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Disaster Care for Persons With Psychiatric Disabilities

Recommendations for Policy Change

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There is growing concern that the management of persons with psychiatric disabilities after disaster has been inadequate. Unfortunately, the literature is extremely limited, and empirical evidence on the best practices for addressing the needs of persons with psychiatric disabilities after disasters is sparse. A literature search of articles published in 3 widely used databases revealed only 12 articles on the topic. The 12 reviewed articles included persons with psychiatric disabilities after both natural disasters and acts of terrorism, both in close proximity to the disaster site and far away and in 3 different treatment modalities. All of the studies used clinically based samples. The available literature indicated that many persons with psychiatric disabilities demonstrate an ability to handle the stress of a disaster without decompensation from their primary illness. However, the literature also revealed that persons with severe mental illness (SMI) can experience posttraumatic stress disorder (PTSD), depression, anxiety, and illness exacerbation after disaster. There is evidence that persons with SMI can be resilient in the short term when they are enrolled in an assertive community treatment program prior to the disaster; however, the outcomes for people with severe mental illness in other treatment modalities are unclear. Well-designed studies with clinical and population-based samples on disaster reactions of persons with psychiatric disabilities are needed for disaster psychiatrists and emergency planners to develop empirically based treatment guidelines for this population.

The topic of psychiatric disability is complex; the nature of a psychiatric illness is variable in both onset of illness and long-term outcomes. Some persons with mental illness are able to function at full capacity for the majority of their lives. Some will function well with marked decompensation only in the context of an illness exacerbation, while others will spend the majority of time with limited ability to function due to debilitating illness. A small percentage of individuals with psychiatric illness are considered disabled, with such disability defined by the Americans with Disabilities Act (ADA) as a "mental impairment that substantially limits one or more of the major life activities" (U.S. Equal Employment Opportunity Commission [EEOC], 1990). In this article, we focus on postdisaster mental health outcomes and policy recommendations for the treatment of individuals who have become disabled by their illness.

Title II of the ADA states that "no qualified person with a disability shall be excluded from participation in or denied benefits of the services, programs or activities of a public entity" (42 U.S.C. 12131–12133, 1990). "Public entity" is defined

in the law as state and local governments, any department or other instrumentality of a state or local government, and certain transportation authorities. Emergency services, including state and local emergency operations, cannot legally discriminate against individuals with disabilities (Jones, 2005). One of the most important roles of local government is to protect its citizenry from harm, including helping people prepare for and respond to emergencies (Jones, 2005). Making local government emergency preparedness programs accessible to people with disabilities is a critical part of this responsibility and is also required by the ADA (Jones, 2005). Therefore, it is necessary for state and local governments to include adequate response and recovery plans for the psychiatrically disabled population in their emergency planning. The first step in developing proper disaster treatment and response protocols is a thorough assessment of the unique needs and responses of this population during times of disasters.

One way to operationalize the term *psychiatric disability* is to use a benchmark of severity known as severe mental ill-

ness (SMI). Although there is considerable debate on the definition of SMI (Ruggeri, Leese, Thornicroft, Bisoffi, & Tansella, 2000), for the purposes of this review we will use the definition given by the American Psychiatric Association: the diagnosis of schizophrenia or related psychotic disorders, bipolar affective disorder, autism, severe forms of major depression, obsessive-compulsive disorder (OCD), and panic disorder. To be considered severely mentally ill, a person must have one of these diagnosable conditions and must also have marked interference with social, occupational, or school functioning (Cournos, 2002).

The prevalence of SMI in the U.S. population is estimated to be 2.8% (Narrow et al., 2000). Approximately 8.26 million Americans are suffering from SMI. In general, persons with SMI rely more heavily on public sector mental health services and are more likely to receive disability compensation than those who have non-SMI mental disorders (Narrow et al., 2000). Given the enormous stress placed on the community and the entire public health sector after disaster, it is important to understand and plan for the unique risks to persons with SMI in this context.

In this article we begin by conducting a preliminary analysis of the existing identified literature on the outcomes of persons with SMI after disasters and critique current studies to identify gaps in our knowledge. We then propose recommendations for future studies to enhance our understanding of the impact of disasters on this population and provide policy suggestions for the improved care of persons with SMI after disasters.

Method

We conducted a literature review of three existing and widely used databases: Pubmed, PsycINFO, and CINAHL. We used the following search terms: *disaster, natural disaster, disaster planning, terrorism, terrorist acts, schizophrenia, schizoaffective disorder, bipolar affective disorder, OCD, autism, panic disorder, severe mental illness, and SMI*. The review excluded case reports and papers written in languages other than English. We also excluded reports that did not discuss or did not employ experimental design. We sought only original work and excluded reports of others' work. Since the literature is so limited, we did not restrict our search by type of experimental design, and we specifically included observational studies and studies that did not include reliable outcome measurements. We identified 12 articles that met inclusion criteria. All of the studies utilized clinically based samples. In an effort to focus this review on persons with SMI, those who were treated in outpatient settings had to have an SMI-diagnosable disorder and a functional limitation indicator for the article to be included in our review. Although one of the articles included in this review did not have a clearly defined functional indicator (Riemann, Braun, Greer, & Ullman, 2004), all patients in that particular study were in varying stages of treatment including

both inpatient and partial hospitalization care, which are both reserved for persons with high psychiatric acuity. All patients were also symptomatic; for completeness this article was included in the review.

We located five studies with patients in outpatient services, two with individuals enrolled in assertive community treatment programs, and five with individuals in psychiatric inpatient clinical settings.

Results

The 12 articles reviewed represent persons with SMI after both natural disasters and acts of terrorism. The articles represented investigations in three countries with most of the investigations originating in the United States. The proximity to the epicenter of the disaster ranged from direct victims at the disaster site to continents away from the disaster site. There was a wide range of psychiatric illnesses represented in this review, from anorexia nervosa to chronic paranoid schizophrenia. Participants ranged in age from adolescents to middle-aged adults. Most studies were cross-sectional in design, and most studies did not use standardized outcomes measurements.

Outpatient Studies

Many persons with SMI receive outpatient services from specialized mental health settings that either specialize in the treatment of a particular diagnosis or more generally treat a wide range of mental illnesses. We found five outpatient studies that assessed those with SMI after disaster. Two outpatient studies assessed persons with OCD after disaster (Bystritsky, Vapnik, Maidment, Pynoos, & Steinberg, 2000; Riemann et al., 2004). OCD is a serious mental illness. In its severe form it can be a debilitating disease requiring extensive treatment, including both hospitalization and partial hospitalization, and is therefore an SMI. Bystritsky and colleagues assessed 19 partially hospitalized patients with OCD 1 week after the Northridge, California, earthquake. Each subject had pre- and postearthquake *Hamilton Rating Scale for Anxiety* (HAM-A) scores (Hamilton, 1959) and *Yale-Brown Obsessive Compulsive Scale* scores (Goodman et al., 1989). Using a repeated-measures analysis of variance (ANOVA) model, they found that there was no increased level of OCD symptoms after the earthquake (Bystritsky et al., 2000). The number of participants was small ($n = 19$), and all participants were assessed within 1 week of the earthquake.

The second OCD study identified 25 patients with OCD and 27 age-matched controls and assessed them after the terrorist attacks of September 11, 2001 (Riemann et al., 2004). The study site was over 500 miles from the epicenters of the disaster. Riemann and colleagues (2004) used a measure they had specifically developed for this study, and using one-way ANOVA they found that patients with OCD did not have an exacerbation of their illness 4 to 6 months after the terrorist at-

TABLE 1
Summary of Literature Addressing Psychiatric Disabilities After Disasters

Author	Participants (N)	Proximity to disaster	Standardized outcome measures?	Primary outcomes
Outpatient				
Bromet et al. (1982)	215	Near	Standardized	No difference between participants living in affected and nonaffected areas
Bystritsky et al. (2000)	OCD = 19	Near	Standardized	No illness exacerbation after disaster
Chubb & Bisson (1996)	20	At	Standardized	50% met criteria for PTSD; 45% for depression; 75% for anxiety
Franklin et al. (2002)	308	Near	Standardized	Psychiatric patients had more PTSD symptomatology than comparison group
Riemann et al. (2004)	25 patients 27 controls	Far	Nonstandardized	No illness exacerbation after disaster
Assertive community treatment				
LaChance et al. (1994)	47	At	Nonstandardized	No illness exacerbation after disaster
McMurray & Steiner (2000)	33	At	Nonstandardized	One patient required hospitalization for illness exacerbation
Inpatient				
DeLisi et al. (2004)	156	Near	Nonstandardized	Inpatients with schizophrenia had more symptom worsening than patients with affective disorders
Godleski et al. (1994)	22	At	Nonstandardized	No illness exacerbation after disaster
Sporty et al. (1979)	12 patients 12 staff members	At	Nonstandardized	2 of the 12 patients required emergency psychiatric medication No statistical analysis
Stout & Knight (1990)	19	At	Nonstandardized	Improved coping skills after disaster No statistical analysis
Taylor & Jenkins (2004)	30 psychiatric 26 medical	Far	Standardized	No increased distress among psychiatric inpatients

Note. OCD = Obsessive Compulsive Disorder; At = at side of disaster; PTSD = Post-traumatic Stress Disorder; Near = within 250 miles of disaster; Far = greater than 250 miles from disaster.

tacks. Two significant limitations of this study were the use of nonstandardized measures and the great distance from the epicenters of the attacks. Although prior studies on populations without SMI have found that those with the highest level of exposure fared worse psychologically compared to those far from exposure, there is insufficient data to confirm this finding in persons with SMI (Maes, Mylle, Delmeire, & Altamura, 2000; North et al., 1999).

In the most comprehensive outpatient study on persons with SMI after disaster, Bromet and colleagues (1982) assessed a group of psychiatric outpatients ($n = 151$) living near the Three Mile Island (TMI) nuclear facility after the TMI nuclear

disaster and compared their outcomes with a comparable group of psychiatric outpatients ($n = 64$) who lived near a nonaffected nuclear facility. The team assessed psychiatric symptoms and accident stress as measured by yes/no answers to the following questions: Is TMI currently dangerous? Is living near a nuclear reactor unsafe? They assessed participants using standardized measures for depression and anxiety at three time points after the TMI nuclear disaster: immediately after the accident, 9 to 10 months after the accident, and 1 year after the disaster. They used chi-square analyses for between-group comparisons on anxiety and depressive episodes and found no difference between the two groups at any of the three

time points. They did find that both groups demonstrated high levels of anxiety/depressive episodes after the disaster (approximately 40% of respondents for each group). Additionally they found no significant differences between the groups on accident stress measures and anxiety/depressive episodes (Bromet, Schulberg, & Dunn, 1982). However, they found that for outpatients living near TMI, those who reported high levels of symptomatology were more likely to endorse accident-related stress than those with low levels of symptomatology. They concluded that those patients who persistently perceive a disaster as dangerous should perhaps receive crisis intervention (Bromet et al., 1982).

One very interesting outpatient article on SMI after disaster was a cross-sectional study of posttraumatic stress disorder (PTSD), depression, and anxiety in 20 long-term psychiatric outpatients who were on a group excursion and were victims of a serious motor vehicle accident (Chubb & Bisson, 1996). PTSD is characterized by a constellation of symptoms including avoiding the reminders of the trauma, re-experiencing the trauma, and persistent symptoms of hyperarousal (irritability, poor sleep, trouble concentrating, and exaggerated startle response; Davidson, Malik, & Travers, 1997). The excursion group consisted of patients, psychiatric staff, and family members of patients. The accident was responsible for 10 fatalities (almost one third of the entire group), and an additional 13 patients required hospitalization for injuries sustained during the accident, thus qualifying it as a transportation disaster. Twenty psychiatric patients, including most who had required hospitalization, participated in a structured psychiatric interview between 4 and 8 weeks after the transportation disaster. These patients had varying diagnoses, including schizophrenia ($n = 6$), major depressive disorder ($n = 13$), and anxiety disorder ($n = 1$) and were psychiatrically stable prior to the disaster. Four to 8 weeks after the disaster, 50% ($n = 10$) of the study participants met diagnostic criteria for PTSD, 45% ($n = 9$) met criteria for depression, and 75% ($n = 15$) met criteria for anxiety based on standardized measures (Chubb & Bisson, 1996). Overall this represents a high level of morbidity after the disaster. One intriguing finding was that those with schizophrenia had lower scores on measures of depression, anxiety, and PTSD than those with other psychiatric diagnoses, but due to the small sample size this was not statistically significant (Odds Ratio (OR) = .11, $p = 0.14$). Small sample size and cross-sectional study design, in addition to the lack of predisaster measures, are significant limitations to generalizing these findings to other disasters.

In the final outpatient study, a survey of both medical and psychiatric outpatients was conducted at a clinic 2 to 3 weeks after the September 11, 2001, terrorist attacks (Franklin, Young, & Zimmerman, 2002). The clinic site was over 150 miles away from the sites of the attacks. Two hundred twenty-one psychiatric outpatients and 68 medical outpatients completed a modified *Posttraumatic Diagnostic Scale* (Foa, Cashman, Jaycox, & Perry, 1997), which assessed symptoms of PTSD 2 to 3 weeks after the disaster. These data were analyzed using chi-

square analyses and odds ratios. Posttraumatic stress symptomatology was more likely in the psychiatric outpatients as compared to the group of medical patients (OR = 3.17, $p \leq 0.01$) (Franklin et al., 2002). The research team concluded that psychiatric patients may be more psychologically vulnerable after terrorist events than primary care patients (Franklin et al., 2002). The assessment time frame (2 to 3 weeks after the attacks), the distance from the sites of attack, and the lack of an SMI functional indicator limit the utility of this study for persons with SMI after disaster.

Assertive Community Treatment Program Studies

An increased level of care that, to our knowledge, is uniquely designed for persons with severe mental illness is the assertive community treatment program (PACT or ACT). The design of individual ACT teams follows the six core components: around the clock care, multiservice teams, small homogenous caseloads, assertive outreach, in-vivo rehabilitation, and ongoing and continuous services (Lachance, Santos, & Burns, 1994). Each team provides extensive outreach services to those with SMI who are high utilizers of inpatient psychiatric services. These programs often target the most psychiatrically ill populations and those with SMI for whom community social supports are tenuous. The comprehensive services provided by ACT teams have demonstrated efficacy in reducing the number of psychiatric hospitalizations of recipients (Marshall & Lockwood, 2000). Two studies assessed the ACT model of treatment for those with SMI after natural disasters (Lachance et al., 1994; McMurray & Steiner, 2000).

The first ACT study was observational in nature. The only outcome considered was psychiatric rehospitalization in the first 3 months after Hurricane Hugo. Hurricane Hugo, a Category 5 hurricane, caused considerable damage in the Carolinas in 1989 (Lachance et al., 1994). The ACT study population ($n = 47$) and the ACT providers were directly affected by the hurricane. The investigators found no psychiatric rehospitalizations for ACT participants after Hurricane Hugo (Lachance et al., 1994). Unfortunately, there were no other psychiatric measures employed in this study.

The second ACT study also occurred after a natural disaster. In 1998 an ice storm struck regions of Canada, resulting in heat/electricity outages and the closure of public institutions and businesses. For 12 days hospitals were functioning in an emergency capacity, and only core services were preserved. One preserved core service was the provision of psychiatric outpatient services to those with SMI (McMurray & Steiner, 2000). At the conclusion of the storm 33 ACT participants completed a questionnaire regarding the storm's impact (response rate = 71.7%). Although half of the respondents were forced to evacuate their homes for up to 2 weeks, 87.9% of respondents continued to have access to their psychiatric medication. McMurray and Steiner (2000) found that only one patient required rehospitalization and one patient required a

stay in an emergency shelter because of storm-related distress. Both ACT studies attributed this apparent resilience to the continuity of outreach services, which were preserved after each disaster. Both studies concluded that the comprehensiveness of services offered and the ability to maintain those services during the disasters were likely factors in the apparent resiliency of ACT participants. Both studies relied on psychiatric rehospitalization as their outcome measure. Psychiatric rehospitalization does not provide a complete understanding of the overall functioning of persons with SMI after disasters.

Inpatient Care Studies

Persons with psychiatric disabilities who have serious illness exacerbations sometimes require inpatient psychiatric care to stabilize and control their symptoms. Five studies assessed the impact of disaster on psychiatric inpatients both at the disaster site and continents away (DeLisi, Cohen, & Maurizio, 2004; Godleski, Luke, DiPreta, Kline, & Carlton, 1994; Sporty, Breslin, & Lizza, 1979; Stout & Knight, 1990; Taylor & Jenkins, 2004). Three of these inpatient studies were related to natural disasters, and two were related to acts of terrorism.

Godleski and colleagues assessed 22 psychiatric inpatients during and after Hurricane Iniki, which damaged the state psychiatric hospital where they were located (Godleski et al., 1994). At the time of the study, 91% of the participant sample had been living with SMI for 10 years or more, and 100% of the participants had a primary psychotic disorder diagnosis such as schizophrenia. The assessments were based on retrospective chart reviews for three different time periods: during the hurricane, 1 week after the hurricane, and up to 1 year after the hurricane (Godleski et al., 1994). The research team assessed patients for acute decompensation during and after the hurricane, and they found that none of the inpatients experienced psychiatric decompensation. Additionally, they assessed participants for *DSM-III-R* criteria for PTSD both 6 and 12 months after the hurricane. None of the patients met these criteria for PTSD after the disaster (Godleski et al., 1994). The authors concluded that the staff members' effective organizational approach was likely responsible for these outcomes. The instruments used in these assessments were not described, and it is unclear if they used standardized instruments for either the acute phase or the longitudinal follow-up phase.

In the only reviewed study that assessed adolescents with psychiatric disorders, Stout and Knight (1990) surveyed psychiatric inpatients 2 months after they had been evacuated from their inpatient psychiatric units because of severe flooding. The participants were direct victims of the flood, and 16.7% of respondents indicated that their personal homes were also threatened by the flood. Of the 19 returned surveys, 64% were adolescents with mood and eating disorders. The outcome measure was designed by the research team, which qualitatively assessed the impact of the flood on treatment by using multiple open-ended questions. Although 66.7% of the

respondents felt that the flood had an impact on their treatment, many of those patients felt it was a positive impact in that it required them to employ the coping skills that were part of therapy (Stout & Knight, 1990). Although this study may shed some light on adolescents with psychiatric disorders severe enough to require inpatient hospitalization, the very low response rate (15%), lack of baseline variables, and lack of a validated instrument make any meaningful conclusions difficult to draw.

In 1976 Hurricane Belle flooded a Staten Island psychiatric hospital that had evacuated its population just prior to the storm (Sporty et al., 1979). The relocation of the patients back to their original hospital occurred 16 hr later. Sporty and colleagues utilized a qualitative interview with 12 patients and 12 staff members who had participated in the evacuation process and assessed respondents 2 weeks after the evacuation. Open-ended questions were used, and no statistical analyses were employed. Patients expressed fear "of being left behind" and not relocated back to the hospital when the hurricane passed. Only 2 of the 12 patients required emergency psychotropic medication during the evacuation, but there is no baseline emergency medication record for this group of patients (Sporty et al., 1979). It is impossible to draw any meaningful conclusions from this study due to its evident limitations; however, it highlights the urgent need for more scientifically rigorous research in this field.

The final two studies assessed psychiatric symptoms in psychiatric inpatients after the September 11, 2001, attacks (DeLisi et al., 2004; Taylor & Jenkins, 2004). One study was in Australia—continents away from the site of attacks (Taylor & Jenkins, 2004)—and one study was in Manhattan where patients could directly view the collapse of the Twin Towers (DeLisi et al., 2004).

Taylor and Jenkins (2004) assessed 30 psychiatric inpatients and 26 medical/surgical inpatients in an Australian hospital 3 days after the terrorist attacks of September 11, 2001. The team hypothesized that psychiatric inpatients would be more adversely affected by the news coverage of the attacks than would medical inpatients. The psychiatric inpatients had a range of disorders, including psychotic disorders, mood disorders, and personality disorders. All respondents participated in a cross-sectional interview with a modified form of the *Impact of Event Scale* (Sundin & Horowitz, 2002), which is a well-validated measure for PTSD symptoms. The research team used chi-square analyses for between-group comparisons (Taylor & Jenkins, 2004). The team found no difference between groups in either subjective or observed levels of distress (analyses not provided). One noteworthy finding was that 29% of patients with a psychotic disorder diagnosis incorporated the terrorist acts into their delusions (endorsing statements such as "I did it") (Taylor & Jenkins, 2004). The distance from the sites of attack, the nature of the attack, and the rapid assessment time frame (3 days after the attack) again make meaningful conclusions difficult to reach.

Closer to the site of the attack, DeLisi and colleagues retrospectively reviewed charts of patients with psychiatric illnesses who were hospitalized during the terrorist attacks of September 11, 2001. Of the total patient sample, 37.5% had the opportunity to directly view the collapse of the Twin Towers (DeLisi et al., 2004). The research team reviewed 156 psychiatric inpatient records for 1 week after the attacks. The outcome measures were evidence of illness exacerbation or occurrence of new symptoms after the disaster, and chi-square analyses were used for between-group comparisons. Although no significant difference in illness exacerbation or onset of new symptoms was found between patients who could directly observe the destruction compared to those who did not have a view, $\chi^2(2, N = 155) = 2.22, p = 0.330$, the team did find that patients with a diagnosis of schizophrenia spectrum disorders had significantly more symptom worsening than patients with affective disorders, $\chi^2(2, N = 155) = 10.289, p = 0.036$ (DeLisi et al., 2004). This was the only published study where the patient population was directly exposed (either by viewing it or by being hospitalized close to the site of the attack) to an unprecedented act of terrorism while still hospitalized. Despite a safe and highly structured atmosphere, individuals with schizophrenia spectrum disorders who are highly exposed may decompensate after disaster.

Discussion

Summary of Literature on Health Outcomes

What is evident from the preceding literature review is that there are significant gaps in our knowledge regarding outcomes for those with SMI after disaster. Only two studies assessed patients longitudinally (Bromet et al., 1982; Godleski et al., 1994), and only five studies used standardized outcome measures (Bromet et al.; Bystritsky et al., 2000; Chubb & Bisson, 1996; Franklin et al., 2002; Taylor & Jenkins, 2004). All of the patients in the preceding studies were individuals with SMI who were actively involved in treatment, which makes it impossible to draw conclusions about the general SMI population. Based on epidemiologic data, only 42% of individuals with SMI are receiving specialized mental health treatment (Narrow et al., 2000). We did not find a single study that met our inclusion criteria for persons with SMI who were not in active treatment.

Among outpatients in assertive community treatment (ACT), persons with SMI were resilient if they were able to continue to receive treatment after the disaster (Lachance et al., 1994; McMurray & Steiner, 2000). Both articles concluded that the comprehensiveness of the services received and the ability to maintain those services through the disaster (in which staff members took extraordinary measures to ensure continued care) were the key reasons why these participants

functioned well after the disasters. Unfortunately, neither study utilized standardized measures, which makes such strong conclusions difficult to justify.

As previously mentioned, persons with SMI who are not engaged in treatment are not captured in the clinical studies described; thus it is difficult to predict the extent of negative psychological sequelae after disaster for the entire SMI population. Additional studies should therefore assess persons with SMI who are not in active treatment after disaster, as well as persons with SMI who reside in areas with inadequate resources after disaster. This approach would complement existing research and broaden our understanding of persons with SMI after disaster. Developing sampling frames will be more difficult, since these are often hidden populations. Creative sampling techniques such as adaptive cluster sampling will need to be employed. Additional studies would benefit from the use of control groups or predisaster baseline measures for more meaningful comparisons. Utilizing predisaster measures is one of the most difficult recommendations to carry out in the postdisaster climate. If investigators were fortunate enough to assess a population prior to a disaster, then utilizing that data would be feasible. Otherwise, this design would not be applicable postdisaster. Alternatively, assessing a cohort of persons with SMI who have been exposed to disaster and a control group who vary only on disaster exposure is another viable strategy. Bromet and colleagues (1982) employed this strategy after the nuclear accident. This approach should be utilized more frequently in the postdisaster climate for persons with SMI.

The importance of reliable psychological measurements cannot be overemphasized. The disaster site is chaotic and evolves over time. It is imperative that investigators conducting research in this climate rely on standardized measures for reliable outcomes data. There are many reliable and well-validated instruments available, and investigators need to employ them postdisaster. Clinician-administered measures such as the *Structured Clinical Interview for the DSM-III-R (SCID)* can reliably diagnose psychiatric disorders. For nonclinician assessments, the *General Health Questionnaire (GHQ)* screens for depression and anxiety, the *Post-Traumatic Stress Disorder Checklist—Civilian Version (PCL-C)* screens for PTSD and the *Sheehan Disability Scale (SDS)* measures functional disability as it relates to impairment by psychiatric illness (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Hambrick, Turk, Heimberg, Schneier, & Liebowitz, 2004; Huppert, Walters, Day, & Elliott, 1989; Spitzer, Williams, Gibbon, & First, 1992). These represent only a small number of available reliable measures that currently exist. We recommend that future investigators take advantage of the available measures when studies are designed so that outcomes data will become more reliable and meaningful comparisons can be made.

The above studies also represent small sample sizes with a wide geographic range with respect to the disaster site (from primary victim to thousands of miles away). Although re-

search in the non-SMI population suggests that those closest to the disaster are more likely to have negative psychological outcomes, there are insufficient data to make such a conclusion in the SMI population (Maes et al., 2000). Our review highlights the possibility that like persons without pre-existing psychiatric illness, persons with SMI can have high levels of posttraumatic symptomatology (Chubb & Bisson, 1996; Franklin et al., 2002). In addition, persons with schizophrenia spectrum disorder illnesses can also incorporate events of a disaster into their delusional system, which is likely evidence of illness exacerbation (Koezler & Hicks, 1972; Taylor & Jenkins, 2004).

Local Providers and Systems of Care

Hurricane Katrina has challenged the perception that after a disaster, regional mental health services are capable of easily returning to the pre-existing level of services provided for people with SMI. New Orleans Parish lost 296 inpatient psychiatric beds (only two psychiatric inpatient beds remained in Orleans Parish) after the hurricane, and only 22 of 196 area psychiatrists currently continue to practice in Orleans Parish after the hurricane (Weisler, Barbee, & Townsend, 2006). Even for persons with well-controlled SMI prior to a disaster, these findings suggest that endogenous resources will likely be inadequate to meet the needs of this population after a large-scale disaster such as Hurricane Katrina (Berggren & Curiel, 2006). In addition, the demand for inpatient care for persons with SMI may be higher after a disaster. Two recent studies found that even in locations far from the disaster sites, emergency petitions briefly increased after the September 11, 2001, terrorist attacks (Catalano, Kessell, Christy, & Monahan, 2005; Catalano, Kessell, McConnell, & Pirkle, 2004). They suggested that after acts of terrorism, persons with SMI may be either more evident or less tolerated by the community (Catalano et al., 2004). If individuals with SMI are not as likely as those without SMI to be absorbed into the community recovery infrastructure, then specialized treatment and recovery services will be needed after disaster.

Given the small number of studies in the present review, and the significant limitations of each study, it is premature to draw sound conclusions on the impact of disaster on persons with SMI. Despite the current lack of evidence regarding the impact of disasters on the illness trajectory of persons with SMI, there is reason to suspect that disasters can and do negatively impact the coping and illness of some persons with SMI. Therefore several issues should be addressed in strengthening the mental health components of disaster planning for persons with SMI. Based on our current knowledge, persons with SMI would benefit from policies that maintain the mental health treatment they received prior to the disaster, from crisis intervention for illness exacerbation related to the disaster, from continuous access to psychotropic medication supplies, and from alternative sheltering options if warranted. We now focus on four specific policy implications for disaster planning that

will minimize the negative impact of disasters on persons with SMI.

Policy Implications

One important preliminary finding from the review is that an individual's mental illness does not in and of itself preclude adaptive coping skills (Sporty et al., 1979; Stout & Knight, 1990). Many persons with SMI respond to disasters just as members of the general population. They, like others, feel distressed while trying to cope with the disruption in their lives. They may grieve for losses suffered and they may experience anxiety, sleep difficulties, intense emotions, and difficulty concentrating, which will subside with time. However, the impact of SMI or its related symptoms may present a significant challenge, and specialized care may be warranted after a disaster (Bromet et al., 1982; Chubb & Bisson, 1996; DeLisi et al., 2004; Taylor & Jenkins, 2004).

Persons with SMI can be psychologically vulnerable to rapid, unplanned changes in their environment and may have difficulty assimilating new environmental contingencies. Some disaster survivors with SMI may have achieved only a tenuous balance before the disaster, and the added stress of the disaster disrupts this balance. In these cases, they may need enhanced mental health support services, medications, or even hospitalization (DeWolfe, 1996).

Although the local mental health authority is responsible for re-establishing general mental health services to this population, in many communities these agencies routinely function at maximum capacity, making it difficult to enhance services in times of greater need. Currently, there is no additional infrastructure provided for treatment and care of persons with SMI after a disaster. Local governments are tasked with providing treatment and care for this population; the devotion of resources for this task varies greatly from location to location. For example, after Hurricane Katrina the city of Baton Rouge, Louisiana, saw a doubling of its population virtually overnight including an influx of persons with SMI. Unfortunately, even 5 months after the disaster, no additional state resources had been committed to caring for those with SMI who had moved into the community (Post, 2006). Currently, the only federal mechanism for funding disaster mental health interventions is through the crisis counseling program (CCP). Therefore, it becomes imperative for overwhelmed and underfunded states to access crisis counseling program funding to provide special disaster services and interventions for those with SMI.

Policy Recommendation 1. Require agencies seeking crisis counseling program (CCP) funding to outline plans for treating persons with SMI. Upon receiving a presidential disaster declaration, a state mental health authority (SMHA) conducts a needs assessment to determine whether state and local resources can meet the post disaster mental health needs of the community. If local resources are not sufficient, the SMHA

may apply for a CCP grant. The CCP grant award typically provides funding to local mental health providers so that additional staff can be hired to provide outreach programs to the community. Supplemental funding for CCPs is available to SMHAs through two grant mechanisms. The Immediate Services Program (ISP) provides funds for up to 60 days of services immediately following a disaster declaration, and the Regular Services Program (RSP) provides funds for up to 9 months following a disaster declaration (DeWolfe, 1996).

For more than 25 years, the CCPs have supported short-term psychosocial interventions with individuals and groups experiencing psychological sequelae to large-scale disasters. These interventions involve clear counseling goals: assisting disaster survivors in understanding their current situation and reactions, mitigating additional stress, assisting survivors in reviewing their options, promoting the use of or development of coping strategies, providing emotional support, and encouraging linkages with other individuals and agencies that may help survivors recover to their predisaster level of functioning. There are ambiguities to this funding mechanism, especially for persons with psychiatric disabilities. A person's disability can interplay with his or her disaster reactions in various, sometimes complex ways, which may not be officially covered by the grant. Jennifer Mincin, of Project Liberty, the CCP project in New York City following 9/11, reported that the federal guidelines lacked accommodations to address the unique needs of persons with disabilities in times of disaster.

Instructions from the Federal Emergency Management Agency (FEMA) and the Center for Mental Health Services (CMHS) in providing crisis counseling and recovery services to persons with mental illness are stated as follows: "While always cognizant of those with special needs, the thrust of the Crisis Counseling Program since its inception has been to serve people *responding normally to an abnormal experience*" (CMHS, 2001; Thomas, 1996). The intent of this last sentence is to clarify that the crisis counseling grant mechanism is not designed to provide mental health treatment or counseling for those with pre-existing mental illnesses. By describing those eligible for service as "responding normally to abnormal experience," persons with psychiatric disabilities are subjected to the grant recipient's interpretation of this statement and a sometimes arbitrary determination of predisaster level of functioning. This is problematic. As we found in the literature review, sometimes those with SMI will experience exacerbations of their own psychiatric illness as a response to the disaster (Chubb & Bisson, 1996; DeLisi et al., 2004; Taylor & Jenkins, 2004). However, without prior knowledge of illness, providers could mistake a disaster reaction for predisaster level of functioning, thus excluding them from crisis counseling.

Persons with SMI should not be excluded from this federally funded program simply because of their psychiatric disability. Currently, the policy is such that persons with SMI can be excluded if their reactions are not recognized as being related to the disaster. We concur with Weisler and colleagues (2006) that the language of the Stafford Act of 1974 should be

amended so there is an opportunity and a place for persons with psychiatric disabilities to go for treatment and counseling after a disaster, especially if the local mental health authority is unable to meet the increased demands. We feel that until there is a federal psychiatric disability component to the CCP, persons with SMI will continue to be inappropriately excluded from useful services.

Ideally there would also be a specific funding mechanism ensuring that if necessary, people with SMI would have access to specialized care after disaster. The CMHS should be required to develop specific guidelines for providing care for persons with SMI after disaster. Leaving disaster care for this population up to local agencies, many of whom were already operating beyond capacity predisaster, has been found to be inadequate (Weisler et al., 2006). To maintain a consistent level of care and minimize negative psychological outcomes for persons with SMI in times of disasters, it is imperative to provide the structural mechanism for special disaster services and interventions for people with SMI.

Policy Recommendation 2. Consider adding psychiatric medication to the Strategic National Stockpile. Maintaining continuity of care and a continuous supply of medication is essential for the treatment of individuals with mental illness following disaster. Many times if treatment can be maintained without interruption, individuals will not decompensate, even during traumatic events. The literature review highlighted that those who were actively engaged in treatment were not at significantly higher risk for an illness exacerbation (Bromet et al., 1982; Bystritsky et al., 2000; Lachance et al., 1994; McMurray & Steiner, 2000; Murray & Lopez, 1997). However, if patients with SMI have a precipitous disruption in medication supply, they may experience rapid illness exacerbation and/or serious medication withdrawal symptoms. Maintaining a medication regimen can be especially important in times of disaster or trauma. Recent information from India revealed that in the aftermath of the December 26, 2004, tsunami, people with pre-existing mental illness experienced illness exacerbations due to lack of medication (Davidson, 2006).

In the event of a large-scale public health emergency, the Centers for Disease Control and Prevention (CDC) can distribute large quantities of medicine and medical supplies to impacted areas through the Strategic National Stockpile (SNS). The SNS is organized for flexible response. The first line of support lies within the immediate response 12-hr Push Packages. These are caches of pharmaceuticals, antidotes, and medical supplies designed to provide rapid delivery of a broad spectrum of assets for an ill-defined threat in the early hours of an event. These Push Packages are positioned in strategically located secure warehouses and are ready for immediate deployment. If additional pharmaceuticals and/or medical supplies are needed, vendor-managed inventory (VMI) supplies will be shipped to arrive in the impacted areas within 24 to 36 hours (CDC, 2005). It is then the responsibility of the state to distribute SNS medicine and medical supplies (CDC, 2005).

The SNS is a national repository of antibiotics, chemical antidotes, antitoxins, life-support medications, IV administration, airway maintenance supplies, and medical/surgical items. Currently, the SNS does not contain any psychotropic medications other than diazepam, which is stockpiled as an anticonvulsant. In nondisaster situations, persons with psychiatric disabilities are often taken to local psychiatric emergency rooms for treatment, but in the post disaster context these services can be nonexistent or completely overwhelmed. Persons with active psychiatric illness can be highly disruptive in the shelter setting and unfortunately are vulnerable to abuse or ejection from shelters because of their illnesses; access to medications is of paramount importance in maintaining psychiatric stability and in preventing persons with SMI from being situationally vulnerable and/or disruptive in the chaotic post disaster milieu (Frattaroli, 1991). We believe the CDC should consider adding psychotropic medication to the SNS. In the meantime, we recommend that local emergency planners ensure the availability of psychotropic medications such as atypical antipsychotics, benzodiazepines, and antidepressants in their communities during times of disaster.

Policy Recommendation 3. Require shelters to have a developed plan for sheltering those with SMI if local resources become overwhelmed. The importance of addressing mental health needs of survivors has increasingly become part of routine disaster response planning. Along with preventing or treating physical injuries, mediating the psychological impact of trauma is also a primary goal of any disaster response. The National Center for Post Traumatic Stress Disorder provides a manual: "Psychological First Aid Field Operations Guide to provide acute crisis intervention to victims of disaster" (National Child Traumatic Stress Network and National Center for Post Traumatic Stress Disorder, 2005). Additionally, sometimes a federal disaster medical assistance team (DMAT) will include a psychiatrist. Disaster mental health is a field that continues to grow.

The *Psychological First Aid Field Operations Guide* does provide strategies for assisting persons with SMI in shelter environments. However, in general, the focus of disaster mental health planning is prevention of traumatic illness in individuals without pre-existing mental health conditions. For example, in sheltering situations, volunteer psychiatrists and mental health professionals are on site to treat and prevent the onset of traumatic illness for those *without* pre-existing SMI. Typically, there is no formal mechanism for providing care to persons *with* SMI in shelter situations. In fact, agencies such as the American Red Cross train their mental health volunteers not to provide psychotherapy or medications to populations with whom they are working; but instead to rely on crisis intervention strategies. The underlying premise of this policy is that during a disaster, preexisting resources within a community will continue to handle care of persons with SMI.

The expectation that the local mental health authority will provide services to those with SMI after disaster is in

doubt. In small-scale disasters where large populations have not been displaced and the local mental health infrastructure is functional, this provision has strong merit (McMurray & Steiner, 2000). However, in situations where the local mental health authority is overburdened, or where populations increase because of out-of-area sheltering, this policy is very problematic and likely detrimental to shelter patrons with SMI. It can take weeks to months for shelters to adequately coordinate with the regional mental health providers. During the interim, those with SMI may suffer from preventable illness exacerbations or may be vulnerable to violence in the shelters.

In the wake of Hurricanes Katrina and Rita, one community reported situations in which community mental health workers were ejected from American Red Cross shelters because shelter management objected to basic mental health triage. This apparent lack of coordination by the American Red Cross and the local mental health authority led the medical director of the regional mental health agency to assert that this was an occurrence of "dropping the ball by the American Red Cross leadership" (Post, 2005). There are no federal guidelines mandating that the American Red Cross work with the local mental health authority, although in most cases that is the preferred collaboration. Disaster mental health planning should ensure that mental health professionals are present or at least available at sites where disaster survivors, including those who have mental illness, are likely to seek services (DeWolfe, 1996). Since the overwhelming majority of sheltering in most states is delegated to the American Red Cross, this organization should be required to develop a comprehensive plan for sheltering persons with SMI that specifically involves local mental health authorities

Policy Recommendation 4. Require programs to include proactive outreach initiatives geared toward persons with SMI in their disaster planning. Persons with psychiatric disabilities have the same basic needs as the general population following a major disaster—safety, shelter, food, and social support. However, they may have difficulty navigating the bureaucracy to access these services during traumatic times. An example from the Louisiana Hurricane Andrew Regular Services Program illustrates challenges persons with psychiatric disabilities can face. From a sample of 1,005 persons with severe and persistent mental illness, 47% required assistance after the storm. A total of 45% of these people still needed assistance 9 months later (Speier, 1996). From the perspective of the Louisiana program, the types of requests were not necessarily different from those received from the estimated 5,000 nonmental health clients who sought assistance. The only unique aspect was that the large number of people who had legitimate hurricane-related needs that were not resolved during the recovery phase suffered from SMI (Speier, 1996). Often, providing relief services to persons with psychiatric disabilities is a matter of determining how to best reach individuals to inform them of the services available. Specialized outreach programs are an effective means of reaching specific

populations after disaster (Frattaroli, 1991). Sometimes these mental health outreach programs already exist in the community and can proactively respond to assist persons with SMI (Lachance et al., 1994; McMurray & Steiner, 2000). However, mental health disaster response and recovery services, while distinct from regular mental health treatment, are also effective when they are embedded at service sites (clinics or mental health agencies) where persons with psychiatric illness receive regular, ongoing treatment (Thomas, 1996). If disaster planning agencies included this proactive outreach component to meet the needs of persons with SMI, we believe that considerably fewer persons with SMI would have unmet needs months or even years after a disaster.

Conclusion

Research conducted after disasters (Hurricane Andrew, the Loma Prieta Earthquake in San Francisco, and the Gulf War in Israel) has found that persons with mental illness have the capacity to "rise to the occasion" and perform just as heroically in the aftermath of a disaster as the general population (Thomas, 1996). Many demonstrate an increased ability to handle this stress without decompensation from their primary illness. However, the literature review revealed that persons with SMI can also experience PTSD, depression, anxiety, and illness exacerbation after disaster (Chubb & Bisson, 1996; DeLisi et al., 2004; Taylor & Jenkins, 2004) and that those who functioned well had ample services extended to them (Godleski et al., 1994; Lachance et al., 1994; McMurray & Steiner, 2000). Specialized treatment needs should be planned for and provided to persons with SMI after disaster. The key elements to a successful disaster response for individuals with psychiatric disabilities are continuity of care, availability of medication, availability of medical providers with expertise in treatment of SMI, and assistance in navigating bureaucracies to access available services. Finally, every effort should be made to ensure that the language used to describe specialized programs does not stigmatize individuals with psychiatric disabilities.

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AUTHORS' NOTE

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