The Enduring Mental Health Impact of the September 11th Terrorist Attacks

Challenges and Lessons Learned

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KEYWORDS

• World Trade Center • Disaster response • Crisis counseling • Barriers to care • PTSD

KEY POINTS

- Training emergency response staff to carry out potentially traumatizing tasks that normally fall outside their scope of work before a disaster or before their deployment and limiting the length of shifts and total duration of work may reduce psychiatric morbidity in disaster workers.
- Clinicians who treat disaster survivors must be familiar with the changing needs of a traumatized population over the course of time.
- Once chronic, posttraumatic stress disorder (PTSD) is a difficult condition to treat and is often comorbid with other major psychiatric disorders. Early interventions administered by well-trained, culturally and linguistically capable clinicians may prevent chronic PTSD and the myriad of comorbid psychiatric conditions that consume a substantial amount of resources in the long-term.
- In the long-term, resources should be allocated to maintain an infrastructure to continue public outreach and psychoeducation while training clinicians in advanced and evidence-based treatments to address the complex comorbidity associated with chronic PTSD.

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INTRODUCTION

On September 11, 2001, terrorists affiliated with the militant group al-Qaeda hijacked and flew 2 commercial passenger planes into the north and south towers of the World Trade Center (WTC) complex in New York City,[1] resulting in the massacre of 2606 victims.[2] The September 11th attack on the WTC was the first act of war on the US mainland since the Civil War[3] and the worst man-made disaster in recent history. Tens of thousands of people were affected by the destruction of the towers and the subsequent rescue, recovery, and cleanup operations.[4]

In this article, the authors review the existing literature on the mental health impact of the September 11th attacks and the implications for disaster mental health clinicians and policy makers. The first section focuses on the demographic characteristics of those affected as well as the state of mental health needs and existing mental health delivery services. Second, the authors describe the nature of the disaster and its primary impacts on lives, infrastructure, and socioeconomic factors. The third section outlines the acute aftermath in the days and weeks after September 11, 2001 in terms of the mental health impact and initial response. Fourth, the authors portray the persistent mental health impact and evolution of services of the postacute aftermath, months to years after the attacks. The fifth and final section lists implications for future disaster mental health practitioners and policy makers.

THE PRE-EVENT COMMUNITY

In 2002, the New York City Health Department established the WTC Health Registry, a database for following people who were exposed to the dust cloud, the fumes from the fires, and the mental trauma of the terrorist attacks.[5] Murphy and colleagues[6] identified 4 exposure groups: rescue and recovery workers, residents, students and school staff, and building occupants and passersby in lower Manhattan. Of the estimated 400,000 individuals eligible for the baseline health survey, more than 71,000 interviewer-administered surveys were completed.[6] Roughly 60% of the respondents were men; 47.3% were aged between 25 and 44 years; and 63% were non-Hispanic white, 11.9% non-Hispanic black, 13.4% Hispanic, 7.5% Asian, and 4.3% other.[7] Of the respondents, 11.3% made less than $25,000 a year, 21.6% made $25,000 to $50,000, 21.1% made $50,000 to 75,000, 34% made $75,000 to 150,000, and 11.8% earned more than $150,000 a year.[7]

An estimated 40,000 to 92,000 people were involved in the rescue, recovery, and cleanup operations.[4] A subsegment of this population is served by the WTC Health Program Clinical Centers of Excellence and shows significant diversity across multiple domains (eg, profession and employment status, state of physical health, cultural identity, and immigration status). Most of the rescue and recovery workers are men, more than half of them are white, and 86% are union members.[4] A recent large-scale study[8] found that of the 27,449 participants, 86% were men, the average age of the responders was 38 years, 66% were married, 17% were single, and roughly 8% were separated or divorced. Roughly 57% identified as white, 11% as black, 31% as Hispanic, 1% as Asian, 3% as other, and 28% were unknown.[8] An earlier study[4] found that of the 10,132 participants, approximately 37% attended college, 14% had graduated college, and 7% had attended graduate school. In this sample, more than 62% had arrived within the first 48 hours of the attack; 84% began working on the sites during the first week, and 91% arrived by September 24, 2001.[4]

Several different professions were represented among the rescue and recovery workers. Protective services and military were among the largest occupational groups to respond to the attack.[8,9] Other represented professions included technical

and utility workers, construction workers, asbestos cleaners, administrators, and volunteers with disaster-relief agencies, among others.[10] Wisnivesky and colleagues[8] reported that 48% of their participants (N = 27,449) worked in protective services or the military, 23% worked in construction, 7% in electrical or telecommunication repairs, 4% in transportation or material movers, 16% in other occupations, and 2% were unemployed or retired. Regarding working status at the site, 81% were workers, 11% were volunteers, and 8% both worked and volunteered. According to Katz and colleagues,[11] most of the foreign-born workers at Ground Zero were from Latin America (mainly Colombia and Ecuador) or Eastern Europe (mainly Poland).

THE ATTACK AND THE PRIMARY IMPACT

On the morning of September 11, 2001, 10 al-Qaeda agents hijacked American Airlines Flight 11 and United Airlines Flight 175 and intentionally flew the planes into the WTC towers at 8:46 AM and 9:03 AM, respectively.[12] At the time of impact, each plane was flying around 500 mph and carried approximately 10,000 gallons of jet fuel.[12] Hundreds of people were trapped above the points of impact and died of smoke inhalation and fires, whereas 200 victims jumped from the towers to escape the smoke and flames.[13] In less than 90 minutes, both towers collapsed. Thousands of tons of toxic debris from the pulverized buildings covered the WTC site, which was referred to as Ground Zero.[14] In addition to the twin towers, 2 other buildings in the WTC complex (3 WTC and 7 WTC) were completely destroyed. The remaining buildings, which included the US Customs House (6 WTC), 4 WTC, and 5 WTC, were severely damaged. The Deutsche Bank Building at 130 Liberty Street suffered structural damage and was eventually demolished.

In New York City, about 430,000 job-months, which is equivalent to 143,000 jobs, were lost as a result of the attacks.[15] Approximately 70% of the lost job-months belonged to the export sector, which also represented 86% of all lost wages ($2.8 billion dollars in the 3 months after the attacks). Investigators estimated that the gross city product in New York City declined by $27.3 billion during the last quarter of 2001 and all of 2002.[16] Zimmerman and Sherman[17] reviewed the impact of the attacks on New York City's public transportation infrastructure, and estimated that about 1800 feet of subway track were destroyed when the WTC buildings collapsed, severely limiting the availability of public transit services and crippling the Port Authority Trans Hudson Corporation's (PATH) underground rail system that connects New Jersey with Manhattan for an extended period of time.[17] However, a substantial level of Metropolitan Transit Authority service in Manhattan rebounded within hours of the attacks. In some cases, trains made use of alternative routes in the rail system, which was critical to evacuating people from Ground Zero.[17] Within 2 weeks, transit ridership was beginning to rebound, although it had not yet reached pre-September 11th levels.[18]

Survivors who were able to escape from the towers, lower Manhattan residents, and first responders had a variety of traumatic exposures. Of the 71,437 enrollees of the WTC Health Registry, 36,452 reported getting caught in the dust cloud resulting from the collapse of the towers.[7] Almost 70% of enrollees witnessed a traumatic event that day, including seeing an airplane hit the WTC towers, people jumping from the towers, buildings collapsing, people running away, and people being injured or killed.[7] A clinician first responder described his first visit to Ground Zero as an overwhelming assault on the senses, where he encountered flames, twisted steel girders, and noxious smoke billowing from the rubble.[19]

THE ACUTE AFTERMATH

The rescue and recovery workers who arrived at the site on September 11th or in the days and weeks after the attacks were also met with unprecedented physical hazards from the disintegrated structure and contents of the WTC towers, the jet fuel from the planes, and the resulting fires.[20] In addition, many of them were confronted with the loss of friends and colleagues; the process of handling dead bodies, body parts, and personal effects; and inhaling the odor of burning debris and decomposing bodies.[4] The disaster caused fear and uncertainty among the citizens of New York City; access to many residential homes, schools, and workplaces remained restricted.[21] At the national level, during the week following the attacks, 44% of the adults who were contacted by phone reported a substantial degree of stress.[22] Respondents reported that they used various strategies, such as talking with others (98%), religion (90%), participating in group activities (60%), and giving to charity (36%), to cope with stress.[22]

Immediately after the September 11th attacks, New York City was declared a federal disaster area and became eligible for programs funded by the Federal Emergency Management Agency (FEMA). One such program, the Crisis Counseling Assistance and Training Program (CCP), supports short-term interventions for those psychologically affected by large-scale disasters. New York's CCP, Project Liberty, was awarded $155 million by FEMA.[23] The New York State Office of Mental Health (NYSOMH) oversaw the governmental agencies and nongovernmental organizations (NGOs) that delivered crisis counseling and public education services to 1.2 million people between September 12, 2001, and December 30, 2004.[24] During the emergency Immediate Services Program phase, which ran from September 12, 2001 to June 12, 2002, Project Liberty provided crisis counseling services according to the CCP model, which aims to facilitate a "return to pre-disaster functioning among as many people as possible."[24] The FEMA stipulations required that recipients of services remain anonymous and did not provide funding for psychological assessment and treatment services during this critical period. In addition, the NGOs were forbidden from using some of their existing mental health professionals because of the federal antisupplantation rules,[25] which meant that the agencies had to rely on newly hired staff whose training level and qualifications may have been insufficient.

In fact, there is reason to think that in the wake of September 11th, people living in the New York area actually made *fewer* visits to mental health providers than they did during other time periods. One study probed outpatient mental health care utilization among residents of the New York metropolitan area who were enrolled in the health plans of a large insurance company.[26] During the baseline period, there was a monthly average of 75,225 outpatient mental health visits, which declined to 18% less than expected in September; this dip persisted for the next 2 quarters (14% and 13%, respectively).[26] Relative declines in mental health service use tended to be greater for residents of the innermost zone than for residents of the more distant zones. Among adult Medicaid enrollees living within a 3-mile radius of the WTC site, there was a 10% increase in the rate of behavioral and mental health diagnoses at emergency departments after September 11th compared with previous time periods.[27]

THE POSTACUTE AFTERMATH: THE PERSISTENT MENTAL HEALTH IMPACT AND EVOLUTION OF SERVICES

Schlenger and colleagues[28] administered a Web-based epidemiologic survey to a nationally representative sample 1 to 2 months after the attacks. They found that the New York City metropolitan area had the nation's highest prevalence of probable

posttraumatic stress disorder (PTSD) (11.2%). To compare, Washington, DC had a rate of 2.7%, other major metropolitan areas were at 3.6%, and the rest of the country had a rate of 4.0%, although national levels of significant distress (as opposed to PTSD specifically) were within expected ranges.[28] PTSD symptom levels were associated with sex, age, and direct exposure to the attacks.

To monitor the health of those directly affected by the September 11th attacks, the WTC registry conducted 2 major surveys: the Wave 1 (2–3 years after September 11th) and Wave 2 (5–6 years after September 11th) surveys.[5] The findings show that the WTC attacks had a significant and pervasive impact on both the mental and physical health of those who were exposed. Two to 3 years after September 11th, 16% of the nearly 69,000 adults in the registry screened positive for PTSD,[5] and 8% screened positive for serious psychological distress. Among the 50,000 study participants of the Wave 2 survey, 19% reported new posttraumatic stress symptoms 5 to 6 years later, an increase from 14% in 2003 and 2004.[5] More than half (52%) of those who reported posttraumatic stress symptoms said they had not received treatment in the previous year. The rate of PTSD was highest among low-income (32%) and Hispanic enrollees (31%) and those who were passing through the area on September 11th (23%), including commuters and tourists.[5]

Several studies have traced the persistence of multiple illnesses, including mental health disorders, in WTC rescue and recovery workers and found that PTSD is associated with extensive physical and mental health comorbidities. One study measured the incidence of PTSD, depression, and panic disorders in both New York City police officers and other rescue and recovery workers.[8] In terms of preexisting mental health concerns, 1% of nonpolice rescue and recovery workers reported a history of physician-diagnosed PTSD before the WTC attacks, and 3% reported a previous diagnosis of depression.[8] The study showed that, in nonpolice rescue and recovery workers, the 9-year cumulative incidence of depression was 27.5%, PTSD was 31.9%, and panic disorder was 21.2%. PTSD had the highest cumulative incidence in both groups, and the incidence of PTSD peaked in the fourth year after September 11th for both groups.[8] Those responders with all 3 conditions (PTSD, depression, and panic disorder) outnumbered those with PTSD alone or with comorbid PTSD and depression. Studies have also shown that probable PTSD was associated with more than double the risk for an alcohol problem and more than a 17-fold risk for reported social disability.[4]

Research has revealed lower rates of full PTSD in police involved in the WTC rescue and recovery effort. Perrin and colleagues[29] reported a PTSD prevalence that ranged from 6.2% for police to 21.2% for unaffiliated volunteers. Wisnivesky and colleagues[8] also reported a lower prevalence of mental health disorders in police officers than in other rescue and recovery workers. In their study, the cumulative incidence of PTSD, panic disorder, and depression was substantially lower in the police officers group than in the other group.[8] The 9-year cumulative incidence of depression was 7.0%, PTSD was 9.3%, and panic disorder was 8.4%. The investigators stated that possible reasons for this finding include training, self-selection of highly resilient individuals in NYPD recruitment, and possible underreporting of mental health symptoms because of concerns related to repercussions.[8] As Perrin and colleagues[29] point out, police officers face graver consequences if their psychological health is in question because their job requires carrying a firearm. A study by Pietrzak and colleagues[30] highlights the importance of a more inclusive conceptualization of PTSD, particularly as it pertains to police. This study (N = 8466) found that, although full PTSD occurred at an even lower prevalence in this population than in the other reported studies (5.4%), the prevalence of subsyndromal WTC-related PTSD was 15.4%.[30]

Subsyndromal PTSD, which may result in clinically significant PTSD symptoms, was also associated with elevated rates of comorbid depression, panic disorder, alcohol abuse, somatic symptoms, and functional difficulties.[30] After the attacks, veterans with PTSD related to their military service experienced an immediate but transitory increase in their symptoms as well as longer-lasting subjective impairment.[31] Unfortunately, much about cumulative trauma remains unclear.[32]

In terms of physical health disorders, asthma, sinusitis, and gastroesophageal reflux disease had the highest cumulative incidences and also showed considerable comorbidities.[8] Holman and colleagues[33] reported that, even after adjusting for other factors, acute stress after September 11th was associated with a 53% increase in the incidence of cardiovascular ailments (over the 3 subsequent years), and people who reported high levels of acute stress right after the attacks also reported an increased incidence of hypertension and hearing problems.

Several risk factors associated with posttraumatic stress symptoms have been identified in the literature. These risk factors include pre-event psychopathology, female sex, recent immigration to the United States, and increased hours of viewing event-related media coverage.[21] Among the rescue and recovery workers, immigrants faced distinct challenges in accessing needed care, possibly because immigrants often lack an understanding of their rights to mental health care; many have a low income and lack insurance; and many, both legal and undocumented alike, may be afraid of possible immigration consequences of using services and benefits.[11]

More than a year after the attacks, and consistent with the literature reviewed earlier, findings based on the logs made by the Project Liberty providers indicated that the mental health needs of the community were beyond the scope of what could be addressed within the CCP's brief crisis counseling model.[34] In response, FEMA approved an expansion of the program to provide enhanced services to individuals who were struggling with disaster-related mental health "problems."[23] Although these anonymously provided services were informed by cognitive behavioral therapy–based interventions for anxiety and depression, it is important to note that they did not amount to comprehensive mental health assessment and treatment services for psychiatric disorders associated with trauma exposure. Because these enhanced services were not considered treatment, they did not include coverage for critical interventions, such as psychopharmacologic management, intensive outpatient treatment, substance abuse rehabilitation, and hospitalization.[24]

Barriers to mental health care were investigated by Boscarino and colleagues[35] who reported that African Americans and Hispanics were less likely than Caucasians to access treatment services. Having a primary care physician and a history of more than 2 traumatic life events predicted greater access to psychopharmacologic treatment, which was less likely to be used by ethnic minority groups.[35] Several studies indicated that a substantial number of people were suffering from PTSD, depression, and other anxiety disorders during the years following the attacks[28,36] (one reviewer estimated that there were approximately 200,000 cases of chronic PTSD at 1-year follow-up[37]). However, mental health visits declined compared with the first 2 months following September 11th.[35]

Other barriers to accessing services after the attacks included programmatic barriers (lack of program visibility and accessibility); personal barriers, such as stigmatization and unfamiliarity with September 11th–related health problems and services; lack of referrals from their primary care providers; and reluctance to connect their symptoms to the events of September 11th because of a lack of knowledge, the amount of time that had elapsed since the attacks, and the attribution of current health symptoms to the aging process.[38] Some rescue and recovery workers expressed fear

of connecting their symptoms to their exposure because they thought retraumatized by the knowledge that their exposure might have caused a potentially life-threatening illness.[38]

In response to the WTC attacks, clinicians at the Mount Sinai Irving Selikoff Center for Occupational and Environmental Medicine, in partnership with other affected organizations, developed a medical screening program to evaluate the health status of rescue and recovery workers.[39] The WTC Worker and Volunteer Medical Screening Program received federal funding from the National Institute for Occupational Safety and Health (NIOSH), and examinations began in July 2002. Eligibility criteria for registering with the WTC Medical Monitoring and Treatment Program included having worked or volunteered in the capacity of rescue, recovery, restoration, or cleanup for at least 24 hours from September 11 to September 30, 2001 or for more than 80 hours from September 11 to December 31, 2001 in one or more of the following locations: Manhattan south of Canal Street, barge-loading piers in Manhattan, or the Staten Island landfill.[40] Two other groups were eligible: members of the Office of the Chief Medical Examiner who processed human remains and workers from the PATH who cleaned tunnels for 24 hours or more from September 11, 2001 to July 1, 2002. New York City firefighters were assessed and received services through a separate program.[41] The significant need for a mental health component of the program soon became apparent. In collaboration with Disaster Psychiatry Outreach, Mount Sinai School of Medicine's Department of Psychiatry obtained additional funding to implement a 1-year project to aid the medical program in evaluating the mental health status of the responders.[10] Approximately 6000 responders completed self-administered mental health questionnaires, and 3000 in-person evaluations were conducted during this period.[10] Subsequent funding by the NIOSH enabled the continuation of this assessment protocol and authorized the delivery of on-site treatment services. The WTC Mental Health Program grew out of this project. Currently, the Mental Health Program operates within the WTC Health Program at Mount Sinai School of Medicine Center of Excellence and provides ongoing psychiatric assessment and treatment services for WTC exposure-related mental health conditions.

DISCUSSION

Implications for Disaster Response Planning

Communication problems may have indirectly contributed to the loss of life and traumatic exposures immediately after the attacks, specifically by delaying the evacuation of the WTC buildings and the surrounding area.[12] Zimmerman and Sherman[17] suggest that emergency response planners should be mindful of people's tendency to seek information and other people during a disaster when they design communication and risk management policies. Future psychology research should focus on identifying additional factors that can influence emergency behavior to minimize casualties and reduce the frequency and intensity of traumatic exposures suffered by survivors and responders.

The literature suggests that workers who did not have the appropriate training for disaster-related work (such as volunteers and construction workers) had a higher risk for developing PTSD.[29] Among the personnel who had prior experience with emergency response (eg, emergency medical staff), those who performed dangerous tasks that fell outside the scope of their specific training (such as firefighting, search and rescue operations) were also at increased risk.[29] Early arrival at the WTC site, particularly on September 11, and working more than 3 months were additional risk factors.[29] Training emergency response staff to carry out potentially traumatizing

tasks that normally fall outside their scope of work before a disaster or before their deployment may reduce psychiatric morbidity in this population. In order to minimize the PTSD risk, policy makers should also consider limiting the length of shifts and total duration of work for those who will participate in future disaster response efforts.

Crisis Counseling

Project Liberty was a successful public outreach, crisis-counseling, and psychoeducation program that was administered by the NYSOMH, which oversaw approximately 200 agencies that provided services to nearly 1.2 million people in New York City.[24] The project was, and remains to this day, the most expensive CCP funded by FEMA. Unfortunately, there is very little scientific evidence to suggest that the interventions supported by the CCP are effective in preventing and/or treating the various psychiatric disorders that can be caused or exacerbated by trauma exposure.[37] Furthermore, the FEMA model assumes that those who need treatment services can receive this care from public mental health systems. However, as Sederer and colleagues[24] argued, the US public mental health system had and continues to have limitations in providing patients with access to high-quality, evidence-based, and coordinated care. NYSOMH officials communicated the significant gap between the mental health needs of the affected population and the capabilities of the existing infrastructure to FEMA. In return, they were provided with additional funding to offer enhanced services, which were mainly cognitive behavioral therapy–based interventions for disaster-related stress, depression, and anxiety.[24] However, as noted earlier, these enhanced services did not amount to mental health treatment. Comprehensive psychiatric assessments by qualified, culturally and linguistically capable clinicians and basic interventions, such as sedatives for severe anxiety or antidepressants for major depression, were not available.[24] The lessons learned from these challenges should be considered to expand the CCP model to include comprehensive mental health treatment services in addition to education and crisis counseling. Several studies suggest that patients whose PTSD symptoms do not decrease within 3 to 6 months of trauma exposure become chronic cases,[42] as reflected by the current definition of PTSD in the *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition).[43] Once chronic, PTSD is a difficult condition to treat and is often comorbid with other major psychiatric disorders.[42] On the other hand, recent literature suggests that prolonged exposure (PE) and cognitive therapy can prevent chronic PTSD in patients who develop acute stress disorder and meet the full criteria for PTSD within a few weeks of trauma exposure.[44] Crisis counseling services should be provided by adequately trained mental health clinicians and should focus on identifying and treating those who need comprehensive care.

Training Clinicians

After September 11, 2001, several community-based organizations, professional associations, hospitals, and government agencies began to provide disaster mental health training for practitioners. A review conducted by The National Center for Disaster Preparedness at Columbia University's School of Public Health indicated that the effectiveness of these programs is hard to assess.[45] A lack of a standard curriculum and a widespread lack of record keeping and credentialing of trainers were noted. To improve the quality of these training programs, Gill and Gershon[45] recommended specifying clear objectives and measureable outcomes for each program, the mandatory use of a specific training manual, and minimum criteria that all programs must meet (eg, course length, format, and instructor qualifications).

Long-term Planning

Chronic PTSD is not the only outcome associated with trauma exposure. PTSD is highly comorbid with several other disabling psychiatric disorders, such as major depression (48%), generalized anxiety disorder (17%), panic disorder (7%), alcohol abuse (52%), and substance abuse (35%).[42] The comorbidity between PTSD and major depressive disorder may be partially caused by overlapping symptoms of both disorders.[46] However, Chiu and colleagues[41] reported that, among the WTC exposed firefighters, PTSD and depression are different outcomes with specific risk factors. Conducting a meta-analysis of 20 studies, Panagioti and colleagues[47] reported that PTSD and depression equally increase the risk for suicidality.

Another condition that is commonly comorbid with PTSD, borderline personality disorder (BDP), is characterized by affect dysregulation, impulsivity, self-injurious behavior, anger, and identity disturbance.[43] Several studies indicate that this comorbidity can lead to more anxiety and depression, worse physical health,[48] greater impulsivity and suicide proneness,[49] or higher self-reported anger and anxiety symptoms.[50] An increased likelihood of suicide attempts has been found among individuals with comorbid PTSD-BPD relative to those with PTSD alone.[50] Pagura and colleagues[51] posit that multiple traumas and repetition of trauma early in life may be especially important in influencing the development of characterological vulnerabilities that may culminate in comorbid PTSD-BPD. They also maintain that PTSD and BPD have a high degree of lifetime co-occurrence but are not entirely overlapping. Because this concurrence is associated with poorer functioning compared with either diagnosis alone, the researchers emphasize the clinical utility of diagnosing both conditions.[51] Evidence-based treatments, such as dialectical behavioral therapy (DBT), mentalization-based treatment, and transference-focused psychotherapy, should be made available to address the needs of this complex and clinically challenging subpopulation of patients with PTSD. A recent study demonstrated that PE can be integrated with DBT to treat PTSD in suicidal and self-injuring individuals with BPD without causing exacerbations of self-injurious behavior or crisis service use.[52]

There is extensive literature indicating that alcohol and substance abuse/dependence disorders are also common among patients with PTSD.[53] The treatment of these conditions requires infrastructure to provide patients with rapid access to outpatient or inpatient detoxification, residential rehabilitation, and intensive outpatient treatment services that should delivered by highly trained multidisciplinary teams consisting of addiction psychiatrists, nurses, case workers, substance abuse counselors, and family therapists.

In summary, clinicians who treat disaster survivors must be familiar with the changing needs of a traumatized population over the course of the days, weeks, months, and years following the event. During the acute period, resources should be focused on identifying and reaching out to individuals who are symptomatic. Policy makers should consider integrating this triaging system with specialized treatment services, which should also be covered as part of the disaster relief efforts. Early interventions administered by well-trained, culturally and linguistically capable clinicians may prevent chronic PTSD and the myriad of comorbid psychiatric conditions that consume a substantial amount of resources in the long-term. The complex comorbidity associated with chronic PTSD requires highly specialized treatments that are scarcely available. In the long-term, resources should be allocated to maintain an infrastructure to continue public outreach and psychoeducation while training clinicians in these advanced and evidence-based treatments. Quality-assurance (QA) procedures

should be implemented to ensure that only competent and adequately trained mental health clinicians provide these professional services. QA measures should be defined for every stage of disaster response and should be captured in a way that can be quickly used to improve performance as well as facilitate scientific research. As discussed earlier, NGOs that are funded via FEMA's CCP-based projects are not allowed to use their existing staff in disaster relief efforts because of the federal antisupplantation rules. Although these rules ensure that CCPs do not disrupt the provision of routine services, they also prevent the utilization of the most experienced and well-trained staff, leaving the extremely challenging disaster mental health work to individuals who may not be sufficiently qualified to render them. Policy makers should consider revising these rules to introduce a level of flexibility to ensure that highly trained clinicians can be used to address disaster-related mental health issues. In conclusion, the treatment of chronic PTSD and comorbid disorders presents particular challenges that necessitate new and creative collaborative approaches for best outcomes, both for the continued treatment of patients currently suffering from these disorders and to ensure better service provisions in the future.

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