NORTH CAROLINA Psychiatric Association

Mental Health Impact of Disasters Overview

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Disclosure

- **Allan K. Chrisman, MD** has no financial relationships to disclose relating to the subject matter of this presentation.
- **Richard H. Weisler, MD** has no financial relationships to disclose relating to the subject matter of this presentation.

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Objectives

1. Participants will name the 6 phases of a disaster
2. Participants will name 4 psychological disorders associated with disasters
3. Participants will name 3 basic tenets for mental health recovery after a disaster

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Disasters

*A severe disruption, ecological and psychosocial, which greatly exceeds the coping capacity of the altered community.

We are now in an era where the frequency, severity, scope and complexity of disasters have created an environment where challenges to our resources- physical and psychological require a level of engagement with all members of our community to achieve preparedness.

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Disaster

*A severe disruption, ecological and psychosocial, which greatly exceeds the coping capacity of the altered community.

Natural

- Hurricane
- Tornado
- Flood
- Wild Fire
- Tsunami
- Drought
- Blizzard
- Volcano

Man-Made

- Nuclear
- Biological
- Fire
- Chemical
- Shooting
- Terrorism
- Road Accidents
- Epidemics
- War/Armed Conflicts

SAMHSA https://www.samhsa.gov/find-help/disaster-distress-helpline/disaster-types

*World Health Organization.http://apps.who.int/iris/bitstream/handle/10665/329958/WHO-MNH-PSF-91.3_REV.1.pdf?sequence=1&isAllowed=y. Accessed 7/10/ 2018.

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TABLE 1. OVERVIEW OF MASS VIOLENT VICTIMIZATION AND NATURAL DISASTERS

DIMENSION	Mass Violent Victimization	Natural Disasters
Examples	• Mass riots • Hostage taking • Arson • Terrorist bomb • Mass shooting • Bioterrorism • Aircraft hijacking	• Hurricane • Earthquake • Tornado • Flood • Volcanic eruption • Wildfire • Drought
Causation	• Include evil human intent; deliberate sociopo- litical act, human cruelty, revenge, hate or bias against a group, mental illness.	• Is an act of nature; severity of impactmay result from interaction between natural forces and human error oractions.
Appraisal of Event	• Event seems incomprehensible, senseless. • Some view as uncontrollable and unpredictable, others view as preventable. • Social order has been violated.	• Expectations defined by disastertype. • Awe expressed about power and destruction of nature. • Disasters with warnings increase sense of predictability and controllability. • Recurring disasters pose ongoing threat.
Psychological Impact	• Life threat, mass casualties, exposure to trauma, and prolonged recovery effortsresult in significant physical and emotional effects. • There are higher rates of Post-Traumatic Stress Disorder (PTSD), depression, anxiety and traumatic bereavement that can last for a longer period of time.	• Property loss and damage are primary impacts, so reactions relate to losses, relocation, financial stress, and daily hassles. • Disaster traumatic stress typically resolves over 18months, with lower rates of diagnosable disorders unless high number of fatalities and seriousinjuries.
Subjective Experience	• Victims are suddenly caught unaware in a dangerous, life-threatening situation. May experience terror, fear, horror, helplessness, and sense of betrayal andviolation. • Resulting distrust, fear of people, or being "out in the world" mayCause withdrawal and isolation. • Outrage, blaming the individual or group responsible, desire for revenge, and demand for justice are common.	• Separation from family members, evacuation, lack of warning, life threat, trauma, and loss of irreplaceable property and homes contribute to disaster stress reactions. • Anger and blame expressed toward agencies and individuals responsible for prevention, mitigation, and disasterrelief.
World View: Basic Assumptions	• Assumptions about humanity are shattered; individuals no longer feel that the world is secure, just, and orderly. • Survivors confronted with the reality that evil things can happen to goodpeople. • People lose their illusion of invulnerability; anyone can be in the wrong place at the wrong time.	• Spiritual beliefs may be shaken (e.g., "How could God cause thisdestruction?"). • Loss of security in "terra firma" that the earth is "solid" and dependable. • People lose their illusion of invulnerability; anyone can be in the wrong place at the wrong time.

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TABLE 1: Comparison of Mass Violent Victimization and Natural Disasters

Dimension	Mass Violent Victimization	Natural Disasters
Stigmatization of Victims	• Some victims may come to feel humiliation, responsibility for others' deaths, survivor guilt, self-blame, and unworthy of assistance, thus assigning stigma to themselves. • The larger community, associates, friends, and even family may distance themselves to avoid confronting the idea that crime victim- ization can happen to anyone. • Well-meaning loved ones may urge victims and bereaved to "move on," causing them to feel rejected and wrong for continuing to suffer. • Hate crimes reinforce the discrimination and stigma that targeted groups already experience.	• Disasters tend to have greater impact on people with fewer economic resources due to living in lower-cost, structurally vulnerable residences in higher-risk areas. • Survivors from cultural, racial, and ethnic groups; single parent families; people with disabilities; and the elderly on fixed incomes experience greater barriers to recovery causing double jeopardy and potential stigma.
Phases of Response and Reconstruction	• Impact • Outcry • Disbelief, shock, and denial • Interaction with criminal justice system • Working through process • Coming to terms with realities and losses • Reconstruction	• Warning, threat • Impact • Rescue and heroism • Honeymoon • Interaction with disaster relief and recovery • Disillusionment • Coming to terms with realities and losses • Reconstruction
Media	• The media shows more interest in events of greater horror and psychological impact. • Excessive and repeated media exposure puts people at risk for secondary traumatization. • Risk of violations of privacy.	• Short-term media interest fosters sense in community that "the rest of the world has moved on." • Media coverage can result in violations of privacy; there is a need to protect children, victims, and families from traumatizing exposure.
Secondary Injury	• Victims' needs may conflict with necessary steps in the criminal justice process. • Steps required to obtain crime victim compensation and benefits can seem confusing, frustrating, bureaucratic, and dehumanizing and trigger feelings of helplessness. • Bias-crime victims may suffer prejudice and blame. • Victims may feel that the remedy or punishment is inadequate in comparison to the crime and their losses.	• Disaster relief and assistance agencies and bureaucratic procedures can be seen as inefficient, fraught with hassles, impersonal. • Disillusionment can set in when thegap between losses, needs, and available resources is realized. • Victims rarely feel that they have been "made whole" through reliefefforts.

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18 – Mental Health Response to Mass Violence and Terrorism

Hurricane Florence

- Formed August 31, 2018
- Dissipated September 19, 2018
- (Remnant low after September 17, 2018)
- **Wind at Landfall in Wrightsville Beach, NC on September 14, 2018 1-minute sustained around 90 mph, but moving forward only at about 2-3 mph dumping an est. 8-10 Trillion gallons of water in NC alone and additional large amounts in SC and elsewhere.**
- Highest winds **before** US landfall 1-minute sustained: 140 mph (220 km/h)
- Lowest pressure 939 mbar (h Pa); 27.73 inHg
- Fatalities 30 direct, 23 indirect
- Damage **early** estimates > $22 billion (2018 USD)
- Areas affected West Africa, Cape Verde, Bermuda, Eastern United States (especially The Carolinas), Atlantic Canada

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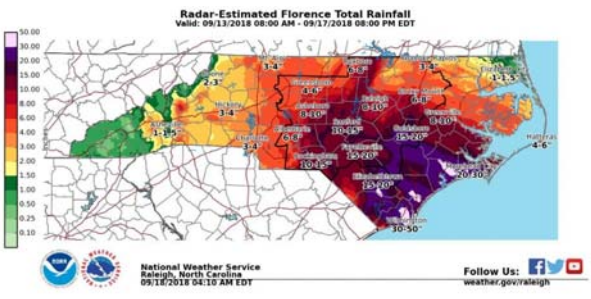

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Hurricane Maria – Puerto Rico

- Maria had entered Puerto Rico's southeast side on Wednesday with Category 4 winds of **155 mph**
- 16,267 refugees and 234 pets of Puerto Ricans headed to 500 emergency shelters to ride out the storm
- 100% of the Puerto Rico populations lost electricity and water services after Hurricane Maria hit the island. For many the power was out for months or longer. That along with damaged roads/transportation and housing, telephone/Internet service, limited access to food, water, and power most likely limited residents ability to get medical care/medications, hospital surgery, and dialysis care in cases
- **Maria initially was thought by Puerto Rican officials to have caused at least 64 confirmed deaths. However, a 5/29/18 study led by Harvard concluded that a distribution resulted in a post-hurricane mid-point statistical estimate of 4645 excess deaths (95% CI, 793–8498) to a 62% increase in the mortality rate as compared with the same period in 2016 were associated with Hurricane Maria and its aftermath in Puerto Rico alone. The household-based survey suggests that the number of excess deaths is more than 70 ✕ the official estimate.**

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Kishore N, et al. *N Engl J Med.* 2018;379(2):162-170.

Hurricane Michael was still a very dangerous Major Category 4 Hurricane even after making landfall on Oct. 10th between Panama City and Mexico Beach along the Florida panhandle with winds of 150 mph. The rain from Michael quickly move inland spreading across Georgia, the Carolinas and Southern Virginia.

It's central pressure was recorded down to 919 mb making it the 3rd strongest pressure on record behind Camille in 1969 and the Labor Day hurricane in the Florida Keys in 1935!

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Category 5 hurricanes have hit 6 land areas dead-on in 2017, more than ever before

- **Brenden Moses, a researcher at the National Hurricane Center, found that of all Category 5 landfalls on record in the Atlantic since 1851, one-quarter have occurred in the 2017 season**
- Category 5 hurricanes are the most destructive storms on Earth, bearing peak winds of at least 157 mph
- A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months

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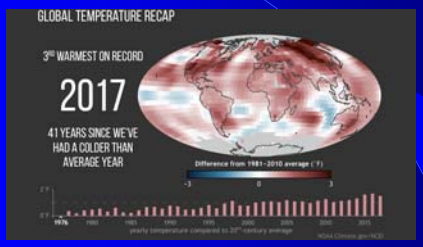
Samenow J. *The Washington Post.* September 22, 2017. www.washingtonpost.com/news/capital-weather-gang/wp/2017/09/22/category-5-hurricanes-have-hit-6-land-areas-dead-on-in-2017-more-than-ever-before/?noredirect=on&utm_term=.0ba08b1ca27c. Accessed July 12, 2018.



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NOAA National Centers for Environmental Information

Hurricane Katrina 2005

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Hurricane Katrina's Impact

- Impacted a 90,000 square mile area size of United Kingdom
- > 1825 people died with hundreds of people still missing
- Over 2,500,000 people still living outside of their home zip code area according to FEMA 10 months later in 6/06
- 108,000 New Orleans homes were under 4 feet or more of water
- 31% of the homes in Louisiana and 21% of the homes in Mississippi were damaged
- Significant loss of inpatient and nursing home beds
- Major losses of faculty at Tulane Medical Center and LSU Health Sciences Center in New Orleans plus MHCs

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FEMA = Federal Emergency Management Agency; LSU = Louisiana State University; MHC = Mental Health Center.
Weisler RH, Barbee, and Townsend *JAMA*. 2006;296(5):585-588.

Post-Katrina Survey

- Post-Katrina respondents were 2 × as likely to have serious mental illness (11.3% vs 6.1%) and mild to moderate mental illness (19.9% vs 9.7%)
- Among people with serious mental health problems, an estimated one-third to one-half suffer from PTSD
- Prevalence of thoughts of suicide in people with mental illness, however, was significantly lower than in the pre-Katrina sample
- Most (88.5%) respondents said that their Katrina experience had helped them develop a deeper sense of meaning or purpose in life
- About three-quarters said that their experiences with the hurricane made them more spiritual or religious
- Exception
  - New Orleans: Suicide rate 3 × higher as reported by Rouse, Medical Examiner

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Kessler RC, et al. *Bulletin World Health Organ*. 2006;84(12):930-939.

Emotional Response to Disaster

Despite the differences in disasters, communities, and individuals, survivors' emotional responses to disaster tend to follow a pattern of "disaster phases"

DeWolfe DJ. *Training Manual for Mental Health and Human Service Workers in Major Disasters*. 2000. https://files.eric.ed.gov/fulltext/ED459383.pdf. Accessed July 10, 2018.

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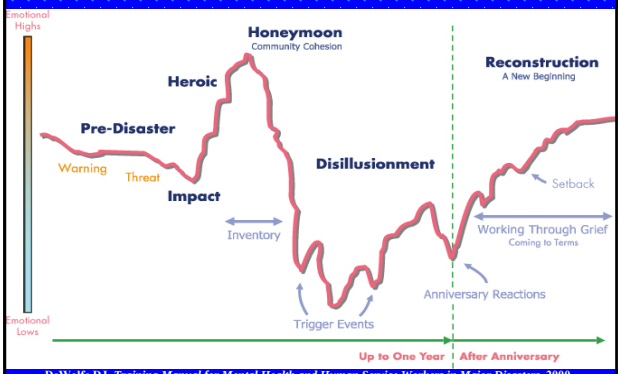
Phases of Disaster



DeWolfe DJ. *Training Manual for Mental Health and Human Service Workers in Major Disasters*. 2000. https://files.eric.ed.gov/fulltext/ED459383.pdf. Accessed July 10, 2018.

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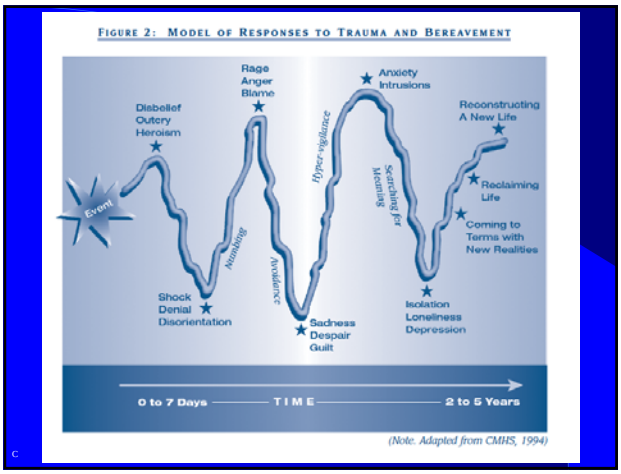

Disaster System of Care

- Ideally, initial disaster services are provided within a hierarchical incident command structure established by local, state, and federal governments.
- During the impact and immediate post-impact phases of a disaster, interventions may be provided in emergency shelters, family assistance centers, medical and pediatric health care settings, schools, and community based programs.
- In the intermediate and longer term phases of response and recovery, systems of care may extend to primary health care settings, schools and preschools, daycare settings, youth centers, faith-based institutions, and volunteer organizations.

Practice Parameter on Disaster Preparedness Pfefferbaum, Betty et al. Journal of the American Academy of Child & Adolescent Psychiatry , Volume 52 , Issue 11 , 1224 - 1238

Sheltering

- The provision of shelter and housing for disaster victims falls along a continuum from pre-disaster emergency sheltering to permanent re-housing. The 4 categories that are usually arrayed along this continuum include emergency shelters, temporary shelters, temporary housing, and permanent, or replacement, housing
- Shelters should be run by the local jurisdiction or state and staffed by hospital employees, home healthcare staff, local healthcare providers, caregivers, and volunteers
- Multiple agencies manage shelters during a disaster, including Red Cross. Other agencies may be managing a shelter in cooperation with Red Cross, with or without receiving Red Cross support, or they may be managing a shelter completely independently. Partner Managed Shelters are managed by partners, following Red Cross principles, in cooperation with the Red Cross

MDC. Disaster Sheltering. www.mdcinc.org.

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Assisting with Dislocation after Disasters

Pamela Tucker, MD
Medical Officer

Reducing the Emotional and Physical Effects of Trauma and Dislocation
October 29, 2018

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Psychological Stressors in Disaster Relocation

- Trauma from unexpected relocation under threat
- Physical and financial losses
- Loss of family members and pets
- Social disruption
- For children, disruption of family routines, friendships, and school
- Strain in resettlement

www.atsdr.cdc.gov/emes/health_professionals/document

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Psychosocial Responses to Dislocation

- Immediate reactions: Shock, grief, numbness, feelings of unreality, flashbacks, diminished ability to function
- Intermediate reactions: Grief, sorrow, anxiety about the future
- Long-term reactions: Healing, posttraumatic resiliency, generalized anxiety disorders, depression, and posttraumatic stress disorder, increased substance use

www.atsdr.cdc.gov/emes/health_professionals/document

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Create Supportive Recovery Environment after Evacuation

- Provide support for physical and medical needs
  - Once the rescued are physically safe, tend to their immediate physical, psychological, and medical needs
  - Assist them to regain physical strength by reminding them of the importance of eating, drinking, and sleeping
  - Help restore daily activities and routines
  - Provide comfort and support

www.atsdr.cdc.gov/emes/health_professionals/document

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Intermediate Phase of Recovery: Supporting Your Patients as They Rebuild

- After homecoming or resettlement, rebuilding a new life occurs
- Physical rebuilding and long-term emotional recovery begins after initial physical and emotional shock has passed
- Support and guidance is critical to help people begin to work on developing an emotional understanding of the disaster
- Remember that working through grief, loss, and disaster related emotions will take time

www.atsdr.cdc.gov/emes/health_professionals/document

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Understanding Special Needs of Children Experiencing Relocation Distress

- Losses from disaster are difficult for young people to understand
- Ability to understand and cope depends on age of child
- Children and adults lose illusion of safety
- Children can have immediate or delayed reactions
- Children's reactions are strongly affected by emotions and behavior of adults with them

www.atsdr.cdc.gov/emes/health_professionals/document

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Understanding Special Needs of Elderly Experiencing Relocation Distress

- May have difficulty adjusting to new settings
- May have medical problems requiring medications or immediate attention
- Demented elderly become disoriented in new settings
- Multiple losses may be harder to cope with
- Worries about loss of independence
- Worsening of pre-existing medical problems due to stress

www.atsdr.cdc.gov/emes/health_professionals/document

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Stress Reactions

- Psychological stress reactions and fear-driven behavioral responses ramp up during the disaster warning phase and escalate during disaster impact, the period of overt danger when destructive forces of harm are operating.
- However, in the aftermath, psychological reactions do not disappear even when physical danger ceases.
- The reason is that loss and change are prominent features of the post-disaster environment. The hardships of enduring physical destruction, scarcity of basic needs, displacement, community-wide disruption of services, loss of resources, and painful rehabilitation from physical injury collectively act to maintain or amplify the stress level.
- For large-scale disasters, the protracted period of reconstruction perpetuates chronic stress.

PSYCHOLOGICAL IMPACTS OF NATURAL DISASTERS
James M. Shultz, Yuval Neria, Andrea Allen, Zelde Espinel
2013

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Disaster Psychological Impact

- From a public health, population-focused vantage point, no one goes through a traumatic event unchanged.
- Almost all persons exposed to a disaster are affected psychologically
- For most persons, disaster stress responses will be relatively brief and transient, followed by return to pre-disaster levels of functioning

Butler, A. S., Panzer, A. M., and Goldfrank, L. R., 2003. Preparing for the Psychological Consequences of Terrorism: A Public Health Approach

Pronounced Disaster Mental and Behavioral Health Impacts

Generally restricted to the subset of high-profile disasters that possess two or more of the following four characteristics:

- (1) large numbers of injuries and/or deaths
- (2) widespread destruction and property damage
- (3) disruption of social support and ongoing economic problems
- (4) intentional human causation.

Norris, F. H., Friedman, M., and Watson, P., 2002. 60,000 disaster victims speak. Summary and implications of the disaster mental health research. Psychiatry, 65, 240–260.

Psychological impacts throughout the disaster life cycle

- In the post-disaster environment, ongoing exposure to hazards, compounded by the profound realization of loss and change, combine to produce powerful psychological effects.
- Postimpact adversities are experienced by some survivors as more difficult than the disaster event itself.
- Mental health sequelae typically persist long after the physical threats abate in the postimpact phase.

PSYCHOLOGICAL IMPACTS OF NATURAL DISASTERS
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2013

Psychological impacts

Psychological distress also extends to "indirect victims", persons who are typically outside the geographical perimeter of the disaster footprint but are socially connected to the direct victims.

Galea, S., and Resnick, H., 2005. Posttraumatic stress disorder in the general population after mass terrorist incidents: considerations about the nature of exposure. CNS Spectrums, 10(2), 107–115.

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Role of Culture in Disaster Response

- Culture: a protective system, comforting, reassuring
- Culture:
  - defines appropriate behavior
  - furnishes social support, identity
  - depicts a shared vision for recovery
- Culture provides:
  - knowledge, information
  - continuity and a process for healing in times of tragedy
  - the context in which survivors react to and recover
  - values and life experiences that support recovery

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Reactions to the Stress of the Event

- Reactions are developmentally manifest in any or all of these categories:
  - Emotions/Feelings;
  - Cognitive Impacts/Thoughts;
  - Physical Effects;
  - Behaviors;
  - Spiritual.

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Risk Factors for Survivors

Categories	Risk Factors
Relational Losses	• Family member missing/dead • Friend missing/dead • Pet missing/dead • Prolonged separation from family/ caregiver
Physical/Economic Losses and Transitions	• Home damaged or destroyed • Vehicle or major property loss • Other financial loss • Unemployed due to disaster (self or loved one) • Changed schools (for children or youth) • Evacuated quickly with no time to prepare • Displaced from home 1 week or more • Major disruption in the community's infrastructure

Risk Factors for Survivors

Categories	Risk Factors
Threats to Life	• Injured or physically harmed (self or loved one) • Life was threatened (self or loved one) • Witnessed death/injury (self or loved one) • Assisted with rescue/recovery (self or loved one) • Sheltered in place or sought shelter due to immediate threat of danger
Loss of Community/ Lifestyle	• Changed schools • Displaced from home one week or more • Community completely destroyed and/or residents disbursed

Risk Factors for Disaster Responders

Categories	Risk Factors
During the assignment	• Seeing fatalities and/or severe client injuries • Personal crisis/family problems at home • Dissatisfaction with some aspects of the operation • Resident of the disaster affected area • Difficult living conditions • Staff/supervisor conflicts arise during the assignment • Needing to interact with exploitive or unappreciative clients
After the assignment	• Bothersome memories of things seen, heard and smelled • Difficulty sleeping/change in appetite • Less interest in normal activities and spending less time with people • Difficulty downshifting from the fast pace of disaster work

Resilience of the Individual

- Resilience refers to an individual's ability to cope effectively and adapt well to difficult challenges such as tragedy, adversity, or significant stressful experiences. Resilience is influenced by an individual's environment.
- It involves thoughts, behaviors, and ways of reacting that can be learned and developed
- Resilience is not something one is simply born with; it is something humans develop. Everyone experiences resilience

Resilience of the Individual

- Individual resilience is shaped by three key aspects of each person's life.
  - Factors of birth -- personality, ethnicity, economic and cultural background
  - Past history and life experiences which influence how he/she handles stressors
  - Perceived social support systems which include family, friends, school, work, and community.
- These aspects can have a positive or negative influence on an individual's resilience depending upon the specific experience and the person's reaction to that experience.

The key aspects that shape individual resilience

- Family history;
- Physical health;
- Mental health;
- Trauma history;
- Past social experiences;
- Past cultural experiences;
- Medical or physical challenges.

Individual Resilience

Factors Contributing to Individual Resilience	
Individual Attributes	Perceived Social Support
• Capacity to make and carry out realistic plans • Communication and problem-solving skills • Positive or optimistic view of life • Confidence in personal strengths and abilities • Capacity to manage strong feelings (self-control) • Insightfulness • Ability to persevere when challenged • Capacity to make changes as needed (flexibility)	• Feels connected to others • Has a sense of security • Believes resources are available

Individual Resilience

The factors that inhibit individual resilience include:

- Poor social skills;
- Poor problem solving;
- Lack of empathy;
- Family violence;
- History of abuse or neglect;
- Divorce or partner breakup;
- Death or loss of loved one and/or pet;
- Lack of social support.

The Combination of the 3R's
Resilience-Risk-Reactions to Stress

Disaster-Created Special Needs Population

Psychological Impacts of Natural Disasters, Table 3 High-risk groups for psychological consequences by disaster phase

Pre-disaster phase

Population Demographics
Female gender
Children
Older adults
Low socioeconomic status
Minimal education
Economic disadvantage
Unemployment

Culture, race, ethnicity, language
Minority status
Minority culture, race ethnicity
Marginalized culture
Recent immigrant
Limited proficiency in dominant language

Family context characteristics
Adult with children
Single head of household
Child with dysfunctional parent
Family instability
Domestic violence

Social support/Adaptive skills
Limited coping skills
Limited social support network

Psychiatric/Psychological Health
Serious and persistent mental illness
History of trauma
Psychiatric diagnosis
Substance abuse diagnosis

Physical health
Pregnancy
Pre-existing chronic disease
Disease requiring life-sustaining treatment
Disease requiring essential medications
Immunosuppression

Disability status
Physical limitation and disability
Learning/language disability
Limitation of intellectual skills

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Disaster impact phase

Direct victims
Experiencing the physical forces
Physical injury
Perception of threat to life
Extreme fear, horror, trauma
Witnessing destruction
Witnessing injury or death of others
Witnessing grotesque scenes

Indirect victims
Connection to disaster-affected community
Inability to help
Survivor guilt
Secondary trauma

Bereaved victims
Death of loved one
Death of close friends, neighbors

Post-disaster phase

Injured
Pain, rehabilitation, physical disability

Disaster-impacted community at large
Massive destruction
Desperate search for missing persons
Lack of basic needs
Loss of community function
Disruption of services
Diminished social support
Marital stress

Unemployed
Economic hardship
Lack of career identity
Inability to provide for dependents

Bereaved (loss of loved one in disaster)
Complicated grief

Disaster-displaced persons
Loss of home
Lack of shelter and safety
Relocation stress
Temporary housing
Crowding

Psychiatric "Peritraumatic" symptoms
Dissociation
Panic, extreme distress
Depression

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Post-disaster mental health problems

A range of post-disaster mental health problems has been documented including posttraumatic stress disorder, major depressive disorder and complicated grief disorder, substance abuse, and physical illness.

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Mental Health: *Firemen and Policemen* Post-Katrina

- Of 525 firefighters, 114 (22%) reported symptoms consistent with PTSD, and 133 of 494 (27) reported major depressive symptoms
- Of 912 police officers, 19% (170) reported PTSD symptoms and 26% (227 of 888) reported major depressive symptoms

PTSD = posttraumatic stress disorder.
Centers for Disease Control and Prevention (CDC). *MMWR Morb Mortal Wkly Rep*. 2006;55(16):456-458.

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US Mass Shootings 1984–2018

The Sun Holly Christodoulou and Becky Pemberton 30th June 2018,

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Virginia Tech

- On April 16, 2007, in the worst campus shooting incident in U.S. history, 49 students and faculty at Virginia Polytechnic Institute and State University (Virginia Tech) were shot, of whom 32 were killed.
- A cross-sectional survey of 4,639 Virginia Tech students was carried out the following summer/fall to assess PTSD symptoms using the Trauma Screening Questionnaire (TSQ). High levels of posttraumatic stress symptoms (probable PTSD) were experienced by 15.4% of respondents 3 to 4 months following the shooting
- The exposures that explained most of the cases of high posttraumatic stress symptoms were inability to confirm the safety of friends (30.7%); death of a (not close) friend (20.3%); and death of a close friend (10.1%).

Hughes, M., Brymer, M., Chiu, W. T., Fairbank, J. A., Jones, R. T., Pynoos, R. S., Rothwell, V., Steinberg, A. M., & Kessler, R. C. (2011, July 18). Posttraumatic Stress Among Students After the Shootings at Virginia Tech. Psychological Trauma: Theory, Research, Practice, and Policy. Advance online publication. doi: 10.1037/a0024565

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Posttraumatic stress disorder (PTSD)

- Strong predictors of developing PTSD include serious physical injury, imminent threat to life, severe property damage, and high death toll.
- Overall, studies of natural disasters report PTSD prevalence rates ranging from 3.7% to 60% in the first 2 years after the disaster, with most studies reporting prevalence estimates in the lower half of this range (Neria et al., 2008)
- Prevalence rates of PTSD are higher for human generated acts of mass violence compared with natural disasters.

PSYCHOLOGICAL IMPACTS OF NATURAL DISASTERS
James M. Shultz, Yuval Neria, Andrea Allen, Zelde Espinel 2013

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Risk Factors for PTSD after Major Disaster

- Severe exposure to the disaster
- Living in a highly disrupted community
- Female gender, middle age, ethnic minority
- Poverty or low socioeconomic status
- Presence of children in the home
- Presence of a distressed spouse
- Psychiatric history
- Impoverished support system

Norris et al, 2002

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6 Psychosocial Factors That Protect Against and Aid Recovery from Posttraumatic Stress

Factor: Definition

1) **Active coping style**: Problem-solving and managing emotions that accompany stress; learning to face fears
2) **Physical exercise**: Engaging in physical activity to improve mood and health
3) **Positive outlook**: Using cognitive-behavioral strategies to enhance optimism and decrease pessimism; embracing humor
4) **Moral compass**: Developing and living by meaningful principles; putting them into action through altruism
5) **Social support**: Developing and nurturing friendships; seeking resilient role models and learning from them
6) **Cognitive flexibility**: Finding good in adverse situations; remaining flexible in one's approach to solving problems

Haglund M, et al. 6 keys to resilience for PTSD and everyday stress. *Current Psychiatry*. 2007;6(4):23-30.

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Increased Morbidity With PTSD

	% Rates	
	PTSD	Non-PTSD
Psychiatric		
GAD	53	9
Major depression	30	4
Somatization	12	0
Drug abuse/dependence	9	1
Medical		
Bronchial asthma	13	5
Peptic ulcer	13	4
Hypertension	31	18

Davidson JR, et al. *Psychol Med.* 1991;21:713-721.

Major Depressive Disorder (MDD)

- Several disaster-related stressors increase the risk for MDD in disaster survivors: **death of a loved one, displacement, relocation, lack of social support, and being alone.**
- Estimates of post-disaster MDD vary and frequently do not exceed expected rates of depression in the general population
- Prevalence is higher for persons with more intense disaster exposure.
  - For example, 14 months following an earthquake in Turkey, MDD prevalence was 16% for persons near the epicenter compared to 8% for persons away from the center(Başoğlu et al., 2007).

PSYCHOLOGICAL IMPACTS OF NATURAL DISASTERS
James M. Shultz, Yuval Neria, Andrea Allen, Zelde Espinel 2013

Complicated Grief
Prolonged Grief Disorder ICD11
Persistent Complex Bereavement Disorder DSM5

- ICD11-The grief response has persisted for an atypically long period of time following the loss (more than 6 months at a minimum) and clearly exceeds expected social, cultural or religious norms for the individual's culture and context.
- Complicated grief shares characteristics with posttraumatic stress, such as preoccupation with what has been lost, or avoidance of its reminders. Intrusive thoughts, feelings, and images associated with the loss are also common. Although at the time of the disaster it may be difficult to determine who will and who won't develop complicated grief, it doesn't hurt to keep in mind that when grief isn't worked through

Center for Complicated Grief
https://complicatedgrief.columbia.edu/professionals/complicated-grief-professionals/overview/

Domestic Violence

- Domestic violence may increase in communities that experience disaster.
- This increase may be related to stressors experienced after a disaster, such as housing or employment losses. Such occurrences may result in a perpetrator feeling a loss of control, which may then be followed by the perpetrator using abusive behavior to try and gain back control in personal relationships.
- Domestic violence that is ongoing before a disaster may be exacerbated or may increase following a disaster.

w Substance Abuse and Mental Health Services Administration (SAMHSA), US Department of Health and Human Services (HHS).

Statistics About Substance Abuse Following Disasters

- Numerous studies about different disaster all over the world show the same thing.
- When a disaster happens the rates of substance abuse and even addiction go up.
  - In New Orleans, hospitalizations for substance abuse increased 2.5% in the years following Hurricane Katrina
  - Following 9/11, alcohol consumption went up 24.6%, smoking went up 18%, and marijuana use went up 3% among New Yorkers
  - After the devastating earthquake in Haiti, the rate of substance addiction went up more than 4%

http://www.ghjournal.org/mental-health-in-haiti-beyond-disaster-relief/#

w http://headsup.scholastic.com/students/scientists-find-a-connection-between-911-and-substance-abuse

Post-disaster Mental and Behavioral Health Interventions

One of the major aims of early post-disaster intervention is to reestablish a sense of safety and calm (Psychological First Aid), whereas intermediate (Skills for Psychological Recovery) and long-term interventions (Cognitive Behavioral Therapy) focus on acquiring coping skills and ameliorating psychopathological presentations.

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Stepped Care Model

- The stepped care model is a non-pathologizing approach.
- It begins with a period of monitoring followed by the use of increasingly intensive treatments as the need for such interventions is determined.
- This model is resource efficient as it provides best practice care only to those who need it.
- It also promotes the normal recovery process.

The Australian Centre for Posttraumatic Mental Health (ACPMH)

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What Helped After A Disaster? Survivors' Perceptions

- Helpline 93%
- Support group 83%
- Reunion 83%
- Individual therapy 44%
- Medication 28%
- Group therapy 14%

c (Hull et al, BJP 2002; 181: 433-438)

PFA Core Actions

- **Contact and engagement**
- **Safety and comfort**
- **Stabilization (if needed)**
- **Information gathering: current needs and concerns**
- **Practical assistance**
- **Connection with social supports**
- **Information on distress reactions and coping**
- **Linkage with collaborative services**
- **A component of a disaster system of care**

Melissa Brymer, Psy.D.; Director, Terrorism & Disaster Programs
National Center for Child Traumatic Stress: UCLA/Duke University
http://www.nctsnet.org/

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Skills for Psychological Recovery (SPR)

CONCERN	PRIMARY SPR INTERVENTION	SECONDARY SPR INTERVENTION
Having a difficult problem that I need to solve.	PROBLEM SOLVING	• HEALTHY CONNECTIONS • HELPFUL THINKING • LINKAGE WITH ANCILLARY SERVICES
Having upsetting reactions to things that happen.	MANAGING REACTIONS	• HEALTHY CONNECTIONS • HELPFUL THINKING
Not having enough people that care about me or can help me out.	HEALTHY CONNECTIONS	• ACTIVITY SCHEDULING • HELPFUL THINKING
Not doing enough positive and pleasurable activities.	ACTIVITY SCHEDULING	• PROBLEM SOLVING • HEALTHY CONNECTIONS
Having upsetting thoughts that make me feel bad.	HELPFUL THINKING	• MANAGING REACTION • ACTIVITY SCHEDULING
Having a serious physical health problem; a serious mental health condition; a serious substance abuse problem; significant current hardships and adversities.	LINKAGE WITH ANCILLARY SERVICES	• PROBLEM SOLVING • HEALTHY CONNECTIONS • HELPFUL THINKING

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Cognitive-Behavioral Therapy (CBT)

- Prolonged exposure is the most common and effective form of CBT for PTSD
- Vivid, repeated recounting of traumatic event in presence of clinician
- Suggested treatment length is 10-15 sessions
  - Brief treatment (e.g. ≤ 6 sessions) is sufficient but may not maintain effect
- Emotional response gradually diminishes to safe level
- Able to confront fear-evoking reminders
- Exposure therapy effective in modifying anxiety and beliefs about danger
- Cognitive restructuring effective when PTSD is characterized by shame and guilt vs. fear

Schnurr et al. JAMA 2007;297(8):820-30
Sijrandij et al. Am J Psyc 2007;164(1):82-90
Zayfert and Becker. CBT for PTSD: A Case Formulation Approach 2007

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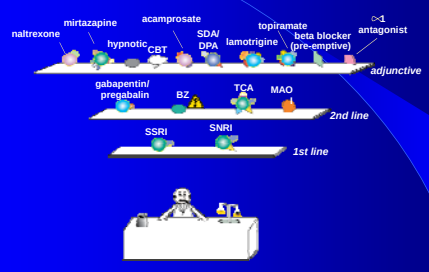
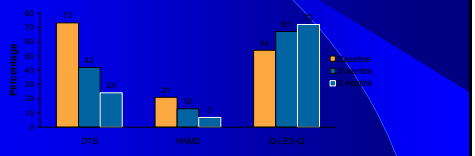


Sertraline and paroxetine are currently the only FDA-approved medications for PTSD. Some studies suggest prazosin, an alpha-1 blocker, can help nightmares.
Courtesy of Stephen Stahl, MD.

W

One Medication Example
Long-Term Effects of Sertraline in PTSD



DTS = Davidson Trauma Scale; HAM-D = Hamilton Rating Scale for Depression Rating; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire.

Londborg PD, et al. *J Clin Psychiatry*. 2001;62(5):325-331.

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Pharmacotherapy for PTSD

- Pharmacotherapy improves core PTSD symptoms and quality of life
- Longer duration of treatment is associated with better outcome
- Controlled data are limited and more studies are needed to evaluate other pharmaco-therapeutic agents

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Disasters disrupt mental health /care services.

- The shutting of inpatient psychiatric units and hospitals and outpatient clinics.
- Pharmacies may be closed or their supply chains interrupted, resulting in patients not receiving their medications.
- Problems with transportation infrastructure may make it difficult to get to appointments.

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Severely Mentally ill

- According to the National Institute of Mental Health, 26.2% of the US adult population will experience a mental disorder within a given year
- 22.3% of those (5.8% of the US adult population) diagnosed as severely mentally ill.
- Available regional statistics suggest prevalence rates are slightly higher in the Southeastern US, especially in areas of poverty, rural areas and among those with comorbid physical health conditions.

Addressing the Needs of the Seriously Mentally Ill in Disaster

- **Persons with serious mental illness are vulnerable to disasters.**
  - **Less prepared**
  - **Onset of new and recurrent symptoms**
- **Disasters disrupt mental health care and services**
  - **Loss of caretakers**
  - **Mental health services are disrupted**
  - **Loss of hospitals and care facilities**
  - **Increased demand for mental health services**

Helping Families Deal with the Stress of Relocation After a Disaster

- Basic information about stress,
- Signs of and ways to help family members deal with relocation stress,
- Signs of stress in young people of different age groups (preschool to high school age),
- Ways to help young people deal with stress (preschool to high school age),
- How to help the elderly deal with relocation stress, and
- Where to find further information on these topics.

https://www.atsdr.cdc.gov/emes/health_professionals/do

SAMHSA Behavioral Health Disaster Response Mobile App

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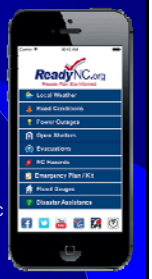
ReadyNC mobile app

- Current weather conditions
- Real-time traffic conditions where you are, by route or region
- Where to report nearby power outages
- Open shelters near you (including ones which accept pets)
- Counties being evacuated
- How to prepare for and be safe during typical hazards that impact NC
- How to create an emergency plan and kit
- Real-time stream and river flooding information
- Who to call for help when disasters strike



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