# Posttraumatic Stress Disorder and Aging

*Barton W. Palmer, Ph.D., Murray A. Raskind, M.D.*

Posttraumatic Stress Disorder (PTSD) is not typically viewed as a prototypic mental health concern in the context of geriatric mental health; however, it is profoundly important for clinicians and researchers in geriatric psychiatry to attend to this condition. In part, there is the demographic imperative, the "graying of America," that applies across many if not most psychiatric conditions as the first of the Baby-Boom generation (notably, the generation most directly subject to the draft during the Vietnam War) began turning 65 in 2010.[1] Given the high rates of PTSD among military combat veterans it is notable that in 2014 there were already an estimated 9.4 million veterans age 65 or older, including 4.5 million over age 75.[2] In addition, future generations will see a second wave of combat-related PTSD from veterans involved in the wars in Afghanistan and Iraq. Indeed, a recent meta-analysis suggested a prevalence of PTSD among Afghanistan/Iraq veterans of up to 23%. In addition, as noted by Smith et al. (this volume),[3] for a complex array of reasons these recent conflicts have resulted in an increase in newly diagnosed PTSD among Vietnam-era veterans. In addition, there is the much less studied issue of PTSD from non-military related traumas among older adults. Estimates of lifetime prevalence of PTSD in the general community have varied widely across studies, but appear to be between 3.6%–6.3% among men and 7.9% and 13.8% among women.[4]

The above statistics suggest we are beginning a period of increased prevalence of PTSD among older adults. This trend is likely to continue even beyond the demographic influence of the Baby-Boom generation on the population parameters particularly as the OEF/OIF/OND veterans and their civilian peers with PTSD continue to age. Moreover, the issue of aging and PTSD is not limited to a future concern when people reach 65 or some other cut-off defining "older age." As documented in the comprehensive review by Lohr et al.[5] recently published in this journal, there is strong evidence that PTSD is associated with an accelerated or premature aging process. For example, Lohr et al.'s review indicated PTSD is associated with significantly increased risk of mortality (pooled hazard ratio weighted by sample size was 1.29 indicating a 29% increased risk of mortality for those with PTSD). Lohr et al.'s review also indicated an association of PTSD with increased prevalence of several age-related medical conditions, including heart/cardiovascular disease, new onset metabolic syndrome or type 2 diabetes mellitus, and gastrointestinal ulcers. There was also a consistent finding of increased risk of dementia among those with PTSD, which parallels findings from an earlier meta-analysis showing increased risk of neurocognitive deficits among those with PTSD.[6]

In short, the issue of PTSD and aging has considerable public health and humanitarian significance. Yet there is a clear need for further research to better document the prevalence, long-term outcomes, and mechanisms of interaction of PTSD and aging, as well as to guide age-appropriate interventions. This information is critical for both researchers and clinicians (both mental health professionals and general physicians) to better guide treatment of older adults with PTSD, as well as to help prevent premature aging among those with PTSD across the life-span. The present volume of *American Journal of Geriatric*

Received January 4, 2016; revised January 8, 2016; accepted January 11, 2016. From the Center for Excellence in Stress and Mental Health (BWP), Veterans Affairs San Diego Healthcare System, San Diego, CA, USA; Department of Psychiatry (BWP), University of California, La Jolla, San Diego, CA, USA; VA Northwest Network Mental Illness Research, Education and Clinical Center (MIRECC) (MAR), Seattle, WA/Portland, OR, USA; and Department of Psychiatry and Behavioral Sciences (MAR), University of Washington, Seattle, WA, USA. Send correspondence and reprint requests to Barton W. Palmer, Ph.D., Psychiatry, University of California, MC 0993, 9500 Gilman Drive, La Jolla San Diego, CA 92093-0993, USA. e-mail: bpalmer@ucsd.edu

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*Psychiatry* includes three articles that represent substantive contributions in beginning to fill this need.[3,7,8]

## PREVALENCE OF PTSD AMONG VIETNAM VETERANS

One of the key components of the above mentioned demographic imperative is that as of 2010 the first of the Baby Boom population began turning 65. This fact raises the obvious pressing issue of the lifetime and ongoing prevalence of PTSD among aging Vietnam veterans. The study reported by Goldberg et al.[7] provides critical information in regard to this question. Goldberg et al. noted that between 2007 and 2009 a total of 366,317 Vietnam-era veterans had a diagnosis of PTSD within the Department of Veterans Affairs health system, representing a treated prevalence of 15.8% of all Vietnam-era veterans in the VA system at that time. However, given that many veterans opt to receive health and mental health care outside the VA system, or may not be receiving mental health care at all, the VA records represent only a portion of Vietnam era veterans. Thus, the purpose of their study was to estimate the prevalence of PTSD in the larger community of Vietnam-era veterans.

Goldberg et al.[7] studied 5,598 community-based Vietnam era veterans, including 4,064 age 60 years or above. The methods included a mail-in survey of general health information and PTSD symptoms, as well as a telephone-based structured interview to establish PTSD diagnostic status. Prevalence of PTSD was significantly associated with whether the veteran had served "in theater" (served in the geographic combat area). Specifically, lifetime prevalence of PTSD among theater veterans was 17.6% compared to 8.9% among non-theater veterans, and the 12-month prevalence was 12.8% among in theater versus 5.6% among non-theater Vietnam-era veterans. Prevalence rates of PTSD among in-theater Vietnam era veterans were high in both the younger (age < 60 years) and older (age > 60 years) groups, i.e. 22.0% and 16.9% respectively. PTSD prevalence may be even higher in the subgroup of theatre veterans who experienced actual combat. The 12-month prevalence rates are particularly remarkable in showing that even after more than four decades since the end of the Vietnam War, a substantial proportion of Vietnam veterans still experience significant PTSD-related symptoms.

## PTSD AND VASCULAR DISEASE

Several empirical reviews have documented that people with PTSD are at increased risk for cardiovascular disease.[5,9–11] But the study by Beristianos et al.[8] adds in several ways to this empirical literature. First, many studies of vascular disease in PTSD are limited by small sample size and/or cross-sectional designs, and few have examined peripheral vascular disease in addition to the more common foci of cardiac and cerebrovascular conditions. Using administrative data of middle-aged and older (ages 55 years or above) veterans in the Veterans Affairs National Patient Care Database, Beristianos et al. compared rates of new onset vascular disorders among 4,014 veterans with PTSD and 134,300 without PTSD. All statistical comparisons of eight-year cumulative incidence rates (including those adjusting for sociodemographic, and comorbid medical, substance abuse, and psychiatric disorders) indicated higher new onset rates of cardiovascular disease, congestive heart failure, myocardial infarction, and peripheral vascular disease among those with versus without PTSD. For example, they found that those with PTSD had a 45–49% elevated risk of cerebrovascular disease and myocardial infarction and a 26–35% increased risk of congestive heart failure and peripheral vascular disease later in life compared to those without PTSD, even after accounting for variance in sociodemographics, and comorbid medical, substance use, and psychiatric disorders. Treatment implications are not discussed but prominent among factors intrinsic to or associated with PTSD that increase risk for cardiovascular disease are increased blood pressure and increased tobacco smoking.[12]

The most consistently demonstrated intrinsic biological abnormality of PTSD is increased noradrenergic activity involving both the brain noradrenergic system (expressed behaviorally as hyperarousal symptoms) and the peripheral sympathetic nervous system (SNS). Increased SNS noradrenergic activity is expressed physiologically as increased blood pressure in PTSD.[13,14] This major cardiovascular risk factor already is present in a substantial subgroup of veterans recently returned from Iraq and Afghanistan.[15] Brain penetrant antiadrenergic drugs developed to treat hypertension represent a rational and available treatment approach to reducing both cardiovascular risk and core PTSD symptoms. Prazosin is a brain penetrant