OVER the course of a few hours on September 11, 2001 (9/11), life as Americans knew it changed irrevocably. Terrorists hijacked three commercial aircraft with a number of passengers on board and deliberately crashed them into landmark American buildings: two into New York’s World Trade Towers, a symbol of America’s financial and commercial dominance, and one into the Pentagon in Arlington, Virginia. A fourth was hijacked and later crashed into a field in Somerset County, Pennsylvania, most likely during a struggle between hijackers and passengers. These events unfolded in real time on national television as at least 80 million Americans—the exact number may never be known—looked on (1), and images of the resulting death and destruction were broadcast nonstop over the airwaves and chronicled in newspapers and magazines over the subsequent days and weeks.

Shortly thereafter, envelopes containing Bacillus anthracis spores were mailed to several government and media addresses. Between September and November 2001, 18 individuals contracted cutaneous or inhalation anthrax, and five died. Thousands more received prophylactic antibiotic treatment due to suspected exposure to B. anthracis. Disturbingly, at least two women who died of inhalation anthrax had no affiliation with either media or government; the mode of transmission in these cases remains unknown. The fact that the source of these mailings has not been identified has left open the possibility of further, similar acts. Uncertainty over the source of the anthrax, the odds of infection, and the probability of further spread of anthrax or other biological agents has caused considerable concern among many Americans and has been widely chronicled in the media.

These unprecedented events have had profound and far-reaching effects on American citizens, and researchers are beginning to document these effects on various segments of the U.S. population. Intensive (although not exclusive) attention has been paid to the repercussions on children and adolescents. However, the effects—physical and psychological, immediate and long-term—of the terrorist attacks specifically on older Americans are not fully known and remain understudied. Older Americans may have special physical, social, and emotional needs in the wake of a terrorist attack that differ from those of younger people. In this study, we survey what little is known about older people’s response to these events, as well as scientific literature documenting their response to similar events. We suggest lessons learned, or perhaps yet to be learned, by the community that cares for older people. A better understanding of older Americans’ response to the 2001 terrorist activities will help us meet their long-term needs related to the events of late 2001 and will also help us in the event of future attacks.

THE 9/11 ATTACKS: IMMEDIATE AFTERMATH

The 9/11 terrorist attacks had a strong, sustained, and widespread psychological impact. In one survey, 90% of Americans reported one or more symptoms of stress (including feeling upset, difficulty concentrating, and trouble falling or staying asleep) in the days immediately following the attacks, and 44% of adults reported one or more substantial symptoms of stress (e.g., they reported experiencing the symptom “extremely” or “quite a bit.”) (2). The rate of severe stress symptoms correlated with distance from the World Trade Center, with individuals living within 100 miles of the towers most likely to demonstrate substantial symptoms. Age was not a significant predictor of stress or stress reactions in this study, according to M. A. Schuster (written communication, March 5, 2002).

In fact, the neighborhood around the World Trade Center was home to a number of older people, many of whom had aged in place, having lived much of their lives in lower Manhattan. Their lives were significantly disrupted as a result of the attacks. According to one estimate, as many as 6300 residents ages 65 and older lived within a few blocks of the attack site, and at least three times that number live in neighborhoods below Canal Street that have been affected to some degree by the attacks (3). Many of these individuals were displaced, at least temporarily, if authorities deemed their homes unsafe as a result of building trauma; others may have experienced disruption in needed services (e.g., home health, Meals on Wheels). Elderly residents without family or friends to turn to may have remained alone in damaged buildings, lacking working telephones and elevators, their daily routine shattered by the sudden loss of local conveniences such as favorite hairdressers and coffee shops.

Exposure to the events through 24-hour-a-day television coverage also increased Americans’ stress. On 9/11, adult respondents watched television coverage of the attacks for a mean of 8.1 hours; extensive television viewing was associated with a substantial stress reaction. Also, people who
viewed television the longest were more likely to experience substantial stress reactions (2), perhaps as a result of repeated exposure to the traumatic images.

Indirect effects of the 9/11 attacks are more difficult to quantify. Americans overall changed their routine as a result, in particular traveling less, both for business and recreation. This may be because of fear of further terrorist activity, difficulty negotiating increased security at airports, or for other reasons; however, there is little direct evidence that older Americans curtailed their travel activities any more or less than the general population in the days or weeks directly following the attacks, although one could speculate that retired persons were more likely to have discretionary travel plans that could be altered.

Finally, as with any large-scale tragedy, older Americans may have been particularly vulnerable to scam artists hoping to profit from the events. In the days after the 9/11 attacks, private and government organizations warned older people against swindlers masquerading as representatives of charitable organizations dedicated to aiding the victims of terrorist attacks.

Physical Issues
There is evidence that older people may respond differently than younger people to infectious agents such as those that lend themselves easily to terrorist misuse (e.g., anthrax, smallpox). For instance, it is widely accepted that infectious diseases can often present differently in older people, likely because of changes in the immune system with aging. Older people are also more likely to have comorbid, chronic conditions that make them more susceptible to infection with biological agents, affect presentation and early diagnosis, or hinder recovery.

There is some tenuous evidence that susceptibility to anthrax itself may increase as people age. Meselson and colleagues investigating the 1979 anthrax outbreak in the former Soviet Union city of Sverdlovsk, noted that no patient in this outbreak was younger than 24 years, and cited evidence that young people were underrepresented in earlier anthrax epidemics in Russian rural communities (4). However, the effects on the older-than-65 cohort in Sverdlovsk were not reported.

Finally, it is possible that, among older patients, clinicians may not recognize infection incurred as part of terrorist-instigated outbreak because of a perceived unlikelihood of infection. This is illustrated by the widely reported case of the 94-year-old rural Connecticut woman who rarely left home, yet succumbed to inhalational anthrax whose source remains uncertain. This patient was not tested for anthrax until several days after presentation (5); this may be because she did have extensive comorbidity, and it seemed reasonable to assume that anthrax was an extremely remote possibility, given the relatively small scope of the outbreak, her circumstances, and her lifestyle.

Psychological Issues
The long-term psychological impact of the 9/11 attacks is only now beginning to emerge. It is likely that the impact of these and subsequent terrorist events (if any) will be significant; in particular, psychologists believe that the long-term social and psychological effects of an episode of chemical or biological attack, real or suspected, would be as damaging as the acute ones, with levels of fear and anxiety remaining high for years after the event (6).

As noted in the Immediate Aftermath section, Americans struggled with a number of symptoms, including difficulty concentrating, feeling upset, and sleep disturbances, in the days immediately following the attacks, with individuals living near the New York attack site the most likely to experience severe symptoms. However, other research has shown that physical proximity to a disaster is not necessary for a significant stress reaction to occur. For instance, investigators studying the follow-up to a catastrophic fire found that individuals who were not physically present but were exposed through family members reported significant levels of subjective stress (7). Grief as a result of having lost someone in a terrorist attack, as examined in the aftermath of the 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City, was also associated with difficulty in functioning and a higher incidence of post-traumatic stress (8).

Studying veterans of World War II, Elder and Clipp (9) found that the men who had lived through the extreme stress of combat exhibited greater resilience and less helplessness in older age; it is possible that older people in general, having lived through extreme stresses in the past (e.g., World War II, the Holocaust, the Depression), may display greater resilience in dealing with similar stresses. However, this view has been challenged (10), with some clinicians believing that new stresses may trigger memories of past traumatic experiences as well as new symptoms of loss, stress, and grief (11). Unresolved conflicts related to former stressful experiences (such as wartime experiences) may resurface as a result of terrorist activity, particularly to the extent that the new stressor is similar to the old one (9).

In most extreme cases, survivors of the attacks may manifest post-traumatic stress disorder (PTSD), which is characterized by flashbacks, emotional detachment, fear, anxiety, depression, and sleep disturbances. Little is known about PTSD among the elderly population, including how it is optimally managed in this age group; however, elders do not appear to be more predisposed than younger individuals to develop the condition, and symptoms are similar across age groups (12). Observation of military veterans seen as patients in the Veterans Health Administration who are currently undergoing treatment for war-related PTSD has shown that, in general, these patients’ symptoms have not been uniformly exacerbated by the recent attacks; indeed, some veterans appear to have been “strengthened by the surge in national patriotism and experienced a sense of unity that helped control or decrease their symptoms (13,14).”

In a survey of 1008 adults living near the attack site in Manhattan, conducted 5–8 weeks after the attacks, 7.5% reported symptoms consistent with current PTSD and 9.7% reported symptoms consistent with a diagnosis of depression—about twice the expected baseline values (15). Age does not appear to have been a predictor of either PTSD or depression in this study. Some evidence indicates that these individuals may be at high risk for further problems: In one study, a high score on a PTSD instrument 6
months after a terrorist attack in a Paris subway was highly predictive of a high score at 18 months post-attack. These findings indicate that it may be possible to identify now those individuals who are at risk of long-term coping problems (16).

Finally, the effect of the 9/11 attacks-related stress on cognitively impaired or demented individuals is unknown, both in the short term and in the longer term. There is some evidence that existing PTSD may worsen if cognitive decline is present. (17)

WHAT LESSONS CAN CLINICIANS, CAREGIVERS, AND RESEARCHERS TAKE FROM 9/11 FOR POSSIBLE FUTURE ACTS OF TERRORISM IN THE UNITED STATES?

1. In the event of further terrorist acts, it is likely that people even far from the attacks will have trauma-related symptoms of stress.
2. Clinicians, particularly but not limited to those geographically close to the attack sites, should be watchful for symptoms of acute or chronic stress in their older patients.
3. Clinicians should be alert for signs of unusual infectious disease in their elderly patients, particularly during a bioterrorism outbreak. Further, the safety of older persons must be addressed in bioterrorism preparedness and response programs (18).
4. Public health terrorism and/or bioterrorism preparedness efforts must take into account the special needs of older people, particularly those relatively invisible older individuals who live alone and have limited social contacts.
5. Communities must be prepared to respond to large scale disasters—natural or man-made—with specific plans for institutionalized older persons. The response to the needs of nursing home patients after the 1995 Loma Prieta earthquake in Southern California is a good model for quick and appropriate community response.
6. Symptoms of stress may flare up or worsen around key anniversaries of terrorist events (e.g., 9/11/02) (19).
7. Stress related to terrorism may cause an increase of symptoms in older patients with chronic conditions (e.g., chronic pain that was previously well controlled) (20).
8. Clearly, well-designed research into the after-effects of 9/11, including long-term consequences, must focus on special populations, notably older people.

The price of terrorism striking at home has been great for all Americans. Living with the new realities requires that clinicians and public health agencies must consider and plan for the possibilities of a future attack. As health and aging professionals, the safety, care, and reassurance of older persons must be gerontologists’ priority.

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