Climate-Related Disasters & Public Mental Health: Impacts, Risks, and Interventions to Protect Workers & Others

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Disclaimer

The ideas, attitudes, and opinions expressed herein are my own and do not necessarily reflect those of the Uniformed Services University, the U.S. Public Health Service, the Department of Defense, or other branches of the U.S. government. I am not endorsing any of the entities or resources mentioned in this presentation and have no relevant disclosures or conflicts of interest to report.
Objectives

• List the psychological and behavioral effects of climate-related disasters
• Describe aspects of risk and protective factors across the disaster lifecycles
• Explain the framework and actionable interventions for protecting mental health of workers & others in disasters
Disasters Collide…

Challenges to our Values (caring, equity, justice, connectedness)

Pandemic (Health)

Climate Disaster (Emer Mgmt.)

Social/Civil Unrest (LE)

Economic Crisis (?)

War (military/civilians)
Categories of Disasters

Climate-Related/Natural Disasters
- Hurricanes
- Floods
- Wildfires
- Earthquakes
- Pandemics

Human-Generated Disasters
- Non-intentional
  - Transport Accidents
  - Industrial Accidents
- Intentional
  - Mass Violence
  - Terrorism

Adapted from James M. Shultz, Ph.D., DEEP PREP training
Average Seasonal Temperatures in the Contiguous 48 States, 1896–2020

Winter

Spring

Summer

Fall


https://www.epa.gov/climate-indicators/climate-change-indicators-seasonal-temperature
Global Climate-Related Disaster Annual Incidence & Cost 1900-2021

U.S. Mass Shootings: Incidence & Fatalities

## Dimensions of Disasters

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>HURRICANE</th>
<th>WAR</th>
<th>PANDEMIC</th>
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</thead>
<tbody>
<tr>
<td>Altered sense of safety</td>
<td>++</td>
<td>++++</td>
<td>++++</td>
</tr>
<tr>
<td>Local &amp; National fear</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Prolonged stress</td>
<td>++</td>
<td>++++</td>
<td>++++</td>
</tr>
<tr>
<td>Consequences over time</td>
<td>+++</td>
<td>++++</td>
<td>++++</td>
</tr>
<tr>
<td>Community disruptions</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Overwhelm health systems</td>
<td>++</td>
<td>++++</td>
<td>++++</td>
</tr>
<tr>
<td>National bereavement</td>
<td>+</td>
<td>++++</td>
<td>+++</td>
</tr>
<tr>
<td>Impact societal infrastructure</td>
<td>+++</td>
<td>++++</td>
<td>+</td>
</tr>
<tr>
<td>Intentional</td>
<td>-</td>
<td>++++</td>
<td>-</td>
</tr>
<tr>
<td>Unpredictable</td>
<td>+</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>Institutional trust loss</td>
<td>-</td>
<td>-</td>
<td>++++</td>
</tr>
</tbody>
</table>
PSYCHOLOGICAL AND BEHAVIORAL EFFECTS ON INDIVIDUALS AND COMMUNITIES
THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES
A Scientific Assessment

U.S. Global Change Research Program


THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES
A Scientific Assessment

MENTAL HEALTH AND WELL-BEING

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On the web: health2016.globalchange.gov

Chapter Coordinator

U.S. Global Change Research Program
Psychological & Behavioral Responses to Pandemics & Disasters

- Resilience
- Distress Reactions
- Psychiatric Disorders
- Health Risk Behaviors

Distress Reactions:
- Sleep difficulties
- Decreased Sense of Safety
- Physical (Somatic) Symptoms
- Irritability, Anger
- Distraction, Isolation

Psychiatric Disorders:
- Depression
- PTSD
- Anxiety
- Complex Grief

Health Risk Behaviors:
- Alcohol, Tobacco, Rx meds
- Family Distress
- Interpersonal Conflict/Violence
- Disrupted Work/Life Balance
- Restricted Activities/Travel

# Stress Continuum

<table>
<thead>
<tr>
<th>READY</th>
<th>REACTING</th>
<th>INJURED</th>
<th>ILL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEFINITION</td>
<td>DEFINITION</td>
<td>DEFINITION</td>
<td>DEFINITION</td>
</tr>
<tr>
<td>• Adaptive coping</td>
<td>• Mild and transient distress or loss of function</td>
<td>• More severe and persistent distress or loss of function</td>
<td>• Clinical mental disorders</td>
</tr>
<tr>
<td>• Effective functioning</td>
<td></td>
<td></td>
<td>• Unhealed stress injuries</td>
</tr>
<tr>
<td>• Well-being</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEATURES</td>
<td>TYPES</td>
<td>FEATURES</td>
<td>TYPES</td>
</tr>
<tr>
<td>• In control</td>
<td>• Trauma</td>
<td>• Loss of control</td>
<td>• PTSD</td>
</tr>
<tr>
<td>• Calm and steady</td>
<td>• Fatigue</td>
<td>• Can’t sleep</td>
<td>• Depression</td>
</tr>
<tr>
<td>• Getting the job done</td>
<td>• Grief</td>
<td>• Panic or rage</td>
<td>• Anxiety</td>
</tr>
<tr>
<td>• Playing</td>
<td>• Moral injury</td>
<td>• Apathy</td>
<td>• Substance abuse</td>
</tr>
<tr>
<td>• Sense of humor</td>
<td></td>
<td>• Shame or guilt</td>
<td></td>
</tr>
<tr>
<td>• Sleeping enough</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Ethical and moral behavior</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Self Help**

- Leadership/Organizational Support
- Peer Support

**Screening/Referral**

They are scattered throughout all 50 states, the District of Columbia and Puerto Rico — 613 in Utah, 1,114 in Kansas, 14 way-out in Alaska. They are clustered by the hundreds in large Southern cities like Dallas, Atlanta and Memphis, and huddled in handfuls in unlikely hamlets like Shell Rock, Mo. (pop. 1,393) and Fountain Run, Ky. (pop. 926).

Evacuees flee Hurricane Katrina and the floods that followed in cars or trains or buses, on helicopters and charted planes, by bus and a few on foot. A month after the storm, a map emerges of where they landed, based on ZIP codes from which applications for aid were submitted to the Federal Emergency Management Agency as of Sept. 23.

Of 1,256,014 applications, 56 percent came from Louisiana, Mississippi, Texas and Alabama. But 16,134 families were more than 1,800 miles from the Gulf — among the farthest: MacArthur, Alaska, 3,813 miles from the French Quarter and another in Lihue, Hawaii, 4,275 miles away.

Residents of New Orleans, a city that was two-thirds black, seem to have flocked to the nation's African-American population centers. On average, the applicants came from counties where blacks were 28 percent of the population, more than twice the national average.

Katrina's Diaspora

The victims of Hurricane Katrina have filed for assistance from FEMA from every state. The map shows the distribution and number of the 1.36 million individual assistance applications as of Sept. 23.

Applications by state

<table>
<thead>
<tr>
<th>State</th>
<th>Applicants</th>
<th>% of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louisiana</td>
<td>523,149</td>
<td>28.6%</td>
</tr>
<tr>
<td>Mississippi</td>
<td>363,840</td>
<td>28.3%</td>
</tr>
<tr>
<td>Texas</td>
<td>156,895</td>
<td>11.6%</td>
</tr>
<tr>
<td>Alabama</td>
<td>109,469</td>
<td>8.1%</td>
</tr>
<tr>
<td>Georgia</td>
<td>35,342</td>
<td>2.6%</td>
</tr>
<tr>
<td>Florida</td>
<td>31,305</td>
<td>2.3%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>15,529</td>
<td>1.1%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>11,097</td>
<td>0.8%</td>
</tr>
<tr>
<td>California</td>
<td>10,955</td>
<td>0.8%</td>
</tr>
<tr>
<td>Illinois</td>
<td>6,430</td>
<td>0.5%</td>
</tr>
<tr>
<td>Others</td>
<td>73,065</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Applications by distance from New Orleans

<table>
<thead>
<tr>
<th>Distance from New Orleans</th>
<th>Applicants</th>
<th>% of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-100</td>
<td>482,917</td>
<td>24.9%</td>
</tr>
<tr>
<td>100-300</td>
<td>153,909</td>
<td>29.9%</td>
</tr>
<tr>
<td>300-600</td>
<td>145,676</td>
<td>29.9%</td>
</tr>
<tr>
<td>600-900</td>
<td>144,697</td>
<td>29.9%</td>
</tr>
<tr>
<td>900-1,200</td>
<td>130,430</td>
<td>29.9%</td>
</tr>
<tr>
<td>1,200+</td>
<td>133,900</td>
<td>29.9%</td>
</tr>
</tbody>
</table>

Source: FEMA, Census Bureau, Census College Sociology Department,
Matt Lissick, Arin Hare, and Aron Wingerbren The New York Times
Community Phases

https://www.samhsa.gov/programs-campaigns/dtac/recovering-disasters/phases-disaster
RISK AND VULNERABILITY IN DISASTERS
Resilience... not static or generic, but is context and time dependent

- For Whom?
- From What?
- When?
- Where?

The better each is defined the more we can enhance resilience (e.g. know the “how” of building, fostering and sustaining resilience)
## Psychological/Bhv Intervention Matrix

<table>
<thead>
<tr>
<th></th>
<th>HOST</th>
<th>AGENT/VECTOR</th>
<th>PHYSICAL ENVIR</th>
<th>SOCIAL ENVIR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-EVENT</strong></td>
<td>-Risk Assessment</td>
<td>-Fear</td>
<td>-Existing care services</td>
<td>-Culture of readiness</td>
</tr>
<tr>
<td></td>
<td>-Risk Communication</td>
<td>-Uncertainty</td>
<td>-Proximity to exposures</td>
<td>-Knowledge of roles</td>
</tr>
<tr>
<td></td>
<td>-Surveillance</td>
<td>-Misinformation</td>
<td></td>
<td>-Baseline trust</td>
</tr>
<tr>
<td></td>
<td>-Primary Prevention</td>
<td></td>
<td></td>
<td>-Culturally based risk perceptions</td>
</tr>
<tr>
<td></td>
<td>-Training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EVENT</strong></td>
<td>-Crisis &amp; Risk Communication</td>
<td>-Exposure to illness, death</td>
<td>-Identification of risk indicators</td>
<td>-Comm/Org response to communication</td>
</tr>
<tr>
<td></td>
<td>-Prophylaxis</td>
<td>-Isolation</td>
<td>-Knowledge of care services (where/how)</td>
<td>-Grief leadership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Loss</td>
<td>-Barriers to care</td>
<td>-Access to crisis resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Stress</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>POST-EVENT</strong></td>
<td>-Lessons learned</td>
<td>-Decreased access to care</td>
<td>-Availability of resources</td>
<td>-Help-seeking</td>
</tr>
<tr>
<td></td>
<td>-Surveillance</td>
<td>-Loneliness</td>
<td>-Application of lessons learned</td>
<td>-Comm/Org trust in health/other</td>
</tr>
<tr>
<td></td>
<td>-Mitigation/Care</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Aspects of Risk in Disasters

**PRE-EVENT**
- Socioeconomic Status
- Social Support
- Preparedness Measures
- Work Environment
- Underlying Health Conditions
- Help-Seeking Behaviors

**EVENT**
- Duration & Severity of Exposure
- Displacement
- Property Damage
- Injury/Illness
- Bereavement
- Moral distress
- Psychological Identification

**RECOVERY**
- Job Loss, Financial Hardship
- Housing Instability
- Social Support Loss
- Diminished Access to Health/Community Care
- Low Organizational Support
- Poor Leadership
- Lack of Rest & Recovery

**PRE**

**POST**

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Populations Benefitting from Special Considerations

- Dependence on Systems of Care
- Migrants & Refugees
- Cognitive & Mobility Impaired
- Communities of Color
- Children & Adolescents
- Structurally Disadvantaged; Homelessness
- Disaster Workers & Responders
Impact of Repeated Disasters: Protecting Responders

BEFORE THE DISASTER EVENT

• Issue: Difficulty recovering from previous disaster
• Action: Identify those who have not fully recovered to address needs prior to repeated exposure

• Issue: Decreased productivity following disaster exposure
• Action: Provide opportunities for engagement in work peer support groups, leadership-led stress management trainings/education

• Issue: Lower levels of social support
• Actions: Encourage social support from significant others, friends, and/or family; Provide opportunities to bolstering relationships and engagement away from work

DURING THE DISASTER EVENT

• Issue: Greater initial emotional response (e.g., fear, anxiety, hopelessness, helplessness, horror)
• Action: Offer acute disaster care (e.g., Psychological First Aid) and targeted follow-up support

AFTER THE DISASTER EVENT

• Issue: Personal disaster-related injury or property damage
• Action: Provide informal and formal support resources; Offer flexibility with leave to manage disaster-related consequences.

INTERVENTIONS FOLLOWING DISASTERS TO PROTECT WORKERS
Psychological First Aid (PFA)

Five Essential Elements:
- Safety
- Calming
- Self/Community Efficacy
- Connectedness
- Hope/Optimism

- Analogous to “First Aid”
- Population-based “framework”
- “Do no harm” approach
- Resilience-focused
- NOT a cure/tx for illness
- MAY mitigate illness/dz

DECREASED SENSE OF SAFETY

- INSOMNIA
- ALCOHOL USE
- DEPRESSION
- PTSD


Self & Community Efficacy


Figure 1. Changes in probability of having PTSD over two injury/damage groups and five community-level efficacy levels. doi:10.1371/journal.pone.0088467.g001
Combat & Operational Stress Control Model

Proximity
Immediacy
Expectancy
Simplicity
Organizational Sustainment in Disasters

ORGANIZATIONS

INDIVIDUALS
- Self-care
- Take Breaks
- Peer Buddies
- Stay Connected
- Self Check-ins
- Honor Service
- Speak Up

TRAINING
- Equipment
- Education
- Policies
- Procedures
- Resources

LEADERS
- Presence
- Communication
- Encouragement
- Be an example
- Normalizing
- Hope/optimism
- Grief


Media Exposure


Buddy Systems... Helping the Helpers

- Formal (vs ad hoc) peer support
- Battle Buddies, Swim Buddies
- Safety, social support, efficacy
- Daily check-ins:
  - Self-care
  - Emotional health
  - Camaraderie
- Buddy assignments
  - Military vs Healthcare


Post-Shift Huddles / After Action Reviews

- Culture of learning
- Organizational improvement
- Strengthen the team
- Enhance morale
- Correct distorted thoughts
- Informal “check in”
- Make “meaning” of event


Reintegration… Challenges of returning from “War”

- Transition from prolonged high stress back to “normal life”
- Loss of meaning and purpose
- Tight knit teams dissolve
- Lack of a shared experience
- Others don’t understand
- Usual “problems” seem trivial
- Family expectations collide


How do I know if someone is “okay” during times of high stress?

- **Controllability of Emotions**
  - Controlling them or they control you?

- **Preserved Task Performance**
  - Able to do what is needed at home/work?

- **Capacity for Rewarding Interactions**
  - Still able to feel and connect?

- **Maintain Self Value**
  - Know who you are and what you stand for?

https://www.youtube.com/watch?v=8R88AfXhKAU&list=PLGgouusCzgnWPBApVxogTR59qH2oQwqIs&index=1
CRISIS LEADERSHIP ACTIONS TO PROTECT MENTAL HEALTH IN DISASTERS
Crisis Leadership Behaviors

- Communicate Effectively
- Model Self-Care
- Enhance Cohesion
- Support Emotion Regulation
- Foster Purpose

- Facilitate Help-Seeking
- Encourage Growth
- Promote Reintegration
- Address Grief
- Sustain Morale


Leadership Through Walking Around

- Walk around, be present, listen to concerns
- Engage in protective leadership behaviors
- Make time for “face-to-face” activities
- Enhance communication and connection
- Facilitate team building activities
- Pandemic/other factors caused leaders to “hunker down”… creates challenges
Foster Purpose

- Fosters meaning & understanding of individual/shared sacrifices
- Connect the present to the future
- New York National Guard (4k) following COVID-19 missions
  - Leaders reminding people of the purpose of their work a/w:
    - Better health
    - Better mental health
    - Greater unit cohesion


Support Emotion Regulation

- Anger is common - adaptive vs problematic
- Sadness, boredom, shame, grief
- Contagion and impact on morale / cohesion
- Breathing, grounding for intense emotions
- Focus & regulate to enhance performance
  - Acceptance – what can you control?
  - Perspective – will it matter 1 wk / mon / yr?
  - Compartmentalize – “Put it away”
Sustain Morale

POSITIVE Impact
- Cohesion
- Team connection
- Leadership
- Shared purpose/goal
- Resilience
- Preparedness & training
- Discipline
- Supportive work conditions

NEGATIVE Impact
- Poor communication, rumors
- Mission uncertainty / confusion
- Inadequate supplies
- Disrespect / harassment / racism
- Unresolved interpersonal conflict
- Substance abuse
- Boredom / lack of purpose
- Perceived failure

“Confident and positive state of mind and persistent motivation to engage in the shared purpose of the group, especially during challenging conditions.”

References:
Grief Leadership

- Communicate effectively and openly
- Being visible and present
- Provide accurate and timely info
- Encourage working together
- Promote cohesion
- Anticipate and acknowledge grief
- Honor losses; make meaning
- Look to the future
- Encourage growth and a “new normal”

Support/Caring/Helping…
How do we Foster Hope/Optimism?

• There is an end ahead
• Most people - including you/your family - will be ok
• Do a “random act of kindness”- altruism gives hope to you and to someone else
• You give hope by always holding in mind the picture of what a person, a child, a colleague “can be”… not just who they are in this moment
• Hope is an action, not just a wish – don’t wait to find it, go build it!
Stockdale Paradox

“You must never confuse faith that you will prevail in the end – which you can never afford to lose – with the discipline to confront the most brutal facts of your current reality, whatever they might be.”
”We will meet again…”