Disaster Mental Health

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Educational Objectives

At the end of this session, physicians will be able to

1. Describe typical mental health reactions immediately after a disaster.
2. Describe the role of mental health immediately after a disaster.
3. Name the most common new onset mental health disorders that occur three months and longer after a disaster.
4. Describe the role of mental health after the first three months post disaster.

Trauma Review

- Trauma is the emotional and physical response to **experiencing or witnessing an event that is dangerous, frightening, or life-threatening.**.
- **Individual trauma** is a **single event** that occurs to one person, such as, a physical assault.
- **Mass trauma affects large numbers of individuals, either directly or indirectly,** such as, the 9/11/2001 terrorist attack in New York City.
- **Historical or generational trauma** is trauma experienced by a specific cultural, racial, or ethnic group prior to present day, such as, the enslavement of Black Americans.
- **Secondary trauma** is experiencing trauma-related psychological and physical symptoms in response to **helping others who have experienced traumatic events**.

https://www.acf.hhs.gov/trauma-toolkit/trauma-concept

Trauma Review (2)

- Complex trauma for individuals results when the trauma is prolonged or repeated (Herman, 1992).
- **Trauma spectrum disorders include PTSD and a subgroup of major depression** (Bremner, 2002).
- **Trauma spectrum disorders** are **related to psychological trauma, usually in childhood and share an underlying neurobiological footprint** (Bremner, 1999, 2002, 2016) with **high symptom overlap**, and are **often co-morbid.**

PTSD Review

- PTSD has a lifetime incidence of 6.1% in the US adults.
- Multiple factors are implicated in the etiology of PTSD, including genes, epigenetic regulation, neuroendocrine factors, inflammatory markers, autonomic risk and resilience, and sleep disturbances.
- There are many risk factors for PTSD, including **exposure to trauma at a younger age, a high number of adverse childhood experiences, and a previous diagnosis of a mental disorder** (Isaacson, 2020).
- The four-component concept of vulnerability and resilience to stress-related mental disorders is based on gene-environment interactions during critical phases of perinatal and juvenile brain development. The components are **genetic predisposition, early-life adversity, traumatic event and social context of the traumatic event.** The model is consistent with the cumulative stress hypothesis that vulnerability is enhanced when failure to cope with adversity accumulates.

Auxéméry, 2012; Daskalakis, Bagot, Parker et al., 2013

The Study Of Disaster Mental Health Effects Is Relatively New

- Behavioral changes after combat were recorded in *The Epic of Gilgamesh,* the oldest known written poem (2000 BC) and the Bible.
- Observations of mental health symptoms after disasters were first recorded during studies of 18th century England's railway disasters (Crocq & Crocq, 2000).
- **Disaster relief in the US started after the American Red Cross organized relief for survivors of the 1881 Michigan wildfire**. More information on early US disaster relief is in the Appendix..
- Secondary trauma among industrial accident rescue workers was recorded during the early 1900's by a French psychiatrist (Ursano & Norwood, 1997).
- The organized study of disasters started in the 1950's as a component of Cold War readiness planning (Tierney, 2007).
- **Disaster mental health started with the creation of the disaster mental health initiative by the American Red Cross and the mobilization of Red Cross disaster mental health teams in response to Hurricane Andrew in 1992.**

Natural Disasters

- The US Federal Emergency Management Agency (FEMA) defines disaster as, " an event in which a community undergoes severe danger and incurs, or is threatened to incur, such losses to persons and/or property that the resources available within the community are severely taxed" (https://training.fema.gov/emiweb/downloads/sdd/handout%202-1.pdf).
- Disasters can be natural (earthquake) or man made (industrial accident).
- **Virtually 100 percent of people exposed to disasters, both natural and man-made, experience some degree of psychological distress** (Everly & Lating, 2004).
- **The mental health response to natural disasters differs in severity and course compared to the mental health response to man made disasters** (Makwana, 2019).
- **A world-wide survey found about 7% of adults report natural disaster related trauma** (Benjet, Bromet, Karam et al., 2016), .

Wildfires As A Natural Disaster, An Evolving Story For This Century

- **Wildfires are increasing around the globe in frequency, severity and duration,** heightening the need to understand the health effects of wildfire exposure (https://www.who.int/health-topics/wildfires)

- The long-term mental health impacts of wildfires have received relatively limited attention (Belleville, Ouellet, Lebel et al., 2021).

- **US wildfires are getting longer, fiercer, and more costly to contain.** Wildfires have burned an average of 7 million U.S. acres every year since 2000 **doubling the average** from 1960 to 1999.

- U.S. wildfire seasons now last **an average 76 days longer** than in the 1970s and 1980s. Before 1986, a wildfire was contained on average in less than eight days. Since then, the average wildfire has burned for 37 days

https://facethefactsusa.org/facts/the-national-burn-rate-is-going-up--literally/

Mental Health Effects of Natural Disasters

- **Although almost all people exposed to disasters experience psychological distress** (Everly & Lating, 2004), **the majority will do well over time** and recover to previous levels of function.
- **Some may experience an increased sense of efficacy** and the belief in their ability to manage future challenges, often termed **post-traumatic growth**.
- **The mental health effects of disasters begin immediately** following the event and may persist for **extended periods of time**, **extend beyond the geographic region directly impacted by the event**, and are experienced within the broader culture and context of a community.

Morganstein & Ursano, 2020

Disaster Survivors That Need Immediate Mental Health Assistance

- **A previous mental health disorder increases the risk of recurrence and exacerbation following a disaster** (Morganstein & Ursano, 2020).

- **Survivors with pre-existing mental health disorders can be especially vulnerable after disasters; they may need immediate mental health evaluation and treatment to prevent deterioration.**

- Others who need evaluation during the immediate phase are (1) people with **severe symptoms** (thought disturbances, dissociative episodes, extreme arousal or mood lability) **and impaired functioning**, (2) **people with acute risk of harm to self or others**, including suicidality, homicidal ideation and inappropriate anger and threats of violence and (3) people with **disabling and durable mental health symptoms that do not respond to general support.**

Vernberg & Varela, 1998

Mental Health Effects of Natural Disasters (2)

- **Distress reactions are the most common** reaction following natural disaster.
- **Post disaster Insomnia is highly prevalent and increases risk for other psychosocial problems** (Zhen, Quan, Zhou, 2018; Hall Brown, Akeeb, Mellman, 2015. Mellman, David, Kulick-Bell et al., 1995).
- **Maladaptive coping strategies to manage distressing emotions**, such as, **increased use of alcohol and other substances** (Beaudoin, 2011; Fullerton, McKibben, Reissman et al., 2013), **using substances for the first time** (Orui, Ueda, Suzuki et al., 2017), and **social isolation** (West, Bernard, Mueller et al., 2008) often increase after a disaster.
- **Immediate mental health symptoms post disaster include insomnia, trauma symptoms and grief.**

Morganstein & Ursano, 2020

Acute Insomnia Is Prevalent Among Disaster Survivors

- **Studies of acute insomnia are limited, especially in disaster populations**. However, one study of Greek wildfire survivors found **63.0% reported insomnia one month after the wildfire** (Psarros, Theleritis, Economou et al., 2017).
- Acute insomnia occurs when sleep is disrupted by a life event or events that cause distress and lasts from three days to three months.
- **Acute insomnia is considered a normal part of hyperarousal, the sympathetic activation of the fight or flight response and a necessary override to the normal regulation of sleep**. If it is not safe to sleep, one should not sleep, regardless of the duration of prior wakefulness and time of day.
- The physiology of hyperarousal is usually time limited.
- **If insomnia persists for longer than 3 months, the insomnia symptom become learned behavior and are likely to increase the risk of future mental health disorders**.

Vargas, Nguyen, Muench et al., 2020

Trauma Symptoms

- **Most disaster survivors will experience trauma symptoms immediately after a disaster**.

- **Trauma symptoms consist of (1) re-experiencing** (nightmares, flashbacks, trauma reminders), **(2) avoidance** (especially of trauma reminders), **(3) negative thoughts and feelings** (numbness, increased sense of danger, guilt or shame) and **(4) hyperarousal** (anxiety, anger, irritability, difficulty concentrating and increase in risky behaviors such as smoking, alcohol or drug use and risky driving) https://www.ptsd.va.gov/understand/what/ptsd_basics.asp.

- To qualify for a diagnosis of **Acute Stress Disorder, a person must experience nine trauma symptoms from 3 days to one month after the disaster.**

https://www.ptsd.va.gov/professional/treat/type/violence_trauma_effects.asp

Prior Trauma Is Common And May Increase The Severity Of The Initial Disaster Response And Long-Term Mental Health Effects

- **Over 70% of adults surveyed in a world-wide study report a traumatic event in their lifetime and 30.5% report four or more**. The majority of the reported events were individual traumatic events (Benjet, Bromet, Karam et al., 2016).

- **Previous disaster trauma, previous non-disaster trauma and cumulative stress over the life course sensitizes stress responses** (Schumm, Stines, Hobfoll et al., 2005; McLaughlin, Koenen, Bromet et al., 2017; Altamore, Grappasonni, Laxhman et al., 2020; Lowe, Raker, Arcaya et al., 2020; Agyapong, Shalaby, Eboreime et al., 2022).

- **Having experienced traumatic events prior to the disaster puts an individual at greater risk for post-disaster new onset mental health disorders and reduces the likelihood of resilience** (Mitchell, 1983; Bonanno & Gupta, 2009; Maguen, Neria, Conoscenti et al., 2009; Goldmann & Galea, 2014).

Risk Of Post Traumatic Stress Disorder (PTSD) Varies By Type Of Trauma

- **Trauma symptoms of sufficient severity and type that persist one month after a traumatic event can be diagnosed as PTSD.**
- The **highest risks for PTSD** are observed in individuals exposed to **assaultive violence** (military combat, rape, captivity, torture or kidnapping)
- The **sudden unexpected death of a loved one** is associated with a **moderate risk** for PTSD and increased risk of depression and prolonged grief (Kristensen, Weisæth, Heir, 2012).
- The experience of accidents, **natural disasters**, or witnessing others being killed or injured is associated with **low PTSD risk** (Breslau, Chilcoat, Kessler et al., 1999).
- At least three other studies from different cultural settings have independently replicated these findings, showing that inter-personal traumatic events more often lead to PTSD than disaster events (Conrad, Wilker, Pfeiffer et al. 2017).

More information on the prevention of PTSD is included in the Appendix

PTSD Among Disaster Survivors

- The prevalence of **PTSD among disaster survivors is 30% to 40% (5 to 7 times the population prevalence) and the prevalence among disaster rescue workers is 10% to 20% (1.5 to 3 times the population prevalence**) (Galea, Nandi & Vlahov, 2006).
- About 13% to 22% of people with PTSD will develop chronic PTSD that can last for years (Kessler, Sonnega, Bromet et al., 1995; Norris, Tracy, Galea, 2009; Tang, Lu, Xu, 2018).
- Although there are multiple different interventions to prevent trauma and disaster related PTSD, none meet current evidence standards for efficacy.

Lotzin, Franc de Pommereau, Laskowsky, 2023).

Most Natural Disaster Related Trauma Symptoms Resolve Over A Year

- **About 20% of disaster survivors will experience trauma symptoms at a level of severity to qualify for a diagnosis of Acute Stress Disorder indicating a severe trauma response** (Geoffrion, Goncalves, Robichaud et al., 2022).
- The majority with disaster related trauma symptoms show improvement with time (Norris & Elrod, 2006)
- **Up to 50% of disaster survivors are PTSD resistant, never experiencing more than three PTSD symptoms**.
- About 10% to 32% disaster survivors are PTSD resilient; they report initial trauma symptoms that sharply decrease over time (Norris, Tracy, Galea, 2009).
- The downward trend of trauma symptoms over time is not observed with man-made disasters. **Survivors of man-made disasters qualifying for a PTSD diagnosis double over the first-year post disaster** (Santiago, Ursano, Gray et al., 2013).

https://www.ptsd.va.gov/professional/treat/type/violence_trauma_effects.asp

Grief Is A Part Of Disasters

- **Grief occurs after disasters and not only after deaths of loved ones.**
- **The loss of pets, prized possessions and general economic losses can trigger disaster related grief** (Lowe, Joshi, Pietrzak et al., 2015).
- **Grief immediately after a disaster usually does not require mental health treatment and is best addressed by providing material, emotional and social support.**
- **For most people, the symptoms of grief begin to decrease over time**. Only 7% to 10% of grieving adults will experience the persistent symptoms of grief at one year after the event (Szuhany, Malgaroli, Miron et al., 2021). More information on normalizing disaster related grief is included in the Appendix.

Disaster Mental Health: The Big Picture

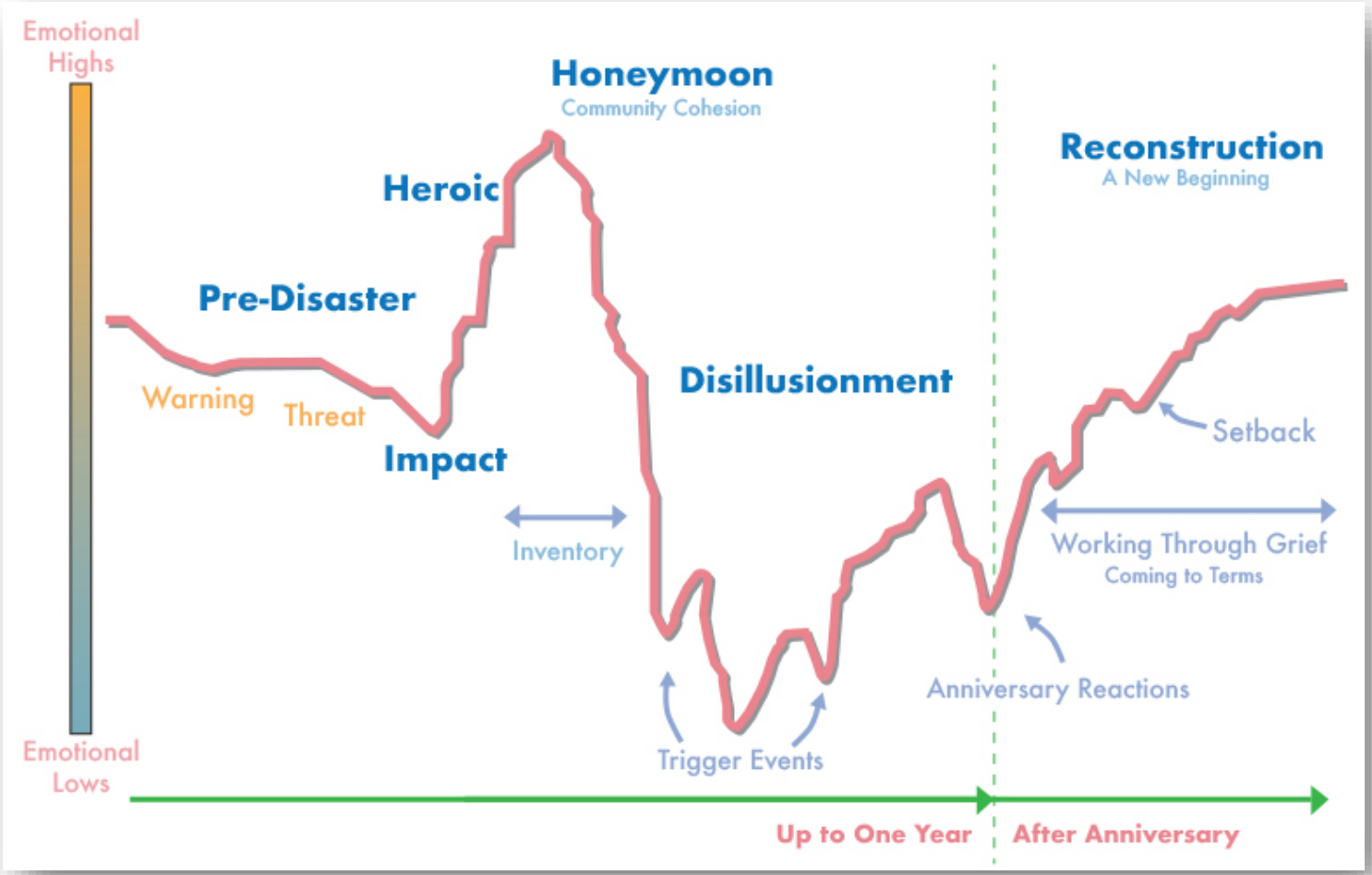
- **Immediate post disaster mental health symptoms are usually self-limiting and remit over several months** (Pietrzak, Tracy, Galea et al., 2012; Math, Nirmala, Moirangthem et al., 2015).

- Disaster mental health experts discourage pathologizing these reactions with a psychiatric diagnosis and formal mental health treatment, especially medication for this level of mental health symptoms.

- Mental health intervention immediately after a disaster is **population based general support to reduce distress among survivors. The FEMA recommended intervention for individuals is Psychological First Aid (PFA)** that focuses on calming individuals and connecting them with community resources. More information on immediate post-disaster public health messaging and PFAs included in the Appendix.

The Time Course Of Population Mental Health Response To Disaster

- Disaster population mental health phases are heroic, honeymoon, disillusionment and reconstruction.
- The time course of each phase varies.
- The type and prevalence of mental health symptoms also varies by phase.



Math, Nirmala, Moirangthem et al., 2015

The Heroic And Honeymoon Phases

- **The heroic phase is immediately after the disaster, survivors in the community usually show altruistic behavior** in the form of rescuing, sheltering, feeding, and supporting their fellow human beings.
- **The heroic phase usually lasts from a day to weeks** depending upon the severity of the disaster, the duration of exposure to traumatic events and availability of the relief resources.
- **The honeymoon phase provides a sense of relief and faith in community recovery among survivors**.
- Medical aid, food and shelter for the survivors, media attention, and VIP visits peak during this phase. The honeymoon phase usually **lasts for 2 to 4 weeks** (Math, Nirmala, Moirangthem et al., 2015).

The Disillusionment Phase

- The **disillusionment phase starts when VIPs and politicians' visits stop, media coverage reduces and relief efforts wane**.
- Survivors face the reality of the complex process of rebuilding and become aware of the hurdles to restoring their former life.
- **Long lasting mental health symptoms usually develop during this phase.**
- The **disillusionment phase can last for 3 to 36 months** before the community enters a stable reconstruction phase.
- **The role of mental health in identifying and treating disaster related new onset mental health disorders is central to mitigating the long-term mental health effects of the disaster for individuals and the community.**

Math, Nirmala, Moirangthem et al., 2015

After The First Three Months, Disaster Related New Onset Mental Health Disorders (Other Than PTSD) Start To Present

- **Disaster related mental health disorders that present three months after the disaster are considered long-term disaster effects** and usually require evaluation and treatment from mental health professionals (Math, Nirmala, Moirangthem et al., 2015).
- **Disaster related mental health disorders, especially depressive and anxiety disorders usually peak at one year after the disaster and then decline** (Goldmann & Galea, 2014).
- **Post disaster mental health disorders can persist for 3 to 20 years in the disaster affected community and affect the community's ability to recover** (Liu, Tan, Zhou et al., 2006; Ingram, Tinago, Cai et al., 2018; Tanaka, Tennichi, Kameoka et al., 2019).

Long Term Mental Health Effects Of Natural Disasters Vary Substantially

- **Long term mental health effects** vary by the **type of natural disaster** (storms, floods and earthquakes) and the **affected population**'s economic, health and educational status (Keya, Leela, Habib et al., 2023).

- **Contemporary studies of natural disasters find multiple types of DSM 5 disorders among 30% to 40% of adults who experienced the disaster one year later** (Madakasira & O'Brien, 1987; Norris, Friedman, Watson et al., 2002; Galea, Nandi & Vlahov, 2005; Guina, Baker, Stinson et al., 2017; Cénat, McIntee & Blais-Rochette, 2020; Belleville, Ouellet, Lebel et al., 2021).

- Meta-analytic studies consistently find rates of PTSD and depression (MDD) are significantly increased after disasters (Beaglehole, Mulder, Frampton et al., 2018; Keya, Leela, Habib et al., 2023).

The Concept of Simple And Complex Disaster Trauma

- **The prevalence of post-disaster mental health disorders is only weakly associated with objective disaster severity** (Galea et al. 2007, 2008; McLaughlin et al. 2009) because **secondary stressors unique to disaster type and site of the disaster often have more impact than the disasters themselves** (Galea et al. 2007).

- **Complex trauma for individuals results when the trauma is prolonged or repeated** (Herman, 1992).

- Simple disaster trauma is defined as experiencing or witnessing a disaster without experiencing secondary stressors during the next year

- **Complex disaster trauma is defined as experiencing or witnessing a disaster in addition to experiencing secondary stressors during the year after the disaster**, such as, loss of residence or source of income.

- **The amount and type of secondary stressors after the disaster are key to the development of new onset mental health disorders** (Bell, Boden, Horwood et al., 2017; Boden, Fergusson, Horwood et al., 2015).

Kessler, McLaughlin, Koenen et al., 2012

MDD Is Both A Trauma Spectrum And Stress Related Disorder

- **MDD frequently occurs as a new onset mental health disorder after a disaster and may be the most prevalent post disaster new onset mental health disorder** (Goldmann & Galea, 2014; Cénat, McIntee, Blais-Rochette, 2020).

- A history of depression significantly increases the risk of developing PTSD symptoms following natural disaster (Mao, Eboreime, Shalaby et al., 2022).

- **Stress affects the development of mental health disorders through several mechanisms**. **Prior stress can sensitize an individual's stress response and stress can be cumulative** (larger effects occuring as the number of stressors accumulate). Both effects occur for trauma disorders and MDD (McLaughlin, Rosen, Kasparek et al., 2022).

- **Depression may be conceptualized as the result of the chronic and cumulative effects of environmental stressors and the long-lasting effects of trauma** (Tang, Liu, Liu et al., 2014; Tafet & Nemeroff, 2016; Dworkin, 2020).

- Cumulative stress is an important concept for post disaster new onset MDD.

Disaster Mental Health Effects: A Met-analysis

- A recently published met-analysis combined 22 studies on the mental health effects of disasters (earthquake, flood and storm/cyclone) that used randomized population surveys.
- The study locations were dispersed across Asia, Europe, and America.
- The studies showed **significant variation in post-disaster new onset mental health disorder prevalence rates.**
- **The type of disaster affected the general prevalence of post disaster new onset mental health disorders**. Floods as a group had the smallest effects, with earthquakes next and storm/cyclones had the largest effect on post-disaster mental health disorder prevalence.

Keya, Leela, Habib et al., 2023

Disaster Mental Health Effects: A Met-analysis (2)

- The new onset mental health disorders attributed to the disaster include **generalized anxiety disorder (GAD), major depressive disorder (MDD), substance use disorders, adjustment disorder, and PTSD.**
- The **risk of new onset mental health disorder increased with secondary stressful events** of displacement and disruption of essential services.
- People who reported the **secondary stressful events of property damage were more likely to experience depression and anxiety**.
- People were more likely to experience new onset mental health disorders if they had pre-existing (cumulative) secondary stressors of **lower income levels, were unemployed, or had pre-existing medical conditions.**

Keya, Leela, Habib et al., 2023

The Concept of Simple And Complex Disaster Trauma (2)

- A met-analysis of World Health Organization Mental Health Surveys in 23 countries including 110,434 respondents found among natural disaster survivors **10.9% reported secondary stressors within the same year.**
- **Simple disaster trauma was not associated with post disaster new onset mental disorders;** an increasing risk was found for complex disaster trauma for each additional secondary stressor.
- The addition of one secondary stressor increased the risk by 30% and the risk nearly doubled with two or more secondary stressors.
- **The increased risk of anxiety and mood disorders after disaster exposure are due to secondary stressors.**

Kessler, McLaughlin, Koenen et al., 2012

The Concept of Simple And Complex Disaster Trauma (3)

- An analysis of secondary stress among survivors of Hurricane Katrina found that a substantial part of the post disaster new onset mental health disorders were **prolonged grief associated with personal losses** (Shear et al. 2011) and **anxiety and depression associated with the slow pace of recovery efforts** (disillusionment phase) providing housing, utilities and jobs (Galea et al. 2007).

- The clinical interventions that are likely to be most effective in treating prolonged grief and anxiety/depressive disorders (Shear et al. 2005) are different from interventions to prevent PTSD (Lotzin, Franc de Pommereau, Laskowsky, 2023; reviewed in Appendix).

- **Bottom line: The type of mental health intervention appropriate to disaster survivors depends on the disaster phase and the disorder.**

Kessler, McLaughlin, Koenen et al., 2012

Prolonged Grief Among Disaster Survivors

- Prolonged grief can interfere in the process of disaster recovery and has the functional effects of MDD (Freedman & Blumenfield, 1986).
- **Prolonged grief among disaster survivors can range from 9% to 80%**.
- A recent **meta-analysis found 49% of disaster deaths were associated with prolonged grief , but the prevalence was lower in natural disaster deaths** (Djelantik, Smid, Mroz et al., 2020).
- **Economic losses (secondary stress) and PTSD symptoms are risk factors for disaster related prolonged grief** (Math, Kumar, Maria et al., 2013).

Math, Nirmala, Moirangthem et al., 2015

The 2016 Fort McMurray Wildfires, The Most Well-Studied Wildfire

- The 2016 wildfires in Fort McMurray (Alberta, Canada) caused 2 deaths, displaced about 10% of the population and about 1% of the population lost their jobs. Damages cost $3.6 billion, the most expensive disaster in Canadian history (https://en.wikipedia.org/wiki/2016_Fort_McMurray_wildfire).

- A study estimated the prevalence of PTSD, MDD, insomnia, GAD and substance use disorders among adults 1 year after the disaster.

- **38% had a probable diagnosis of either PTSD, MDD, chronic insomnia, GAD, or substance use disorder, or a combination of these diagnoses**.

- Chronic insomnia disorder was the most common, with an estimated prevalence of 28.5%. PTSD, MDD and GAD were almost equally prevalent, with approximately 15% each. The estimated prevalence of substance use disorder was 7.9%.

- **The prevalence of long-term mental health disorders found in this study are at the upper range of disaster mental health studies** (Kessler, McLaughlin, Koenen et al., 2012).

Belleville, Ouellet, Lebel et al., 2021

The Maui Wildfire Secondary Stressor Prevalence

- FEMA estimated that **over 6,000 people have been displaced (about 4% of Maui residents) and a death toll of 97 and 66 missing as of September**.
- **The damage caused by the fire has been estimated at nearly $6 billion. Of 23 declared national disasters in the US during 2023, only three have exceeded $1 billion in estimated damages.**
- **10,448 new claims for unemployment occurred in Maui County four weeks post disaster** representing **more than 11% of those who were employed before the wildfires in Maui County.**
- **The number of Maui survivors who lost family members (both dead and missing) is currently unknown.** For every death, about nine people are affected by bereavement (Verderya, Smith-Greenaway, Margolisc et al., 2020) and about half of those bereaved will likely experience prolonged grief.

The Maui Wildfire Secondary Stressor Prevalence (2)

- The number of Maui survivors with secondary stressors likely already exceeds the 11% complex disaster trauma prevalence found in world-wide disaster survivors.

- The prevalence of secondary stressors of the Maui wildfire strongly exceed the Fort McMurray wildfire for deaths and missing (87x), economic loss (1.6x) and job loss (11x). Only the rate of displaced people is less among Maui survivors (40% of Fort McMurray displacement rate).

- **The Maui wildfires survivors, because of the high prevalence of survivors experiencing secondary stressors, are likely to develop new onset mental health disorders**, especially anxiety and depressive symptoms (including prolonged grief) six to twelve months after the disaster.

- **Improving resilience among Maui disaster survivors especially for at risk populations can reduce new onset mental health disorders,**

The Mental Health Response To The Maui Wildfire Is Just Beginning

- Programs to improve disaster survivor resilience.
- Increasing accessibility to mental health treatment resources: mental health treatment demand is likely to exceed the resources of Maui mental health providers, especially during early 2024.
- Public knowledge about prolonged grief as a mental health disorder and as a disaster related mental health disorder is limited.
- Public education and accessibility of treatment experts may be needed during early 2024, depending on the prevalence of prolonged grief experienced by Maui survivors.

Improving Disaster Survivor Resilience: Skills for Psychological Recovery

- Skills for Psychological Recovery (SPR) is an evidence-informed modular approach to help children, adolescents, adults, and families in the weeks and months following disaster, after the period where Psychological First Aid (PFA) has been utilized or when more intensive intervention than PFA is needed.
- SPR is not mental health treatment. **SPR provides resilience enhancing skills to disaster survivors**.
- Ideally, SPR should be offered to disaster survivors who are at increased risk of new onset mental health disorders.
- Youth (Rezayat, Sahebdel, Jafari et al., 2020) and people with chronic medical disorders are at high risk for new onset mental health disorders post disaster. The Appendix has more information on SPR and high-risk groups.

https://www.ptsd.va.gov/professional/treat/type/SPR/SPR_Manual.pdf

Educational Objectives

1. The majority of the mental health symptoms that occur during the first three months after a disaster are self-limiting and remit within two to three months. The most prevalent mental health symptoms during the acute phase are grief and non-specific general distress presenting as (1) subsyndromal trauma, anxiety and depressive disorders and (2) non-specific somatic symptoms.

2. Disaster mental health intervention immediately after a disaster is primarily population based general educational support to reduce distress among survivors, such as, Psychological First Aid.

Educational Objectives (2)

3. The most common new onset mental health disorders after a disaster are acute insomnia, acute stress disorder, post traumatic stress disorder and adjustment disorder that peak early in the post disaster period and chronic insomnia, generalized anxiety disorder, major depressive disorder and prolonged grief disorder that peak about one year after the disaster. New onset substance use disorders also occur, but usually present years after the disaster.

4. The role of mental health after the first three months post disaster is identification and treatment of new onset mental health disorders to mitigate the long-term effects of these disorders for individuals and the community.

Thank you!

Appendix

Native Hawaiian Historical Trauma

- Prior trauma sensitizes the intensity, duration and frequency of the response to current stress (Schumm, Stines, Hobfoll et al., 2005). Preliminary evidence supports that the prevalence of PTSD is greater among groups that experience historical trauma (McKinley, Scarnato, Liddell et al., 2019).

- Native Hawaiians comprise 11% of Maui residents (https://oceaniademographics.com/maui-population/).

- Native Hawaiians are at risk for re-traumatization of historical trauma by the Maui wildfires. If re-traumatization occurs, complex disaster trauma may be experienced.

- Loss of cultural resources from the burning of the Na'Aikane o Maui Cultural and Research Center may also re-traumatize Native Hawaiians

  (https://www.npr.org/2023/08/18/1194500944/priceless-connections-to-hawaiis-ancient-past-were-lost-when-cultural-center-burned).

- A resource to understand how the Maui wildfire affected Maui's Native Hawaiians with historical trauma is this link (https://www.hawaiipublicradio.org/local-news/2023-09-07/native-hawaiians-grapple-with-generational-trauma-in-wake-of-maui-fire).

Secondary Trauma

- **Secondary trauma** is experiencing trauma-related psychological and physical symptoms in response to **helping or empathizing with others who have experienced traumatic events** (https://www.acf.hhs.gov/trauma-toolkit/trauma-concept).

- **10% to 20% of people who paricipate in disaster relief will develop post traumatic stress symptoms** (Galea, Nandi, Vlahov, 2005).

- The prevalence of traumatic stress symptoms among non-professional rescue workers tends to be higher than professional rescue workers (Stellman, Smith, Katz et al., 2008; Lee, Kim, & Kim, 2020).

Trauma Spectrum Disorders

- Include **PTSD, a subgroup of major depression, BPD, and DID** (Bremner, 2002).
- This group is **related to psychological trauma, usually in childhood, share an underlying neurobiological footprint** (Bremner, 1999, 2002, 2016) with **high symptom overlap**, and are **often co-morbid**.
- **Brain circuits and systems involved in the stress response and fear memory are affected** (Bremner, Krystal, Southwick et al., 1995).
- The hippocampus is sensitive to stress. **Hippocampal volume has been a particularly useful marker of the trauma spectrum disorders** (Bremner & Vermetten, 2012).
- **Brain imaging studies** in patients with PTSD and other stress-related psychiatric disorders **corroborated the initial hypotheses** (Bremner, 2003), and **another decade of research replicated those initial studies**

Campanella & Bremner, 2016

The Variability of Trauma Response

- **Only a minority of individuals who experience a traumatic event subsequently develop psychopathology**.
- Why some individuals develop a psychiatric disorder after trauma and others do not remains obscure.
- **It is also not well understood why some develop PTSD, although others develop depression or another disorder**.
- In most cases, the manifestation of one or more trauma spectrum disorders in response to trauma is influenced by a complex interplay of preexisting vulnerabilities, including genetic predispositions, personality styles, and experiences, as well as psychological and situational factors at the time of the trauma and in the trauma's aftermath.

Heim, Bremner, Nemeroff, 2016

The Varibility of Trauma Response (2)

- **Exposure to trauma is strongly linked to the onset and exacerbation of an array of psychological sequelae.**
- **Studies yield minimal evidence of specificity** for one disorder emerging in the aftermath of trauma (Gibson, Cooper, Reeves et al., 2017).
- It is crucial to identify vulnerability and resilience factors, including genetic factors.
- Studies on the genetics of trauma spectrum disorders have been hampered by many factors, such as **genetic heterogeneity** (a similar phenotype develops from different genotypes) and **incomplete penetrance** of the phenotype (a person with genetic risk for PTSD, who is not exposed to trauma, will not develop PTSD).
- Despite these difficulties, **evidence is accumulating that exposure to trauma and pathological responses to trauma are influenced by genetics.**

Heim, Bremner, Nemeroff, 2016

First US Disaster Relief Efforts

- **The American Red Cross was established in 1881 and provided disaster relief to 1881 Michigan Wildfire** donating money, clothes and furniture to victims. The fire claimed almost 300 lives and left thousands homeless. Red Cross chapters collected food and supplies, which were shipped to Michigan to help assist the 14,000 people in need.

- In 1889, a dam collapsed near Johnstown, Pennsylvania, sending millions of gallons of water toward the town of 30,000 people. More than 2,000 people died, hundreds were missing and tens of thousands were left homeless. **The Red Cross sent a team of doctors, nurses and relief workers to set up hospital tents, feeding stations and their first sheltering operation with "Red Cross hotels" to house the people whose homes were destroyed**. A team of 50 volunteers remained in Johnstown for months, helping the survivors get back on their feet.

(https://www.redcross.org/about-us/news-and-events/news/2021/when-disasters-happen-red-cross-volunteers-spring-into-action.html.).

Recommended Population Based Messaging For Disaster Survivors To Reduce General Distress During The Acute Phase

- Talk to another person for support and spend more time with others than usual.
- Engage in positive distracting activities (sports, hobbies, reading).
- Get adequate rest and eat healthy meals.
- Maintain a normal schedule.
- Schedule pleasant activities more than usual.
- Take breaks.

VA_NCPTSD_All_508.pdf

Recommended Population Based Messaging For Disaster Survivors To Reduce General Distress During The Acute Phase (2)

- Focus on something practical that you can do right now to manage the situation better.
- Use relaxation methods (breathing exercises, meditation, calming self-talk, soothing music) more than usual.
- Participate in a support group.
- Exercise in moderation.
- Keep a journal, writing about trauma is therapeutic.
- Seek counseling, if you think you need it.

VA_NCPTSD_All_508.pdf

Normalizing Disaster Grief

- The following messaging (both public and directed to individuals) can support survivors experiencing grief.
  - Everyone who sees or experiences a disaster is affected by it in some way.
  - Profound sadness, grief and anger are normal reactions to an abnormal event.
  - Acknowledging your feelings helps you recover.
  - Focusing on your strengths and abilities helps you heal.
  - Accepting help from community programs and resources is healthy (https://www.ready.gov/coping-disaster).
- Normalization of disaster grief can be facilitated by **prompt and proper closure of the disaster related missing people**, supporting the **community's cultural and religious rituals of grieving** and facilitating **community grieving through memorial or remembrance events.**

Math, Nirmala, Moirangthem et al., 2015

Psychological First Aid (PFA) Is The FEMA Recommended Approach To Reducing Disaster Survivor Distress Immediately After A Disaster

- PFA is the flagship early intervention for disaster survivors, with recent adaptations for disaster responders, in the post-9/11 era.
- PFA is broadly endorsed by expert consensus and integrated into guidelines for mental health and psychosocial support in disasters and extreme events (Schultz & Forbes, 2013).
- PFA Online is 5-hour interactive online course that helps participants learn the core actions of PFA and describes ways to apply them in different post-disaster scenarios and with different survivor needs (https://learn.nctsn.org/course/index.php).

PFA: Five Essential Elements

- **Promote Physical And Psychological Safety**: a gentle. compassionate approach, inquiries about emotional safety and providing accurate support information.

- **Promote Calm:** Disasters create multiple losses concurrently causing feelings of anxiety which can interfere with sleep, decision-making, and effective coping. Letting survivors know that these feeling are normal can help reduce anxiety.

- **Promote Self and Community Efficacy:** Disaster research shows that loss of personal, social, and economic resources can lead to a diminished perception of self-efficacy and confidence in the ability to recover. Encourage individuals to carry on regular activities as much as possible and find opportunities to participate in community or group activities

https://carcpd.ab.ca/documents/pfa_online_training_workbook_v1-final_2020-04-14_2021-03-03.pdf

PFA: Five Essential Elements (2)

- **Promote Connectedness:** Social support improves emotional well-being and recovery. It's important to involve, engage, and connect with everyone increasing the quantity, quality and frequency of supportive interactions.

- **Instill Hope**: instilling hope is a crucial component in disaster recovery. Helping impacted individuals envision a challenging but realistic future can instill hope and optimism. (https://carcpd.ab.ca/documents/pfa_online_training_workbook_v1-final_2020-04-14_2021-03-03.pdf).

- The five essential elements are based on expert consensus and evidence (Hobfoll, Watson, Bell et al., 2021; Hobfoll, Watson, Bell et al., 2007).

Every Member Of The Health Care Team Needs To Know Psychological First Aid

- Leaving the required psychological support of patients to social work departments or to psychiatrists is, in essence, an abdication of one's responsibilities to care for the entire patient.
- Victims of disasters and terrorist events are often in a state of psychological shock and need the expertise, guidance, and leadership of physicians.
- Even in basic first aid texts, part of the treatment for psychological shock is to provide reassurance. The texts do not say "call the psychiatrist to provide reassurance." They say, reassure the victim.

Mitchell, 2004

Every Member Of The Health Care Team Needs To Know Psychological First Aid (2)

- In any case, there are insufficient numbers of mental health professionals who can be called upon to provide the simple things people need most when experiencing a disaster.
- Most patients would resent the introduction of mental health personnel into their care if all they really needed was information and guidance.
- They would most likely view such an unwarranted insertion of mental health personnel into their lives as intrusive and an indication that they are not being taken seriously

Mitchell, 2004

Mental Health After A Disaster: The First Three Months

- **Few disaster survivors develop new onset mental health disorders during the first 3 months after a disaster** (Math, John, Girimaji et al., 2008).
- **Disaster survivors during the first 3 months will report a mixture of trauma, anxiety and depressive symptoms that are not severe or persistent enough to warrant a DSM 5 diagnosis** (McFarlane, Van Hooff, Goodhew, 2009; Goldmann & Galea, 2014; Math, Nirmala, Moirangthem et al., 2015; Guina, Baker, Stinson et al., 2017).
- **Disaster survivors also report non-specific somatic symptoms (headaches, backaches, GI symptoms) during this time period that can persist for years after the disaster** (Goldmann & Galea, 2014).

Norris, Friedman, Watson et al., 2002; Smith, North, McCool et al., 1990

Prevention Of Disaster Mental Health Effects

- Primary prevention aims to prevent disease before it occurs, one of the primary prevention methods is increasing resistance to the disease if exposure occurs.
- **Twenty-two brief psychological interventions have been developed to promote mental health recovery and reduce distress or subclinical symptoms secondary to disasters and other types of trauma**.
- A systemic review of those interventions found some support for the efficacy of disaster prevention intervention. However, the number of studies and the number of study participants did not meet current evidence standards for efficacy (Lotzin, Franc de Pommereau, Laskowsky, 2023).
- **The FEMA recommended disaster mental health intervention, Skills for Psychological Recovery (SPR)**, for managing post disaster distress and subclinical symptoms and increasing resilience was developed by the National Center for PTSD and the National Child Traumatic Stress Network.

https://www.ptsd.va.gov/professional/treat/type/SPR/SPR_Manual.pdf

Skills for Psychological Recovery (SPR)

- **SPR is designed to help survivors gain skills to reduce ongoing distress and effectively cope with post-disaster stresses and adversities**.

- SPR is based on an understanding that disaster survivors will experience a broad range of reactions (physical, psychological, behavioral, spiritual) over differing periods of time.

- While many survivors will recover on their own, some will experience distressing reactions that interfere with adaptive coping.

- Compassionate, caring, and informed providers may help these survivors recover by introducing them to the applicable SPR skills.

- SPR is designed for delivery by mental health and other disaster response workers who provide ongoing support and assistance to affected children, families, and adults as part of an organized disaster response effort.

https://www.ptsd.va.gov/professional/treat/type/SPR/SPR_Manual.pdf.

SPR Online Course

- SPR is a 5-hour interactive course designed for providers to help survivors gain skills to manage distress and cope with post-disaster stress and adversity.
- This course is for individuals who want to learn about using SPR, learning the goals and rationale of each core skill, delivering SPR, and supporting survivors in the aftermath of a disaster or traumatic event.
- This 5-hour interactive online course offers 5 CEs upon completion.

https://learn.nctsn.org/enrol/index.php?id=535

Youth Are At High Risk Of Developing Post Disaster Mental Health Disorders

- **Youth exposed to disasters are particularly vulnerable to** anxiety (PTSD, panic, phobias) and depression but also acute stress reactions and adjustment disorder.
- **Elevated vulnerability among youth may be a function of their being less equipped to cope with what they have experienced** (Williams, Alexander, Bolsover et al., 2008; Goldmann & Galea, 2014; Khorram-Manesh, 2022).
- **Youth are also more vulnerable to experience prolonged grief**. For a diagnosis of prolonged grief disorder, the loss had to have occurred at least a year ago for adults, and **at least 6 months ago for children and adolescents** (https://www.psychiatry.org/patients-families/prolonged-grief-disorder).
- **Children's mental health recovery in a post-disaster setting can serve as a bellwether indicator of successful recovery or as a lagging indicator of system dysfunction and failed recovery.**

Abramson, Park, Stehling-Ariza et al., 2010

People With Chronic Medical Disorders Are Also At High Risk

- Hawaii Department Of Health estimates that **82% of Hawaiian adults have at least one of the following chronic diseases**: **heart disease, heart attack, stroke, diabetes, asthma, cancer, chronic obstructive pulmonary disease, high blood pressure, high blood cholesterol or obesity** and almost **17% of adults in Hawaii have 4 or more chronic diseases**.

- **People with chronic general medical conditions are at high risk of developing a new onset long term mental health disorder after a disaster** (North, 2003; Keya, Leela, Habib et al., 2023).

- Maui disaster survivors with chronic medical disorders (especially those with multiple chronic medical conditions) ideally should be offered secondary prevention, such as, SPR.

Long Term Disaster Mental Health Disorder Risk Factors

- Disaster related risk factors are the **severity of the disaster, threat to life, loss of life, and duration of exposure** (Frankenberg, Friedman, Gillespie et al., 2008).
- Individual characteristic risk factors are **female gender, youth, elderly, physically disabled, single, ethnic minority, displacement, poverty, substance use including smoking, chronic health disorders, loss of economic livelihood, poor social and family support** (Norris, Friedman, Watson et al., 2002).

Disaster Related Risk Factors Of The Maui Wildfires

- Severity of the economic disaster effects (The Maui wildfires are one of 23 confirmed US weather/climate disaster events with losses exceeding $1 billion for 2023 and **one of three that exceed $5 billion in estimated damages)** (https://www.ncei.noaa.gov/access/billions/).
- **Severity of loss of life** (**most severe Hawaiian natural disaster in loss of life since the April 1, 1946 Hilo Bay tsunami that caused 165 deaths** (https://www.independent.co.uk/climate-change/news/maui-hawaii-wildfires-history-b239)
- The most severe wildfire since the 2018 Northern California Camp Fire that caused 88 deaths and destroyed more than 18,500 structures and cost an estimated $15 billion damages (https://www.c2es.org/2019/02/record-wildfires-push-2018-disaster-costs-to-91-billion/).
- Duration of exposure (the Maui wildfires were shorter in duration than the average US wildfire duration of 37 days) (https://facethefactsusa.org/facts/the-national-burn-rate-is-going-up--literally/).

Frankenberg, Friedman, Gillespie et al., 2008

Many Maui Survivor Demographic Factors Are Associated With New Onset Mental Health Disorders

- Ethnic minority (61% of Maui residents are ethnic minorities),
- Poverty (25% of Maui residents are at poverty levels of income),
- Elderly (17% of Maui residents are 65 and older).
- Physically disabled (22.4% of Maui residents are considered disabled),
- Single (32.% of Maui residents have never been married, 1.1% are separated and 10.5% are divorced). Maui specific health and substance use behavior is not available, but statewide data is.
- The most recent state of Hawaii data from 2020 estimates that 21% of adults binge drink alcohol, 15.5% use tobacco products, 11% use cannabis and 3% use other illicit substances.

Links for Maui and State of Hawaii data sources are in the last slide

Most Maui Survivors Are Likely Have Risk Factors Associated With New Onset Mental Health Disorders (2)

- Many Maui disaster survivors will possess multiple risk factors for new onset mental health disorders.
- For example, almost one in four (22%) of Maui survivors are likely to have a chronic health condition, belong to an ethnic minority and be single.
- **Bottom line: Maui residents will likely possess several risk factors for new onset mental health disorders from 3 to 12 months post disaster.**

Links for Maui and State Of Hawaii Data

https://health.hawaii.gov/chronic-disease/files/2013/12/CD_BurdenReport_FINAL.pdf

https://health.hawaii.gov/healthequity/files/2013/08/trends.pdf

https://www.census.gov/quickfacts/fact/table/mauicountyhawaii,US/EDU685221

https://www.mauinews.com/news/local-news/2020/01/county-population-up-slightly-graying/

https://oceaniademographics.com/maui-population/

https://www.census.gov/quickfacts/fact/table/mauicountyhawaii/PST045222

https://www.hawaii.edu/news/2023/09/08/jobless-claims-after-maui-wildfires/

https://abc7chicago.com/maui-fire-hawaii-death-toll-lahaina/13673635

https://www.samhsa.gov/data/sites/default/files/reports/rpt35964/NSDUHHsaeSpecificStates2020F/NSDUHsaeHawaii2020.pdf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