b><i>Measuring Pre-Fire Preparedness in the Affected Area</i></b>                           | Understanding why the areas impacted by the Marshall Fire were or were not adequately prepared for any incidents – including wildfires – and how to ensure that all of Region 8 is prepared for incidents such as this in the future | Daniel Green, FEMA Region 8            | <a href="mailto:daniel.green3@fema.dhs.gov">daniel.green3@fema.dhs.gov</a> | Partnering/Supporting                                                                |
| <b><i>Understanding Survivor Knowledge of Best Practices for Wildfire Incidents</i></b>      | Investigating the overall knowledge/skills/capabilities of the affected populace in the face of incidents such as these, in terms of what survivors did know, didn't know, would like to know for future incidents                   | Daniel Green, FEMA Region 8            | <a href="mailto:daniel.green3@fema.dhs.gov">daniel.green3@fema.dhs.gov</a> | Partnering/Supporting                                                                |
| <b><i>Equity &amp; Preparedness - Intersectionality and Less Understood Interactions</i></b> | Developing a methodology to be used in areas impacted by future incidents to better understand the ways in which inequitable provision of services or                                                                                | Daniel Green, FEMA Region 8            | <a href="mailto:daniel.green3@fema.dhs.gov">daniel.green3@fema.dhs.gov</a> | Partnering/Supporting                                                                |

# Examples of two models of Extreme Event Reconnaissance or Research Deployments

- Structural Engineering EER (StEER) response to 2019 Hurricane Dorian
  - Virtual Assessment Structural Team – remote and secondary sources
  - Field Assessment Structural Team – directly mobilized and managed by StEER to assess characteristics of structures survived v. damaged



Location: 26.553245, -77.035057



Location: 26.552954, -77.035934



Location: 26.552642, -77.036987



Location: 26.552890, -77.033697

Figure 6.3. Typical performance of single-family residences along Eastern Shores Drive.

# East Palestine Train Derailment

- EPA conducting residential, commercial, and agricultural soil, air, and wastewater sampling
- University of Kentucky Health Tracking Study: <https://cph.uky.edu/research/cares/east-palestine-train-derailment-health-tracking-study>
- Texas A&M and Carnegie Mellon mobile laboratory to measure air quality
- Purdue University conducting interviews and water sampling from wells and creeks based on invitation from United for East Palestine
- University of Pittsburgh researchers studying potential liver damage
- CDC team conducting households surveys with ATSDR and NIOSH
- Ohio Department of Health surveys



# How to meet needs of STLT health departments, communities, and researchers?

- Coordinated mechanism for STLT to engage with the research community
  - Evidence informed practice
  - Generalizable and novel data about public health impacts of disasters
  - Bridging the gap between the disaster research community and the Community of Practice (COP)
    - To support response research objectives
    - Establish essential elements of information

# Year 1 Goals

- Establish a Community of Practice
- Establish a governance structure
- Develop a research framework that outlines the mission and scope(s) of inquiry
- Outline a concept of operations plan (CONOPs) that details pre-, peri-, and post-deployment activities
  - Training and credentialing
  - Event selection and prioritization: Go / No Go Decision-making
  - Ethical considerations
  - Data collection standards and approaches
  - Data sharing, publication, and reuse

# Year 2 Goals

- Test PHEER's mobilization through a pilot deployment.
- Identify opportunities to integrate training, mentorship and service learning opportunities into PHEER operations.
- Develop plans for operationalizing three to five thematic areas of the PHEER's research framework, including through the identification and/or adaptation/development of research protocols (e.g., questionnaires) and/or equipment/instrumentation to support rapid data collection.
- Develop training requirements for deploying PHEER members.
- Identify and recruit members to populate the governance/advisory committees defined in Year 1.

# Other Updates

- Growing number of minors, certificates and disaster epidemiology courses
  - Drexel, NYU, JHU, Jefferson, Penn State, University of Arizona
- DrPH at University of Nebraska
- Disaster epidemiology courses at University of Delaware, Oregon State, and University of Southern California

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## A BILL

To amend the Public Health Service Act to establish and support a network of Centers for Public Health Preparedness and Response.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Centers for Public  
5 Health Preparedness and Response Reauthorization Act”.

6 **SEC. 2. CENTERS FOR PUBLIC HEALTH PREPAREDNESS**  
7 **AND RESPONSE.**

8 (a) IN GENERAL.—Section 319F of the Public  
9 Health Service Act (42 U.S.C. 247d–6) is amended—

# Questions?

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[horney@udel.edu](mailto:horney@udel.edu) |  
[udel.edu/mph-epi](http://udel.edu/mph-epi)

Scan the QR code to  
complete a brief  
survey about our  
community of practice

To learn more about  
PHEER, visit our website at  
[www.pheernetwork.org](http://www.pheernetwork.org)

*Students, emerging  
professionals & BIPOC scholars  
are encouraged to join*

