

**Published by:**

National Center for PTSD  
VA Medical Center (116D)  
215 North Main Street  
White River Junction  
Vermont 05009-0001 USA

(802) 296-5132  
FAX (802) 296-5135  
Email: [ncptsd@va.gov](mailto:ncptsd@va.gov)

All issues of the PTSD Research  
Quarterly are available online at:  
[www.ptsd.va.gov](http://www.ptsd.va.gov)

**Editorial Members:**

Editorial Director  
Matthew J. Friedman, MD, PhD

Scientific Editor  
Fran H. Norris, PhD

Managing Editor  
Heather Smith, BA Ed

**National Center Divisions:**

Executive  
White River Jct VT

Behavioral Science  
Boston MA

Dissemination and Training  
Menlo Park CA

Clinical Neurosciences  
West Haven CT

Evaluation  
West Haven CT

Pacific Islands  
Honolulu HI

Women's Health Sciences  
Boston MA

## A Guide to the 10-year Retrospectives of the September 11th Terrorist Attacks

As it should, the field of disaster research has always been responsive to real-world events. Each disaster raises new questions, calls attention to shortcomings in the existing knowledge base, and prompts new researchers to enter the field. Thus, historically, progress in understanding disaster effects leaps forward after particularly catastrophic or newsworthy events. The September 11, 2001 terrorist attacks (9/11) triggered literally dozens of studies that crossed the range of affected populations. Most studies were conducted in New York City (NYC), NY, of course, but several studies also examined the broad impact of 9/11 across the country.

In September 2011, the 10th anniversary of 9/11 prompted five relevant journals to publish major special issues or sections on the attacks and their aftermath. In this newsletter, we aim to provide our readers with a guide to these important retrospectives. We read and considered for inclusion in our bibliography all articles published in special commemorative issues of *The Lancet*, 378(9794), *American Psychologist*, 66(6), *Disaster Medicine and Public Health Preparedness*, 5, S2, *Journal of Traumatic Stress*, 24(5), and *Traumatology*, 17(3). We highlight the most important contributions for understanding postdisaster mental health, especially PTSD. In general, the 9/11 anniversary articles can be grouped into four categories: Reviews, Original Research, Experiential Writings, and Commentary.

We should note at the outset that a key challenge in research on 9/11, emerging in publications across these four categories, was how to conceptualize and measure exposure. Although the effects of indirect exposure to disasters had been examined previously (see Norris et al., 2002), those effects were typically

**Fran H. Norris, Ph.D.**

Department of Psychiatry Geisel School of Medicine at Dartmouth and Department of Veterans Affairs National Center for PTSD

**Roxane Cohen Silver, Ph.D.**

Department of Psychology and Social Behavior and the Department of Medicine at the University of California, Irvine

studied in persons relatively proximal to the event, for example, people living in a disaster-declared area who suffered no damage to their own homes but did experience a certain degree of community disruption or inconvenience. After 9/11, this question was extended to encompass children and adults who were quite distal to the event, whose exposure was confined to media, broad societal changes, or fear of future attacks. The national scope of research on 9/11 was unprecedented. It is imperative in reading any of these reviews or, for that matter, any specific study of 9/11, to grasp where that study stands on the continuum of severity of exposure.

### Reviews

Neria et al. (2011) reviewed epidemiologic evidence pertaining to the prevalence of PTSD within populations highly exposed to the attacks. A total of 34 peer-reviewed articles met inclusion criteria. Table 1 in their paper provides an excellent overview of these studies, summarizing methodological features, PTSD prevalence estimates, and correlates of PTSD. In community or general population samples, prevalence estimates ranged from 1.5% to 12.5%. The range appeared to reflect variations in the samples' overall proximity to the attacks or measures used, and severity of exposure was a consistent correlate of PTSD on the individual level. Reasonably, the prevalence of PTSD was higher (15%) in a study of over 3,000 adults who had evacuated from the World Trade Center (WTC) on 9/11.

One of the topics of greatest interest was the impact of 9/11 on first responders and recovery workers. Previous research generally had shown responders to be less distressed than other adult survivors (Norris et al., 2002), but after 9/11, their exposure

*Continued on page 2*



was unusually prolonged and severe. According to the Neria et al. (2011) review, PTSD prevalence estimates (6% to 22%) varied both with worker type and study timing. A particularly important study that involved an extraordinarily large ( $n = 29,000$ ) sample of rescue and recovery workers assessed 2 to 3 years postattack yielded a mid-range estimate of 12% and showed that job type, earlier start date on site, longer duration on site, and performing tasks not common to one's occupation were key risk factors for PTSD.

PTSD was not the only outcome of interest. Perlman and colleagues (2011) identified more than 150 studies on the mental and physical health effects of 9/11. Their article was extremely valuable for its breadth of coverage and astute discussion of methodological challenges, especially as they relate to health registries, the primary sources of data on rescue and recovery workers.

The epidemiology and etiology of respiratory health outcomes were particularly fascinating topics in the 9/11 responder research. The presence of airborne toxicants on and after 9/11 was undeniable, but severity and duration of exposure were challenging to measure reliably, and effects of exposure to dust and debris were confounded with those of other physical and psychological stressors. Ekenga and Friedman-Jiménez (2011) summarized this literature and did an excellent job explaining the complexities of postattack respiratory research.

Of course, the effects of the attacks on American society went far beyond the domains of health and mental health. Of most relevance here were suggestions that these societal consequences were linked to psychological states and reactions to the events. On the basis of their review, Huddy and Feldman (2011) concluded that Americans' political reactions were linked to subjective responses to terrorism, with perceived threat of future terrorism being associated with support for strong security policies and the war. Anger was linked to support for aggressive foreign policies, whereas anxiety had the opposite effect. Morgan and colleagues (2011) discussed how Americans responded to the 9/11 attacks with negative social reactions, such as increased prejudice, as well as positive social reactions, including charitable donations and civic engagement.

There was also a great deal of professional concern about the potential effects of the attacks on children. Eisenberg and Silver (2001) observed that both direct and indirect exposure resulted in modest increases in symptoms in youth. In general, however, the emotional impact of 9/11 on children was transitory except for those children who directly witnessed or suffered loss from the attacks. Eisenberg and Silver provided a thorough summary of the important role that parents play in postdisaster adjustment of youth. They also reviewed evidence concerning some understudied outcome variables following 9/11, such as the development of sociopolitical attitudes and changes in beliefs about the world.

Overall, the reviews of the effects of 9/11 concluded that the burden of PTSD and other mental health problems was substantial in both the short- and long-term and strongly associated with direct exposure to the attacks. PTSD prevalence in the community declined significantly over time, which was consistent with past research, but increased in rescue and recovery workers who were studied longitudinally. Strikingly distinctive, this may be one of the most important findings to emerge from 9/11 research.

Given these effects, it is not surprising that interest in intervention mushroomed after 9/11. Watson et al. (2011) reviewed advances in methods for conducting needs assessments, screening, program evaluation, and evidence-based and "evidence-informed" postdisaster interventions. In an international expert consensus conference co-sponsored by six federal agencies, participants identified key components for individual and community intervention following mass violence. A series of systematic reviews conducted around the time of 9/11 (not necessarily because of it) led to a waning of support for psychological debriefing and growth of models generally referred to as "psychological first aid." While discussions of areas of progress over the past decade and areas of dire need for future research are too rich and complex for us to summarize here, it was clear that this article should be on the required reading list for anyone beginning to explore the knowledge base regarding postdisaster behavioral health training of clinicians, screening of community members, and intervention.

## Original Research

Documenting the effects of 9/11 remains a work in progress. North et al. (2011) study conducted 3 years after the attacks was important for several reasons, including the fact that their sample included a number of people who had been in the WTC on 9/11 and many others who had been in the immediate vicinity. All were assessed using a diagnostic interview schedule that included assessment of exposure. North et al. (2011) argued that many estimates of the prevalence of PTSD in the community are inflated because studies have not adequately assessed whether the participants' exposure met *DSM - IV* criteria. Participants who met trauma criteria were largely concentrated within a radius of 0.1 miles from Ground Zero. Most people who met symptom criteria without meeting one of these three qualifying exposure criteria had some other psychiatric diagnosis.

On the other hand, fascinating new research suggests that similar risk factors may operate across severities of exposure. Using data from a national probability sample of adults who had generally experienced only indirect exposure to 9/11, Holman et al. (2011) showed that the serotonin promoter gene (5-HTTLPR) interacted with social constraints (unsupportive social networks) to predict PTSD symptoms 2 to 3 years postevent. In other words, social constraints were more strongly related to symptoms among individuals with the low expression form of the allele than among individuals with the high expression form of the allele. These findings were consistent with previous research suggesting that the low expression form increases vulnerability to stress by promoting greater emotional reactivity.

In a remarkable paper, Soo et al. (2011) presented the longest follow-up to date of the prevalence and persistence of PTSD among NYC firefighters. Data from approximately 11,000 firefighters were collected as part of an ongoing monitoring program sponsored by the Fire Department of the City of New York. By 2010, the prevalence of probable PTSD in this population was 7.4%. Risk for PTSD was associated with early arrival at the WTC. Correlates of PTSD included respiratory symptoms, alcohol use, and decrease in exercise. In analyses of data collected from over 27,000 participants in the WTC Screening, Monitoring, and Treatment Program, findings differed for police officers and other rescue and recovery workers (Wisnivesky et al., 2011). Among the former, cumulative incidence of PTSD was 9.3%, depression was 7.0%, and panic disorder was 8.4%.

Among the latter (e.g., firefighters, construction workers), cumulative incidence of PTSD was 31.9%, depression was 27.5%, and panic disorder was 21.1%. The incidence of new cases peaked in Year 4, which is also an unusual finding for disaster research. Cukor et al. (2011) examined PTSD among nonrescue disaster workers 6 years postevent and found frequencies of approximately 6% and 8% for full and partial PTSD, respectively. Trauma history and extensive occupational exposure increased risk, among other factors.

Original research also included complex analyses of cancer outcomes, suggesting a modest excess of cancer cases in the firefighter cohort (Zeig-Owens et al., 2011), and early analyses of mortality among WTC Health Registry participants (Jordan et al., 2011). Although no significantly increased standardized mortality ratios emerged for diseases of the respiratory and cardiovascular systems, the authors emphasized the need for continued surveillance over time.

New results also emerged for youth in these special issues. For example, Chemtob et al. (2011) examined correlates of postattack suicidal ideation in a large sample of Jewish adolescents in NYC. In general, severity of exposure to 9/11 and probable PTSD increased risk for suicidal ideation, but the results were much more complex than this, showing that some specific types of trauma exposure increased risk for suicidal ideation, while others did not. As they noted, their findings highlight the importance of assessing multiple aspects of exposure and multiple outcomes.

Thus, the new evidence published in the decade anniversary special issues confirmed and extended the conclusions reached by reviewers of previously published research.

## Experiential Writings

It is nearly impossible to summarize experiential writings succinctly without losing the very richness that makes them worthwhile. In the special issue of *Traumatology*, professionals in NYC, most of whom were affiliated with New York University (NYU), told their own stories and shared lessons learned from the attacks. This issue would make especially good reading for graduate students in psychology, social work, and related disciplines because it called attention to the intersection between personal experience, professional experience, and empirical knowledge. The Alpert et al. (2011) article is the best starting point for understanding the points made by the multiple contributors. Greenberg (2011) cogently discussed the evolution of one's memory and story over time, noting the challenge of balancing memory and truth. Tosone (2011) considered the implications for practice when practitioner and client share trauma and showed how personal experience can prompt new avenues of research. Ahluwalia (2011) described the experience of being a member of a Sikh family and community after 9/11; anyone who believes that New Yorkers' solidarity was all-inclusive should read this article and think again. Mills (2011) related her experiences of that day in the form of a letter to her son, who was only 5 years old when the attacks occurred three blocks away from their home. Part of the appeal of these papers is that it has been argued that narratives are a core element of community resilience to disaster, notwithstanding the challenge of documenting such effects empirically (Norris et al., 2008).

## Commentaries

Editorials and commentaries commonly remarked on the tremendous growth of knowledge that was sparked by 9/11. Subbarao et al. (2011) noted that 9/11 is widely considered to be the catalyst for forging the disciplines of disaster medicine and public health preparedness. This is not precisely true, as several pioneering public health professionals and academics have promoted these fields for decades, but it is true that 9/11 gave new life and visibility to these professions. Khan (2011) likewise observed that since 9/11, the U.S. public health system has received unprecedented investment, yielding increased preparedness and response capacity, but he also noted that continued progress is challenging in light of the economic crisis. Advocating for a "continuum of care model" for disaster mental health, Nucifora et al. (2011) argued that conceptualizations of resilience should guide the design of these models, a point with which we agree strongly. Mauer (2011) observed that the research to date leaves no doubt about the necessity of continuing health monitoring, treatment, and research for WTC rescue and recovery workers. Silver and Fischhoff (2011) called attention to the potential of psychological science to help policy-makers understand why terrorism occurs, how the public is likely to respond, and how to reduce the impacts of future terrorist attacks. As they noted, continued scientific study of human behavior is "integral to a national strategy for preparedness, mitigation, response, and recovery."

## References

- Norris, F.H., Friedman, M.J., Watson, P.J., Byrne, C.M., Diaz, E., & Kaniasty, K. (2002). **60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001.** *Psychiatry: Interpersonal and Biological Processes, 65*, 207-239. doi: 10.1521/psyc.65.3.207.20173. Results for 160 samples of disaster victims were coded as to sample type, disaster type, disaster location, outcomes and risk factors observed, and overall severity of impairment. In order of frequency, outcomes included specific psychological problems, nonspecific distress, health problems, chronic problems in living, resource loss, and problems specific to youth. Regression analyses showed that samples were more likely to be impaired if they were composed of youth rather than adults, were from developing rather than developed countries, or experienced mass violence (e.g., terrorism, shooting sprees) rather than natural or technological disasters. Most samples of rescue and recovery workers showed remarkable resilience. Within adult samples, more severe exposure, female gender, middle age, ethnic minority status, secondary stressors, prior psychiatric problems, and weak or deteriorating psychosocial resources most consistently increased the likelihood of adverse outcomes. Among youth, family factors were primary. Implications of the research for clinical practice and community intervention are discussed in a companion article.
- Norris, F.H., Stevens, S.P., Pfefferbaum, B., Wyche, K.F., & Pfefferbaum, R.L. (2008). **Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness.** *American Journal of Community Psychology, 41*, 127-150. doi: 10.1007/s10464-007-9156-6. Communities have the potential to function effectively and adapt successfully in the aftermath of disasters. Drawing upon literatures in several disciplines, we present a theory of resilience that encompasses contemporary understandings of stress, adaptation, wellness, and resource

dynamics. Community resilience is a process linking a network of adaptive capacities (resources with dynamic attributes) to adaptation after a disturbance or adversity. Community adaptation is manifest in population wellness, defined as high and nondisparate levels of mental and behavioral health, functioning, and quality of life. Community resilience emerges from four primary sets of adaptive capacities — Economic Development, Social Capital, Information and Communication, and Community Competence — that together provide a strategy for disaster readiness. To build collective resilience, communities must reduce risk and resource inequities, engage local people in mitigation, create organizational linkages, boost and protect social supports, and plan for not having a plan, which requires flexibility, decision-making skills, and trusted sources of information that function in the face of unknowns.

## FEATURED ARTICLES

Alpert, J.L., Ronell, A., & Patell, S. (2011). **Enduring September 11th in New York: Lessons learned by the NYU community.** *Traumatology, 17* (3), 3-6. doi: [10.1177/1534765611421713](https://doi.org/10.1177/1534765611421713). The articles that follow are written by members of the NYU community, including administrators, faculty, or students, on the day of the WTC attacks in 2011. Collectively the articles offer a glimpse of what some people connected to the university experienced that day and days following. They also offer professional and personal reflections on the event. [Text, p. 3]

Cukor, J., Wyka, K., Mello, B., Olden, M., Jayasinghe, N., Roberts, J., et al. (2011). **The longitudinal course of PTSD among disaster workers deployed to the World Trade Center following the attacks of September 11th.** *Journal of Traumatic Stress, 24*, 506-514. doi: [10.1002/jts.20672](https://doi.org/10.1002/jts.20672). This study examined the long-term mental health outcomes of 2,960 nonrescue disaster workers deployed to the WTC site in New York City following the 9/11 terrorist attacks. Semistructured interviews and standardized self-report measures were used to assess the prevalence of PTSD and other psychopathology 4 and 6 years after the attacks. Clinician-measured rates of PTSD and partial PTSD 4 years posttrauma were 8.4% and 8.9%, respectively, in a subsample of 727 individuals. Rates decreased to 5.8% and 7.7% for full and partial PTSD 6 years posttrauma. For the larger sample, self-report scores revealed probable PTSD and partial PTSD prevalence to be 4.8% and 3.6% at 4 years, and 2.4% and 1.8% at 6 years. Approximately 70% of workers never met criteria for PTSD. Although PTSD rates decreased significantly over time, many workers remained symptomatic, with others showing delayed-onset PTSD. The strongest predictors of ongoing PTSD 6 years following 9/11 were trauma history (odds ratio (OR)) = 2.27, 95% confidence interval ((CI) [1.06, 4.85]); the presence of major depressive disorder 1 to 2 years following the trauma (OR = 2.80, 95% CI [1.17, 6.71]); and extent of occupational exposure (OR = 1.31, 95% CI [1.13, 1.51]). The implications of the findings for both screening and treatment of disaster workers are discussed.

Eisenberg, N., & Silver, R.C. (2011). **Growing up in the shadow of terrorism: Youth in America after 9/11.** *American Psychologist, 66*, 468-481. doi: [10.1037/a0024619](https://doi.org/10.1037/a0024619). Research conducted in the aftermath of 9/11 suggests that, except for those who directly witnessed or suffered loss from the attacks, for most children the emotional impact was relatively transitory. We review this literature as well as consider other ways in which the attacks may have played a role in the development of adolescents and young adults as they came of

age in the shadow of 9/11 in the U.S. Specifically, we discuss the potential impact of the collective trauma of 9/11 on children's coping and emotional regulation, their sociopolitical attitudes, and their general beliefs about the world. Developmental issues and the role of parents in shaping their children's responses to 9/11 are also addressed. Researchers interested in children's social, emotional, and psychological development have much to learn about children's reactions to events like 9/11 and factors that might mitigate the negative consequences of such events on children's development.

Ekenga, C.C., & Friedman-Jiménez, F. (2011). **Epidemiology of respiratory health outcomes among World Trade Center disaster workers: Review of the literature 10 years after the September 11, 2001 terrorist attacks.** *Disaster Medicine and Public Health Preparedness, 5*, S189-S196. doi: [10.1001/dmp.2011.58](https://doi.org/10.1001/dmp.2011.58). Tens of thousands of workers participated in rescue, recovery, and cleanup activities at the WTC site in lower Manhattan after 9/11. The collapse of the WTC resulted in the release of a variety of airborne toxicants. To date, respiratory symptoms and diseases have been among the most examined health outcomes in studies of WTC disaster workers. A systematic review of the literature on respiratory health outcomes was undertaken to describe the available information on new onset of respiratory symptoms and diseases among WTC disaster workers after 9/11. Independent risk factors for respiratory health outcomes included being caught in the dust and debris cloud, early arrival at the WTC site, longer duration of work, and delaying mask and respirator use. Methodological challenges in epidemiologic studies of WTC disaster workers involved study design, exposure misclassification, and limited information on potential confounders and effect modifiers. In the 10 years after 9/11, epidemiologic studies of WTC disaster workers have been essential in investigating the respiratory health consequences of WTC exposure. Longitudinal studies along with continued medical surveillance will be vital in understanding the long-term respiratory burden associated with occupational WTC exposure.

Holman, E.A., Lucas-Thompson, R.G., & Lu, T. (2011). **Social constraints, genetic vulnerability, and mental health following collective stress.** *Journal of Traumatic Stress, 24*, 497-505. doi: [10.1002/jts.20671](https://doi.org/10.1002/jts.20671). A repeat-length polymorphism of the serotonin promoter gene (5-HTTLPR) has been associated with depression and PTSD in trauma-exposed individuals reporting unsupportive social environments. We examine the contributions of the triallelic 5-HTTLPR genotype and social constraints to posttraumatic stress (PTS) symptoms in a national sample following the 9/11 terrorist attacks. Saliva was collected by mail from 711 respondents (European American subsample ( $n = 463$ ) of a large national probability sample of 2,729 adults. Respondents completed web-based assessments of pre-9/11 mental and physical health, acute stress 9 to 23 days post-9/11, PTS symptoms, and social constraints on disclosure regarding fears of future terrorist attacks 2 to 3 years post-9/11. Social constraints were positively associated with PTS symptoms 2 to 3 years post-9/11. The triallelic 5-HTTLPR genotype was not directly associated with PTS symptoms, but it interacted with social constraints to predict PTS symptoms 2 to 3 years post-9/11. Social constraints were more strongly associated with PTS symptoms for individuals with any s/lg allele than for homozygous la/la individuals. Constraints on disclosing fears about future terrorism moderate the 5-HTTLPR genotype-PTS symptom association even when indirectly exposed to collective stress.

Khan, A.S. (2011). **Public health preparedness and response in the USA since 9/11: A national health security imperative.** *The Lancet*, 378, 953–956. doi: 10.1016/S0140-6736(11)61263-4. “The terrorist attacks on September 11, 2001 (9/11) uncovered weaknesses in the U.S. national public health infrastructure. Response efforts did not have the integrated communications and unified command needed for a large-scale response, and information crucial for decision making was not shared among agencies...” [ABSTRACT ADAPTED]

Neria, Y., DiGrande, L., & Adams, B.G. (2011). **Posttraumatic stress disorder following the September 11, 2001, terrorist attacks: A review of the literature among highly exposed populations.** *American Psychologist*, 66, 429–446. doi: 10.1037/a0024791. The 9/11 terrorist attacks were unprecedented in their magnitude and aftermath. In the wake of the attacks, researchers reported a wide range of mental and physical health outcomes, with PTSD the one most commonly studied. In this review, we aim to assess the evidence about PTSD among highly exposed populations in the first 10 years after the 9/11 attacks. We performed a systematic review. Eligible studies included original reports based on the full *DSM – IV* criteria of PTSD among highly exposed populations such as those living or working within close proximity to the WTC and the Pentagon in New York City and Washington, DC, respectively, and first responders, including rescue, cleaning, and recovery workers. The large body of research conducted after the 9/11 attacks in the past decade suggests that the burden of PTSD among persons with high exposure to 9/11 was substantial. PTSD that was 9/11-related was associated with a wide range of correlates, including sociodemographic and background factors, event exposure characteristics, loss of life of significant others, and social support factors. Few studies used longitudinal study design or clinical assessments, and no studies reported findings beyond 6 years post-9/11, thus hindering documentation of the long-term course of confirmed PTSD. Future directions for research are discussed.

North, C.S., Pollio, D.E., Smith, R.P., King, R.V., Pandya, A., Surís, A.M., et al. (2011). **Trauma exposure and posttraumatic stress disorder among employees of New York City companies affected by the September 11, 2001 attacks on the World Trade Center.** *Disaster Medicine and Public Health Preparedness*, 5, S205-S213. *Objective:* Several studies have provided prevalence estimates of PTSD related to the 9/11 attacks in broadly affected populations, although without sufficiently addressing qualifying exposures required for assessing PTSD and estimating its prevalence. A premise that people throughout the New York City area were exposed to the attacks on the WTC towers and are thus at risk for developing PTSD has important implications for both prevalence estimates and service provision. This premise has not, however, been tested with respect to *DSM – IV - TR* criteria for PTSD. This study examined associations between geographic distance from the 9/11 attacks on the WTC and reported 9/11 trauma exposures, and the role of specific trauma exposures in the development of PTSD. *Methods:* Approximately 3 years after the attacks, 379 surviving employees (102 with direct exposures, including 65 in the towers, and 277 with varied exposures) recruited from 8 affected organizations were interviewed using the Diagnostic Interview Schedule/Disaster Supplement and reassessed at 6 years. The estimated closest geographic distance from the WTC towers during the attacks and

specific disaster exposures were compared with the development of 9/11-related PTSD as defined by the *DSM – IV - TR*. *Results:* The direct exposure zone was largely concentrated within a radius of 0.1 miles and completely contained within 0.75 miles of the towers. PTSD symptom criteria at any time after the disaster were met by 35% of people directly exposed to danger, 20% of those exposed only through witnessed experiences, and 35% of those exposed only through a close associate’s direct exposure. Outside these exposure groups, few possible sources of exposure were evident among the few who were symptomatic, most of whom had preexisting psychiatric illness. *Conclusions:* Exposures deserve careful consideration among widely affected populations after large terrorist attacks when conducting clinical assessments, estimating the magnitude of population PTSD burdens, and projecting needs for specific mental health interventions.

Nucifora, F.C., Hall, R.C., & Everly, G.S. (2011). **Reexamining the role of the traumatic stressor and the trajectory of posttraumatic distress in the wake of disaster.** *Disaster Medicine and Public Health Preparedness*, 5, S172-S175. doi: 10.1001/dmp.2011.51. These articles identify a population that continues to suffer long after a disaster, regardless of the diagnosis, and directly or indirectly raises the question of how best to apply research and improve design for future study and resource allocation. It is time to move past collecting statistics on how many people develop psychiatric consequences after a disaster and start engaging in more prospective study design. Although these may be difficult studies for many reasons (e.g., we cannot predict where or when a disaster will strike), we have the opportunity to study a defined and easily accessed population in first responders as was evident from the studies in this issue. As a field, disaster medicine needs to examine preincident training and develop programs to build resistance that take into account antecedent factors such as baseline psychiatric functioning, history, and personality features. We can design trials to increase self-efficacy and determine which ones build resistance and enhance resilience. We can design prospective studies to address ways to prepare people for disasters and determine which have the best outcomes. To better understand PTSD, we should strive to design studies that identify cohorts of people who meet PTSD criteria without comorbidities. Careful and accurate diagnosis will aid neuroscientists in their quest to determine the pathophysiology behind these illnesses, with the goal of developing better treatments and perhaps even prevention strategies. Accurate diagnosis will provide state and local governments with the proper information when allocating scarce resources and trying to predict long-term outcomes. The goal of this type of research is to find a better way to provide help and support to our everyday heroes. [Text, p. S174]

Perlman, S.E., Friedman, S., Galea, S., Nair, H.P., Eros-Sarnyai, M., Stellman, S.D., et al. (2011). **Short-term and medium-term health effects of 9/11.** *The Lancet*, 378, 925–934. doi: 10.1016/S0140-6736(11)60967-7. The New York City terrorist attacks on 9/11, killed nearly 2,800 people and thousands more had subsequent health problems. In this Review of health effects in the short and medium terms, strong evidence is provided for associations between experiencing or witnessing events related to 9/11 and PTSD and respiratory illness, with a correlation between prolonged, intense exposure and increased overall illness and disability. Rescue and recovery workers, especially those who arrived early at the WTC site

or worked for longer periods, were more likely to develop respiratory illness than were other exposed groups. Risk factors for PTSD included proximity to the site on 9/11, living or working in lower Manhattan, rescue or recovery work at the WTC site, event-related loss of spouse, and low social support. Investigators note associations between 9/11 exposures and additional disorders, such as depression and substance use; however, for some health problems association with exposures related to 9/11 is unclear.

Silver, R.C., & Fischhoff, B. (2011). **What should we expect after the next attack?** *American Psychologist*, *66*, 567–572. doi: 10.1037/a0024893. A test of any science is its ability to predict events under specified conditions. A test for the psychology represented in this special issue of the *American Psychologist* is its ability to predict individual and social behavior in the aftermath of a next terror attack. This article draws on that science to make such predictions. These predictions are conditioned on both the nature of the attack and our institutional preparations for it. Some attacks will test our resilience more than others. Whatever the attack, we will reduce its impacts if our institutions take advantage of psychological science. That science can reduce the scope of attacks by limiting terrorists' ability to organize their operations and by enhancing our ability to restrain them. It can reduce the impacts of any attacks that do occur by strengthening the institutions and civil society that must respond to them. Realizing these possibilities will require our social institutions to rely on science, rather than intuition, in dealing with these threats. It will require our profession to provide psychologists with rewards for public service, applied research, and interdisciplinary collaboration, as demanded by complex problems. Responding to these challenges could strengthen society and psychology.

Soo, J., Webber, M.P., Gustave, J., Lee, R., Hall, C.B., Cohen, H.W., et al. (2011). **Trends in probable PTSD in firefighters exposed to the World Trade Center disaster, 2001–2010.** *Disaster Medicine and Public Health Preparedness*, *5*, S197–S203. doi: 10.1001/dmp.2011.48. *Objective:* We present the longest follow-up, to date, of probable PTSD after the 9/11 terrorist attacks on the WTC in New York City firefighters who participated in the rescue/recovery effort. *Methods:* We examined data from 11,006 WTC-exposed firefighters who completed 40,672 questionnaires and reported estimates of probable PTSD by year from serial cross-sectional analyses. In longitudinal analyses, we used separate Cox models with data beginning from October 2, 2001, to identify variables associated with recovery from or delayed onset of probable PTSD. *Results:* The prevalence of probable PTSD was 7.4% by September 11, 2010, and continued to be associated with early arrival at the WTC towers during every year of analysis. An increasing number of aerodigestive symptoms (hazard ratio [HR] 0.89 per symptom, 95% CI 0.86–0.93) and reporting a decrease in exercise, whether the result of health (HR 0.56 vs. no change in exercise, 95% CI 0.41–0.78) or other reasons (HR 0.76 vs. no change in exercise, 95% CI 0.63–0.92), were associated with a lower likelihood of recovery from probable PTSD. Arriving early at the WTC (HR 1.38 vs. later WTC arrival, 95% CI 1.12–1.70), an increasing number of aerodigestive symptoms (HR 1.45 per symptom, 95% CI 1.40–1.51), and reporting an increase in alcohol intake since 9/11 (HR 3.43 vs. no increase in alcohol intake, 95% CI 2.67–4.43) were associated with delayed onset of probable

PTSD. *Conclusions:* Probable PTSD continues to be associated with early WTC arrival even 9 years after the terrorist attacks. Concurrent conditions and behaviors, such as respiratory symptoms, exercise, and alcohol use also play important roles in contributing to PTSD symptoms.

Subbarao, I., Dobalian, A., & James, J.J. (2011). **Reflections on the discipline and profession of disaster medicine and public health preparedness.** *Disaster Medicine and Public Health Preparedness*, *5*, S168–S169. doi: 10.1001/dmp.2011.55. In an introduction to the special 9/11 10th anniversary issue of *Disaster Medicine and Public Health Preparedness*, the guest editor (Dobalian) and his colleagues commented on progress and remaining challenges within the field of disaster medicine and public health preparedness. In their view, the 9/11 terrorist attacks served as the catalyst for forging the discipline. They noted current needs to codify the discipline in terms of competencies, standards, and certification and to clarify the roles of various organizations. They also introduced the papers that appear in the special issue.

Watson, P.J., Brymer, M.J., & Bonanno, G.A. (2011). **Postdisaster psychological intervention since 9/11.** *American Psychologist*, *66*, 482–494. doi: 10.1037/a0024806. A wealth of research and experience after 9/11 has led to the development of evidence-based and evidence-informed guidelines and strategies to support the design and implementation of public mental health programs after terrorism and disaster. This article reviews advances that have been made in a variety of areas, including development of improved metrics and methodologies for conducting needs assessment, screening, surveillance, and program evaluation; clarification of risk and resilience factors as these relate to varying outcome trajectories for survivors and inform interventions; development and implementation of evidence-based and evidence-informed early, midterm, and late interventions for children, adults, and families; adaptation of interventions for cultural, ethnic, and minority groups; improvement in strategies to expand access to postdisaster mental health services; and enhancement of training methods and platforms for workforce development among psychologists, paraprofessionals, and other disaster responders. Continuing improvement of psychologists' national capacity to respond to catastrophic events will require more systematic research to strengthen the evidence base for postdisaster screening and interventions and effective methods and platforms for training. Policy decisions are clearly needed that enhance federal funding to increase availability and access to services, especially for longer term care. Traumatic bereavement represents a critical area for future research, as much needs to be done to clarify issues related to reactions and adaptation to a traumatic death.

Wisnivesky, J.P., Teitelbaum, S.L., Todd, A.C., Boffetta, P., Crane, M., Crowley, L., et al. (2011). **Persistence of multiple illnesses in World Trade Center rescue and recovery workers: A cohort study.** *The Lancet*, *378*, 888–897. doi: 10.1016/S0140-6736(11)61180-X. *Background:* More than 50,000 people participated in the rescue and recovery work that followed the 9/11 attacks on the WTC. Multiple health problems in these workers were reported in the early years after the disaster. We report incidence and prevalence rates of physical and mental health disorders during the 9 years since the attacks, examine their associations with occupational exposures,

## FEATURED ARTICLES *continued*

and quantify physical and mental health comorbidities. *Methods:* In this longitudinal study of a large cohort of WTC rescue and recovery workers, we gathered data from 27,449 participants in the WTC Screening, Monitoring, and Treatment Program. The study population included police officers, firefighters, construction workers, and municipal workers. We used the Kaplan-Meier procedure to estimate cumulative and annual incidence of physical disorders (asthma, sinusitis, and gastro-oesophageal reflux disease), mental health disorders (depression, PTSD, and panic disorder), and spirometric abnormalities. Incidence rates were assessed also by level of exposure (days worked at the WTC site and exposure to the dust cloud). *Findings:* 9-year cumulative incidence of asthma was 27.6% (number at risk: 7,027), sinusitis 42.3% (5,870), and gastro-oesophageal reflux disease 39.3% (5,650). In police officers, cumulative incidence of depression was 7.0% (number at risk: 3,648), PTSD 9.3% (3,761), and panic disorder 8.4% (3,780). In other rescue and recovery workers, cumulative incidence of depression was 27.5% (number at risk: 4,200), PTSD 31.9% (4,342), and panic disorder 21.2% (4,953). Nine-year cumulative incidence for spirometric abnormalities was 41.8% (number at risk: 5,769); three-quarters of these abnormalities were low forced vital capacity. Incidence of most disorders was highest in workers with greatest WTC exposure. Extensive comorbidity was reported within and between physical and mental health disorders. *Interpretation:* 9 years after the 9/11 WTC attacks, rescue and recovery workers continue to have a substantial burden of physical and mental health problems. These findings emphasize the need for continued monitoring and treatment of the WTC rescue and recovery population. *Funding:* Centers for Disease Control and Prevention and National Institute for Occupational Safety and Health.

## ADDITIONAL CITATIONS

Ahluwalia, M.K. (2011). **Holding my breath: The experience of being Sikh after 9/11.** *Traumatology*, 17 (3), 41-46. doi: 10.1177/1534765611421962. This article is based on the author's experiences after the 9/11 terrorist attacks in New York City and the impact of the attacks on her life as a New Yorker, an academic, and a member of a Sikh family and community. To position the author's narrative, her reflection integrates race-based traumatic stress, a model suggesting that individuals who are targets of racism experience harm or injury. The author outlines lessons learned that affect her both personally and professionally, including (a) paralysis can happen but advocacy and allies are healing, (b) trauma changes the work, and (c) the power of macro and microaggressions on identity and community.

Boscarino, J.A., Kirchner, H.L., Hoffman, S.N., Sartorius, J., & Adams, R.E. (2011). **PTSD and alcohol use after the World Trade Center attacks: A longitudinal study.** *Journal of Traumatic Stress*, 24, 515-525. doi: 10.1002/jts.20673. Research suggests that PTSD is associated with increased alcohol use, but the findings have not been consistent. We assessed alcohol use, binge drinking, and psychotropic medication use longitudinally in 1,681 New York City adults, representative of the 2,000 census, 2 years after the WTC attacks. We found that, with the exception of a modified CAGE Questionnaire index for alcohol, alcohol use showed a modest increase over time and was related to PTSD symptoms, with an increase of about 1 more drink per month for those with PTSD, even

## ADDITIONAL CITATIONS *continued*

though overall levels appeared to be within the National Institute on Alcohol Abuse and Alcoholism's safe range. Psychotropic medication use followed a similar trend; those with PTSD used psychotropics about 20 more days over the past year than those without. Because the study analyses adjusted for key psychosocial variables and confounders, it is not clear if the increased alcohol use following trauma exposure is associated with self-medication of PTSD symptoms, whether increased alcohol use prior to exposure is a risk for delayed-onset PTSD, or whether a third unmeasured variable is involved. Further research is warranted.

Chemtob, C.M., Madan, A., Berger, P., & Abramovitz, R. (2011). **Adolescent exposure to the World Trade Center attacks, PTSD symptomatology, and suicidal ideation.** *Journal of Traumatic Stress*, 24, 526-529. doi: 10.1002/jts.20670. This study examined the associations between different types of trauma exposure, PTSD symptoms, and suicidal ideation among New York City adolescents 1 year after the WTC attacks. A sample of 817 adolescents, aged 13 to 18, was drawn from two Jewish parochial high schools (97% participation rate). We assessed three types of trauma exposure, current (within the past month) and past (within the past year) suicidal ideation, and current PTSD symptoms. Findings indicated that probable PTSD was associated with increased risk for suicidal ideation. Exposure to attack-related traumatic events increased risk for both suicidal ideation and PTSD. However, specific types of trauma exposure differentially predicted suicidal ideation and PTSD, knowing someone who was killed increased risk for PTSD, but not for suicidal ideation, and having a family member who was hurt but not killed, increased risk for suicidal ideation, but not for PTSD. This study extends findings from the adult literature showing associations between trauma exposure, PTSD, and increased suicidal ideation in adolescents.

Duarte, C.S., Wu, P., Cheung, A., Mandell, D., Fan, B., Wicks, J., et al. (2011). **Media use by children and adolescents from New York City 6 months after the WTC attack.** *Journal of Traumatic Stress*, 24, 553-556. doi: 10.1002/jts.20687. Six months after the WTC attacks of 9/11, a representative sample of New York City students ( $n = 8,236$ ) in Grades 4 through 12 reported their use of TV, Web, and combined radio and print media regarding the WTC attack. Demographic factors, WTC exposure, other exposure to trauma, and probable PTSD were used to predict intensive use of the three types of media. Intensive use was associated with direct exposure to the WTC attack (with the exception of Web use) and to having reported symptoms of PTSD. Stratified analyses indicated that the association between probable PTSD and intensive media use was more consistently present among those who had no direct or familial exposure to the WTC attack. As well, media, particularly TV, was intensively used by children after the WTC attack. Variations existed in the factors associated with intensive media use, which should be considered when planning postdisaster media coverage and advising families.

Fischhoff, B. (2011). **Communicating about the risks of terrorism (or anything else).** *American Psychologist*, 66, 520-531. doi: 10.1037/a0024570. Communication is essential to preventing terrorists from achieving their objectives. Effective communication can reduce terrorists' chances of mounting successful operations, creating threats that disrupt everyday life, and undermining the legitimacy of the societies that they attack. Psychological research has essential roles to play in that communication, identifying the

public's information needs, designing responsive communications, and evaluating their success. Fulfilling those roles requires policies that treat two-way communication with the public as central to ensuring that a society is strengthened, rather than weakened, by its struggle with terror. There are scientific, organizational, and political barriers to achieving those goals. Psychological research can help to overcome them—and advance its science in the process.

Greenberg, J. (2011). **“That Was Then, This Is Now” or a wound still simmers.** *Traumatology*, 17 (3), 10-14. doi: 10.1177/1534765610395612. “That Was Then, This is Now” or “A Wound Still Simmers” contemplates the author’s memory-work in the years after the attacks of 9/11. As a New Yorker who teaches at NYU and rides the subway regularly, the author encounters armed guards at her local subway station one day slightly eight years after the attacks. How do they evoke the dangers and memories of 9/11? In what ways has time allowed her to forget or “move on” from the day? In what ways does its impact still linger beneath the surface? The author turns to literature — to the short story, “World Memory,” by Italo Calvino and to Toni Morrison’s novel, *Beloved* — to reflect upon how we archive, narrate, and share our traumatic pasts. She underscores a dynamic between, on the one hand, the processes selection, editing, and forgetting that occur in the retelling of the past and, on the other hand, the inability to know, tell and contain traumatic experience. Literature, she observes, calls attention to both the difficulty of the narration of trauma and the necessity of sharing and transmitting traumatic stories to others. Literature can articulate the memory-work or oscillation between remembering and forgetting that transpires in the delay between “now” and “then.”

Huddy, L., & Feldman, S. (2011). **Americans respond politically to 9/11: Understanding the impact of the terrorist attacks and their aftermath.** *American Psychologist*, 66, 455–467. doi: 10.1037/a0024894. The 9/11 terrorist attacks have had profound effect on U.S. domestic and foreign security policy, leading to several expensive wars and the erosion of civil liberties (under the USA PATRIOT Act). We review evidence on political reactions to the 9/11 attacks and conclude that subjective reactions to terrorism played an important role in shaping support for national security policy in the wake of 9/11. Support for a strong national security policy was most pronounced among Americans who perceived the nation as at threat from terrorism and felt angry at terrorists. In contrast, Americans who were personally affected by the attacks were more likely to feel anxious about terrorism, and this anxiety translated into less support for overseas military action. In addition, Americans who felt insecure after the 9/11 attacks and perceived a high future threat of terrorism were more likely than others to support strong foreign and domestic national security policies. Overall, research on American political reactions to 9/11 suggests that support for a strong government response to terrorism is most likely when members of a population perceive a high risk of future terrorism and feel angry at terrorists.

Jordan, H.T., Brackbill, R.M., Cone, J.E., Debchoudhury, I., Farfel, M.R., Greene, C.M., et al. (2011). **Mortality among survivors of the Sept 11, 2001, World Trade Center disaster: Results from the World Trade Center Health Registry cohort.** *The Lancet*, 378, 879–887. doi: 10.1016/S0140-6736(11)60966-5. *Background:* The 9/11 WTC disaster has been associated with several subacute

and chronic health effects, but whether excess mortality after 9/11 has occurred is unknown. We tested whether excess mortality has occurred in people exposed to the WTC disaster. *Methods:* In this observational cohort study, deaths occurring in 2003–2009 in WTC Health Registry participants residing in New York City were identified through linkage to New York City vital records and the National Death Index. Eligible participants were rescue and recovery workers and volunteers; lower Manhattan area residents, workers, school staff and students; and commuters and passers-by on 9/11. Study participants were categorized as rescue and recovery workers (including volunteers), or nonrescue and nonrecovery participants. Standardized mortality ratios (SMR) were calculated with New York City rates from 2000–2009 as the reference. Within the cohort, proportional hazards were used to examine the relation between a three-tiered WTC-related exposure level (high, intermediate, or low) and total mortality. *Findings:* We identified 156 deaths in 13,337 rescue and recovery workers and 634 deaths in 28,593 nonrescue and nonrecovery participants. All-cause SMRs were significantly lower than that expected for rescue and recovery participants (SMR 0.45, 95% CI 0.38–0.53) and nonrescue and nonrecovery participants (0.61, 0.56–0.66). No significantly increased SMRs for diseases of the respiratory system or heart, or for haematological malignancies were found. In nonrescue and nonrecovery participants, both intermediate and high levels of WTC-related exposure were significantly associated with mortality when compared with low exposure (adjusted hazard ratio 1.22, 95% CI 1.01–1.48, for intermediate exposure and 1.56, 1.15–2.12, for high exposure). High levels of exposure in nonrescue and nonrecovery individuals, when compared with low exposed nonrescue and nonrecovery individuals, were associated with heart-disease-related mortality (adjusted hazard ratio 2.06, 1.10–3.86). In rescue and recovery participants, level of WTC-related exposure was not significantly associated with all-cause mortality (adjusted hazard ratio 1.25, 95% CI 0.56–2.78, for high exposure and 1.03, 0.52–2.06, for intermediate exposure when compared with low exposure). *Interpretation:* This exploratory study of mortality in a well-defined cohort of 9/11 survivors provides a baseline for continued surveillance. Additional follow-up is needed to establish whether these associations persist and whether a similar association over time will occur in rescue and recovery participants. *Funding:* U.S. Centers for Disease Control and Prevention (National Institute for Occupational Safety and Health, Agency for Toxic Substances and Disease Registry, and National Center for Environmental Health); New York City Department of Health and Mental Hygiene.

Mauer, M.P. (2011). **9/11: The view ahead.** *The Lancet*, 378, 852-854. doi: 10.1016/S0140-6736(11)61310-X. We now know that, in one of the largest WTC rescue and recovery cohorts, health effects have persisted for almost a decade. These latest findings leave no doubt about the necessity of continuing health monitoring, treatment, and research for WTC rescue and recovery workers. One cannot help but wonder what will be reported when we mark the 20th anniversary of this tragedy. For now, the view ahead is still murky, much like the plumes of acrid smoke that rose in New York City a decade ago. [Adapted from Text]

Mills, L.G. (2011). **Do you remember: A letter to my son.**

*Traumatology*, 17 (3), 62-66. doi: 10.1177/1534765611421812.

A letter, dated one year after the 9/11 terrorist attack on New York City, in which the author recounts to her son the events of that day and their responses to them. [ABSTRACT ADAPTED]

Morgan, G.S., Wisneski, D.C., & Skitka, L.J. (2011). **The expulsion from Disneyland: The social psychological impact of 9/11.**

*American Psychologist*, 66, 447– 454. doi: 10.1037/a0024772.

People expressed many different reactions to the events of 9/11. Some of these reactions were clearly negative, such as political intolerance, discrimination, and hate crimes directed toward targets that some, if not many, people associated with the attackers. Other reactions were more positive. For example, people responded by donating blood, increasing contributions of time and money to charity, and flying the American flag. The goal of this article is to review some of Americans' negative and positive reactions to 9/11. We also describe two frameworks — value protection and terror management theory — that provide insights into Americans' various reactions to the tragedy of 9/11.

Tosone, C. (2011). **The legacy of September 11: Shared trauma, therapeutic intimacy, and professional posttraumatic growth.**

*Traumatology*, 17 (3), 25-29. doi: 10.1177/1534765611421963.

This article describes the personal and professional experiences of the author as a result of her direct exposure to the WTC disaster. The author proposes the use of the term “shared trauma” to describe the experience of clinicians exposed to the same collective trauma as their clients. Shared trauma can result in the blurring of clinician-client roles and increased clinician self-disclosure and emphasis on the shared nature of the experience. Posttraumatic growth can also occur, including in the professional realm where clinicians develop a renewed appreciation for the value of the profession, learn to initiate greater safeguards in protecting personal time, and gain an intimate understanding of patients' traumatic experiences. The results of her 9/11 research as well as plans for collaborative research in environments characterized by chronic acts of terrorism or exposure to natural disasters are summarized.

Tosone, C., McTighe, J.P., Bauwens, J., & Naturale, A. (2011).

**Shared traumatic stress and the long-term impact of 9/11 on Manhattan clinicians.** *Journal of Traumatic Stress*, 24, 546-552.

doi: 10.1002/jts.20686. A sample of 481 social workers from Manhattan participated in a study of the impact of the 9/11 WTC attacks. A variety of risk factors associated with posttraumatic stress and secondary trauma were examined in relation to shared traumatic stress (STS), a supraordinate construct reflecting the dual nature of exposure to traumatic events. Risk factors included attachment style, exposure to potentially traumatic life events, and enduring distress attributed to the WTC attacks. It was expected that clinicians' resilience would mediate the relationship between these risk factors and STS. Using path analytic modeling, the findings support the study's hypotheses that insecure attachment, greater exposure to potentially traumatic life events in general, and the events of 9/11 in particular are predictive of higher levels of STS. Contrary to expectation, enduring distress attributed to 9/11 was not associated with resilience. Resilience, however, was found to be a mediator of the relationships between insecure attachment, exposure to potentially traumatic life events, and STS but did not mediate the relationship between enduring distress attributed to 9/11 and STS. Implications for theory, research, and practice are discussed.

Zeig-Owens, R., Webber, M.P., Hall, C.B., Schwartz, T., Jaber, N., Weakley, J., et al. (2011). **Early assessment of cancer outcomes in New York City firefighters after the 9/11 attacks: An observational cohort study.** *The Lancet*, 378, 898-905.

doi: 10.1016/S0140-6736(11)60989-6. *Background:* The attacks on the WTC on 9/11 created the potential for occupational exposure to known and suspected carcinogens. We examined cancer incidence and its potential association with exposure in the first 7 years after 9/11 in firefighters with health information before 9/11 and minimal loss to follow-up. *Methods:* We assessed 9,853 men who were employed as firefighters on January 1, 1996. On and after 9/11, person-time for 8,927 firefighters was classified as WTC-exposed; all person-time before 9/11, and person-time after 9/11 for 926 non-WTC-exposed firefighters, was classified as non-WTC exposed. Cancer cases were confirmed by matches with state tumour registries or through appropriate documentation. We estimated the ratio of incidence rates in WTC-exposed firefighters to nonexposed firefighters, adjusted for age, race and ethnic origin, and secular trends, with the U.S. National Cancer Institute Surveillance Epidemiology and End Results (SEER) reference population. CIs were estimated with overdispersed Poisson models. Additional analyses included corrections for potential surveillance bias and modified cohort inclusion criteria. *Findings:* Compared with the general male population in the U.S. with a similar demographic mix, the SIRs of the cancer incidence in WTC-exposed firefighters was 1·10 (95% CI 0·98–1·25). When compared with nonexposed firefighters, the SIR of cancer incidence in WTC-exposed firefighters was 1·19 (95% CI 0·96–1·47) corrected for possible surveillance bias and 1·32 (1·07–1·62) without correction for surveillance bias. Secondary analyses showed similar effect sizes. *Interpretation:* We reported a modest excess of cancer cases in the WTC-exposed cohort. We remain cautious in our interpretation of this finding because the time since 9/11 is short for cancer outcomes, and the reported excess of cancers is not limited to specific organ types. As in any observational study, we cannot rule out the possibility that effects in the exposed group might be due to unidentified confounders. Continued follow-up will be important and should include cancer screening and prevention strategies. *Funding:* National Institute for Occupational Safety and Health.