

Mental Health Status of World Trade Center Rescue and Recovery Workers and Volunteers — New York City, July 2002–August 2004

After the September 11, 2001, attacks on the World Trade Center (WTC), a comprehensive screening program was established to evaluate the physical and mental health of rescue and recovery workers and volunteers. Persons were eligible for this program if they participated in the WTC rescue or recovery efforts and met specific time criteria for exposure to the site. During July 16, 2002–August 6, 2004, the program evaluated 11,768 workers and volunteers. This report summarizes data analyzed from a subset of 1,138 of the 11,768 participants evaluated at the Mount Sinai School of Medicine during July 16–December 31, 2002. On the basis of one or more standardized screening questionnaires, approximately half (51%) of participants met threshold criteria for a clinical mental health evaluation. Continued surveillance is needed to assess the long-term psychological impact of the aftermath of the 9/11 attacks and to determine needs for continued treatment.

The program was approved by an institutional review board, and informed consent was obtained for data aggregation and analyses. Participants were asked to complete standardized, self-administered questionnaires that screened for symptoms of anticipated postdisaster mental health conditions. The questionnaires used were the General Health Questionnaire-28

(GHQ), which identifies general psychiatric symptoms (1); Post Traumatic Stress Disorder (PTSD) Symptom Checklist (PCL), which identifies possible cases of PTSD (2); Patient Health Questionnaire (PHQ), which identifies panic, generalized anxiety, and depression (3); CAGE Questionnaire, which identifies likely alcohol dependence and abuse (4); and Sheehan Disability Scale, which measures functioning at home and work (5). Participants who met threshold criteria or acknowledged suicidal ideation or substantial disability on any questionnaire were referred for clinical evaluations by mental health professionals on the same day.

The 1,138 program participants were predominantly male (91%) and non-Hispanic white (58%), with a median age of 41 years (range: 21–74 years). Non-Hispanic blacks and Hispanics accounted for 11% and 15% of the population, respectively. Participants had sustained a median of 966 hours (range: 24–4,080 hours) of exposure (approximately 4 months of 8-hour workdays) to the WTC site. During July 16–December 31, the majority of participants (51%) met criteria for a clinical mental health evaluation on at least one screening questionnaire (Table). Symptoms of depression, panic, and generalized anxiety were each reported by approximately 6% of participants. Nearly 10% reported at least one item on the CAGE Questionnaire. The Sheehan Disability Scale indicated that the top three emotionally related disabilities were problems with social life (15%), work (14%), and home life (13%).

On the PCL, approximately 20% of participants reported symptoms meeting the thresholds for PTSD (2). The diagnosis of PTSD requires both a characteristic pattern of symptoms and impaired functioning or substantive clinical distress relative to a qualifying trauma (6). Among program participants, sufficient exposure to qualifying traumatic events was assumed and not assessed; however, despite meeting threshold by symptom count on the PCL (2), approximately one third (32%) did not meet the criteria for both pattern of symptoms and impaired functioning or substantive clinical distress. Application of the diagnostic criteria reduces the proportion considered to have PTSD from 20% to 13%. Of the 1,138 participants, only 36 (3%) reported accessing mental health services before participating in this program.

Reported by: *RP Smith, MD, CL Katz, MD, A Holmes, Disaster Psychiatry Outreach; R Herbert, MD, S Levin, MD, J Moline, MD, P Landsbergis, PhD, L Stevenson, MPH, Mount Sinai School of Medicine, New York, New York. CS North, MD, Washington Univ, St. Louis, Missouri. GL Larkin, MD, Univ of Texas Southwestern Medical School, Dallas, Texas. S Baron, MD, JJ Hurrell Jr, PhD, Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.*

Editorial Note: The direct and protracted nature of the rescue and recovery workers and volunteers' exposure to the

TABLE. Mental health screening questionnaire results of World Trade Center rescue and recovery workers and volunteers, by category — New York City, July 16–December 31, 2002

Category	No.	(%)
Referred for routine mental health evaluation*	492	(43.2)
Evaluated for suicidality†	92	(8.0)
Total	584	(51.3)
Total sample	1,138	(100.0)
Possible reason(s) for referral		
General Health Questionnaire-28 (GHQ)		
Somatic symptoms, anxiety and insomnia, social dysfunction, or severe depression	500	(43.9)
Post Traumatic Stress Disorder (PTSD) Symptom Checklist (PCL)		
PTSD PCL + met PTSD symptom algorithm	224	(19.7)
PTSD PCL + met PTSD symptom algorithm + functional difficulty on Sheehan Disability Scale	174	(15.3)
Patient Health Questionnaire		
Panic symptoms	66	(5.8)
General anxiety	67	(5.9)
Major depression	64	(5.6)
CAGE Questionnaire	108	(9.5)
Sheehan Disability Scale		
Problem(s) with spouse/partner	52	(4.5)
Problem(s) with children	15	(1.3)
Problem(s) with work	155	(13.5)
Problem(s) with social life	175	(15.3)
Problem(s) with home life	149	(12.9)
Proportion who reported receiving mental health care	36	(3.2)
Total reasons for referral§	1,575	

* If exceeds threshold criteria on General Health Questionnaire (GHQ), Post Traumatic Stress Disorder Symptom Checklist, Patient Health Questionnaire (PHQ), or Sheehan Disability Scale.

† If suicidal ideation was indicated on GHQ or PHQ.

§ Total exceeds 1,138 because persons might have had more than one reason for referral.

aftermath of the 9/11 attacks differentiates these persons from the general population (7). These responders are unlike previous populations of rescue workers (8) because of the heterogeneity of their occupations (e.g., construction trades, utilities and sanitation workers, and first responders) and the documented health effects of their WTC work. The proportion of those meeting PCL threshold scores (2) for posttraumatic stress in the predominantly male sample is approximately four times the 5% reported lifetime prevalence of PTSD in the general male population (6). The point prevalences of approximately 6%, respectively, for panic and generalized anxiety symptoms represent a two- to fourfold increase, compared with the 12-month prevalences of 2% and 3%, respectively, reported in the general population (9). However, depression was detected at a prevalence of 6%, nearly half the 12-month prevalence of 10% reported in the general population (9). The point prevalence of alcohol abuse and dependence of nearly 10% documented by CAGE suggests rates at least as high as the 12-month prevalence of 9.7% reported in the general population (9).

The findings in this report are subject to at least three limitations. First, no reliable data exist regarding the size of the worker/volunteer responder population; therefore, determining participation rates for the screening program was not possible. Second, persons who participated in the screening might have done so because they experienced (or perceived) greater exposures and/or symptoms; therefore, these results are not generalizable to all responders. Finally, the questionnaires, which had been validated by using psychiatric patients, were applied to nonpsychiatric patients; in addition, certain questionnaires had been validated primarily among women and might not be equally valid in a predominantly male population.

Preliminary findings regarding the possible cases of PTSD among these workers underscore the need for better tools to assess the mental health of responders to a disaster. For example, the popular PCL (2) used in this screening program does not conform to established clinical diagnostic criteria for PTSD (6) and might provide either over- or underestimates of post-traumatic psychopathology. In addition, the comparatively low rate of postdisaster depression identified by PHQ challenges assumptions about its sensitivity for detecting depression, especially because the proportion appears lower than that documented for the general population.

Approximately half of the participants met preestablished screening criteria for mental health problems. Despite substantial resources directed at the mental health effects of 9/11, only 3% of this population reported having accessed mental health treatment. Project Liberty (10), a crisis counseling program funded by the Federal Emergency Management Administration, offered interventions beyond crisis counseling to help persons who experienced persistent and disabling distress. In addition, the Public Safety Workers Program, funded by the Substance Abuse and Mental Health Services Administration, has made limited funds available for the mental health treatment of this specific population through September 30, 2005. The mental health effects observed in this population suggest the need for further mental health screening, follow-up, and access to mental health services for WTC rescue and recovery workers and volunteers.

References

1. Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. *Psychol Med* 1979;9:139-45.
2. Blanchard EB, Jones-Alexander J, Buckley TC, Forneris CA. Psychometric properties of the PTSD Checklist (PCL). *Behav Res Ther* 1996;34:669-73.
3. Spitzer RL, Kroenke K, Williams JB, the Patient Health Questionnaire Primary Care Study Group. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. *JAMA* 1999;282:1737-44.
4. Ewing JA. Detecting alcoholism: the CAGE questionnaire. *JAMA* 1984;252:1905-7.

5. Leon AC, Olfson M, Portera L, Farber L, Sheehan DV. Assessing psychiatric impairment in primary care with the Sheehan Disability Scale. *Int J Psychiatry Med* 1997;27:93–105.
6. Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic Stress Disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 1995;52:1048–60.
7. Schlenger WE, Caddell JM, Ebert L, et al. Psychological reactions to terrorists attacks: findings from the National Study of Americans' Reactions to September 11. *JAMA* 2002;288:581–8.
8. North CS, Tivis L, McMillen JC, et al. Psychiatric disorders in rescue workers after the Oklahoma City bombing. *Am J Psychiatry* 2002;159:857–9.
9. Kessler RC, McGonagle KA, Zhao S, et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results of the National Comorbidity Survey. *Arch Gen Psychiatry* 1994;51:8–19.
10. Felton CJ. Lessons learned since September 11, 2001, concerning the mental health impact of terrorism, appropriate response strategies, and future preparedness. *Psychiatry* 2004;67:147–52.