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JRRD Guest Editorial

Community-Based Wounded Warrior Sustainability Initiative (CBWSI): An integrative medicine strategy for mitigating the effects of PTSD

"How people behave is dramatically influenced by how we organize…institutions." Elliott Jaques

INTRODUCTION

The U.S. Department of Veterans Affairs (VA) healthcare system is preparing for an increase in the number of veteran patients caused by the drawdown of troops from Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF), many of whom suffer from posttraumatic stress disorder (PTSD). As such, it is imperative that local communities also prepare for their return. This editorial discusses the unique circumstance of the U.S. veteran with PTSD, examines groundbreaking measures made by the VA to help identify and treat veterans experiencing the invisible wounds of war, and introduces an innovative, community-based, primary care level strategy to mitigate the untoward effects of PTSD on veterans and their families, the VA healthcare system, and local communities.

THE VETERAN

According to the VA, in June 2010, there were 171,423 OIF/OEF veterans diagnosed with PTSD, out of a total of 593,634 patients treated by the VA [1]. The good and bad news about blast injuries from improvised explosive devices is that while many more individuals survive the initial event because of improved military medicine, many also sustain additional injuries that make rehabilitation and full recovery very challenging (i.e., limb loss, traumatic brain injury [TBI], PTSD). Thus far, 84,005 veteran patients have been granted VA disability compensation; of these, about half were for PTSD [2].

The full effect of OIF/OEF on the mental health of soldiers will not be known for years. One study looked at members of four U.S. combat infantry units (three Army and one Marine Corps) who had served in Iraq and Afghanistan. The majority of soldiers were exposed to a variety of traumatic, combat-related situations, such as being attacked or ambushed (92%), seeking dead bodies (94.5%), being shot at (95%), and/or knowing someone

who was seriously injured or killed (86.5%). After deployment, approximately 12.5 percent had PTSD, a rate greater than that found among these soldiers before deployment [3].

There is an alarming rise in PTSD-related suicides, which increased from 11 per day in 2009 to 18 per day in 2011 [4]. Acts of violence by veterans and their associated effects on society are commonly seen in the media [5]. According to VA healthcare services, access to care appears to be a key factor, noting "once a veteran is inside the VA care program…special efforts are made to track those considered to be at high risk…" [4]. Suicide attempts by Iraq and Afghanistan veterans are of special concern because their rates are so much higher. Combined physical and psychological traumas, such as feelings of hopelessness compounded by a cognitive inability to adjust or cope with stress, may result in a further sense of despair. In fiscal year 2009, there were 1,621 suicide attempts by men and 247 by women, with 94 men and 4 women dying [4].

Early studies were of interest to the military [6–7] because of the large numbers of soldiers returning from Iraq and Afghanistan with TBI and PTSD as a result of having survived blast injuries. PTSD has been identified as one of the signature disorders of OIF/OEF [8]. A 2008 RAND Corporation study estimated that 13.8 percent of U.S. servicemembers experience PTSD [9], while other studies report military prevalence rates ranging from 2 to 22 percent [10–11]. The VA and Department of Defense have recently embarked on additional research in the military population at VA facilities using acupuncture for the treatment of PTSD and related symptoms. The scientific rationale for acupuncture is better understood today, including interactions with muscle fascia and peripheral and central neurologic pathways [12–13].

VA AND NATIONAL CENTER FOR PTSD

Recognizing the need for research and education on the prevention, understanding, and treatment of PTSD, the VA designed and implemented a Center of Excellence called the National Center for PTSD. There are seven divisions in the United States (one each in California, Hawaii, and Vermont and two each in Connecticut and Massachusetts) charged with the mission to advance the clinical care and social welfare of America's veterans through research, education, and training in the science, diagnosis, and treatment of PTSD and stress-related disorders. Each of the National Center for PTSD's seven divisions has its own area of specialization, giving researchers access to different types of expertise across the nation. Besides its own staff, the National Center for PTSD has built strong collaborative relationships with institutions and agencies from VA, other branches of government, the healthcare community, and academia, giving researchers a vast array of partners for research activities. Most importantly, these activities are enriched by constant contact with clinicians who are directly involved in patient care, giving the research activities a uniquely real-world perspective [14].

The National Center for PTSD is organized to facilitate rapid translation of science into practice, assuring that the latest research findings inform clinical care, and to translate practice into science, assuring that questions raised by clinical challenges are addressed using rigorous experimental protocols. By drawing on the specific expertise vested at each separate division (e.g., behavioral, neuroscientific), the National Center for PTSD provides a unique infrastructure within which it is able to implement multidisciplinary initiatives regarding the etiology, pathophysiology, diagnosis, and treatment of PTSD. Unfortunately, these facilities are research oriented and minimal treatment is administered at these sites.

THE COMMUNITY

Over 2 million servicemembers served in Iraq and Afghanistan; however, this accounts for less than 1 percent of Americans. As a result, many soldiers return to their hometowns to find themselves the only people in their communities who served. Furthermore, OIF and OEF are often considered chosen wars, and our country has never been fully engaged in these conflicts. As such, veteran patients with PTSD

are often not provided the appropriate attention they need upon return to their towns or communities.

There are around 800,000 jobless veterans, 1.4 million veterans live below the poverty line, and 1 in every 3 homeless adult men in America is a veteran. The unemployment rate among veterans between the ages of 18 and 24 was 37.9 percent in November 2011. In some instances, employers are concerned when they read about the type of work performed in the military and the expertise of the veteran applicant. Employers may find it difficult to determine whether a veteran applicant's military experience can effectively transfer into a particular civilian job.

Government programs designed to put veterans back to work have failed. The Post-9/11 GI Bill, signed into law by George W. Bush in 2008, helped veterans who served more than 90 days in the U.S. military after September 11, 2001, pay for education and training. The Federal Government hired over 70,000 veterans in 2009 and 2010, and Barack Obama created a Council on Veterans Employment in 2009, which helps to employ veterans.

CONVENTIONAL METHODS OF TREATMENT FOR PTSD

While these statistics help us better understand the enormity of the problem, these numbers do not tell the whole story. To better grasp the plight of combat veterans with PTSD when they return to civilian life, we must also review the current conventional and proposed nonconventional methods of treatment and the availability of these treatments once veterans have transitioned back to their hometowns.

According to the VA, PTSD is defined as "a condition resulting from exposure to direct or indirect threat of death, serious injury or a physical threat" [14]. PTSD is the most prevalent mental disorder arising from combat. It also strikes military men and women deployed in peacekeeping or humanitarian missions, responding to acts of terrorism, caught in training accidents, or victimized by sexual trauma. Its burden may be transient or lifelong [15]. The vast majority of medical pharmacologic treatment is with antidepressants, sometimes in combination with psychotherapy and psychosocial adjunctive methods. Unfortunately, studies show that antipsychotic medication for military PTSD is ineffective [16]. The VA treats 89 percent of its veterans diagnosed with PTSD with therapy and prescribed serotonin reuptake inhibitors (SRIs). According to the authors of one study, "SRIs appear to be less effective in males than in females and less effective in chronic PTSD than in acute PTSD. Therefore, it may not be surprising that an SRI study in veterans produced negative results. Second-generation antipsychotics [SGAs] are widely used medications for SRI-resistant PTSD symptoms, despite limited evidence supporting this practice" [17]. A research team at the VA Connecticut Healthcare System in West Haven, Connecticut, headed by John H. Krystal, studied the SGA risperidone, which revealed that there was no statistically significant difference after 6 months of treatment between risperidone and placebo in reducing PTSD symptoms. Additionally, risperidone did not prove to be statistically superior to placebo on any of the other outcomes, including improvement in life quality measures, depression, anxiety, or paranoia and/or psychosis.

In an editorial on treating military-related PTSD, Charles W. Hoge of the Walter Reed Army Medical Center in Silver Spring, Maryland, said

> Significant improvements in population care for war veterans will require innovative approaches to increase treatment reach. Attention to the occupational context, combat physiology, and mental and physical comorbidities is essential. Validating and implementing collaborative care models based in primary care should be a high priority.
>
> Matching evidence-based components of therapy to patient preferences and reinforcing narrative processes and social connections through peer-to-peer programs are encouraged. Family members, who have their own unique perspective, are essential participants in the veteran's healing process and also need their own support. Research is required to better understand the perceptions war veterans have concerning mental health

> care, acceptability of care, willingness to continue with treatment, and ways to communicate with veterans that validate their experiences as warriors. [16]

The bottom line is that conventional pharmacologic treatment has not been an effective treatment option and military medical experts are searching for "innovative approaches to increase treatment reach" [16].

INTEGRATIVE METHODS OF TREATMENT FOR PTSD

Integrative medicine (IM) combines treatments from conventional medicine and complementary and alternative medicine (CAM) for which there is some high-quality evidence of safety and effectiveness. IM, as defined by the Consortium of Academic Health Centers for Integrative Medicine, is "the practice of medicine that reaffirms the importance of the relationships between practitioner and patient, focuses on the whole person, is informed by evidence and makes use of all appropriate therapeutic approaches, healthcare professionals and disciplines to achieve optimal health and healing" [18]. Unlike complementary medicine, in which additional or adjunctive treatments supplement traditional Western medical approaches, or alternative medicine, in which treatments replace conventional approaches, IM "does include ideas and practices currently beyond the scope of the conventional, but it neither rejects conventional therapies nor accepts alternative ones uncritically" [19]. It is also important to know that, with regard to evidence-based medicine, IM uses a "sliding scale." For instance, treatments that have a high potential for causing harm require greater scientific scrutiny. In like manner, treatments that are safe and have a very low potential for causing harm require less scientific analysis before they can be used. For instance, qigong, a well-established breathing technique to help reduce muscle tension and stress in the palliative care of a cancer patient, would be considered appropriate, even though rigorous randomized control trials have not been conducted.

The National Center for Complementary and Alternative Medicine (NCCAM) divides CAM practices into broad categories, such as body-based practices, mind and body medicine, and natural products [20]. Body-based practices include manual therapy (MT) such as spinal manipulation and massage therapy. Mind and body medicine includes acupuncture along with traditional behavioral scientists such as psychologists, meditation, deep-breathing exercises, qigong, guided imagery, and tai chi. Natural products include a variety of herbal medicines, vitamins, minerals, and other dietary supplements. Natural products also include probiotics or live microorganisms that are similar to microorganisms normally found in the human digestive tract that may have beneficial effects. Each of these methods has at least some anecdotal, if not scientific, evidence; however, this editorial will focus on medical acupuncture (MA) in the treatment of PTSD. The practical applications presented in this editorial can be adapted for military use in a systematic and effective way.

Components of CAM, particularly MT and MA, are relatively new areas of interest to the military health system that have grown out of the need for evidence-based healthcare methods that are safe, effective, practical, and cost-effective in the prevention and treatment of ailments that commonly occur in Active Duty (AD) and non-AD servicemembers and their families. Out of this interest, chiropractors were authorized in 1992; however, it was not until recently that chiropractors were commissioned in the U.S. military [21].

In the private sector during the past several decades, IM principles and practice have gradually gained greater acceptance in traditional Western medical practice as seen in increased patient demand [22]. Increased demand and improving technology have driven a shift toward IM treatment models through higher quality, evidence-based research. In the case of MT and MA, improved imaging techniques with functional magnetic resonance imaging [23–25] and the ability to measure small changes in blood levels of neurotransmitters [12,26] have created opportunities to produce more meaningful

research. As a result of these earlier studies, we now have a better scientific basis for understanding the physiologic mechanisms of action involved in MT and MA treatment.

Essential principles of IM include the recognition of the natural healing power of the organism, holistic approach to healthcare, the importance of lifestyle, and the critical role of the patient-doctor relationship [19]. In practice, IM practitioners favor simpler, effective, less invasive, and less costly procedures over expensive technology and invasive methods, "as appropriate to the circumstances of illness" [19]. In private practice, IM practitioners aspire to keep treatments and records transparent to all providers and partner with patients for life. While this may pose a challenge in the military setting today, the advent of electronic medical records (EMRs) and improved information technology enables the U.S. military to maintain continuity of care.

It is worth mentioning that there is an active movement within the medical profession to make IM a medical specialty within the American Board of Medical Specialties. Currently, IM can be practiced by any medical practitioner, either primary or specialty care, depending on training and certification.

PRACTICAL APPLICATIONS OF ACUPUNCTURE IN TREATMENT OF PTSD

One of the most studied methods of CAM is acupuncture. MA is the insertion and stimulation of needles in the body by a trained and licensed medical doctor. The first published record of the U.S. military using acupuncture was by Mitchell et al. in the 1864 text *Gunshot Wounds and Other Injuries of Nerves*, in which they described using acupuncture to control phantom limb pain at the Gettysburg campaign during the U.S. Civil War [27]. More recently, promising studies have revealed acupuncture to be an effective treatment for PTSD and related symptoms.

Practice Guidelines for Medical Acupuncture

Evidence-based MA (EBMA) and practice guidelines for MA are still being developed [28]. As more EBMA studies become available, there will be objective evidence to design more specific treatment protocols with more details regarding treatment styles and techniques, efficacy, dosing and duration, and frequency of treatments. In the meantime, information from current practitioners and subject matter experts in the field will be required to provide guidance in these areas.

Contraindications to acupuncture include clotting and bleeding disorders (e.g., hemophilia and advanced liver disease), warfarin use, severe psychiatric conditions (e.g., psychosis), and local skin infections or trauma to the skin (e.g., burns) [29]. In addition, electro-acupuncture should be avoided at the site of implanted electrical devices, such as pacemakers. Acupuncture is not an absolute contraindication during pregnancy; however, there are specific acupuncture points that are known to be especially sensitive to needle insertion during pregnancy. These sites, as well as acupuncture points in the abdominal regions, should be avoided during pregnancy [30].

Adverse Effects

Major adverse effects of acupuncture in general are rare. Two prospective surveys covering a total of more than 60,000 acupuncture sessions did not reveal any serious adverse events [31–32]. Minor adverse events (all occurring in less than 0.1% of cases) included needle-site pain, nausea and vomiting, and dizziness or fainting. In another survey, which included 9,429 physicians performing more than 760,000 sessions of acupuncture, two instances of pneumothorax, one exacerbation of depression, an acute hypertensive crisis, a vasovagal reaction, and an asthma attack with hypertension and angina were reported [33]. Nonserious adverse events included needle-site pain in 3 percent of patients, hematoma in 3 percent, bleeding in 1 percent, and orthostatic symptoms in 0.5 percent [34].

In a German study involving more than 2 million acupuncture treatments in 229,230 patients, 8.6 percent reported at least one adverse event and 2.2 percent reported one that required treatment [35]. The most common adverse effects were bleeding or hematoma (6.1%) and pain (1.7%). Two patients had a

pneumothorax. One adverse event, a nerve injury in a lower limb, persisted for 180 days.

For now, using the IM principle of a sliding scale for scientific evidence, there is ample and verifiable evidence for the credible use of acupuncture in the treatment of PTSD from all causes, including combat.

Civilian Experience with Acupuncture for PTSD

According to the National Institutes of Health's NCCAM Web site, a pilot study shows that acupuncture has promise in treating PTSD [36]. Hollifield et al. conducted a clinical trial examining the effect of acupuncture on the symptoms of PTSD and found that acupuncture provided treatment effects similar to group cognitive-behavioral therapy and that both interventions were superior to the control group. In addition, acupuncture was found to maintain the effects for 3 months after the end of treatment [6].

There is perhaps no better example of successful community acupuncture for populations exposed to intense trauma than that of Acupuncturists Without Borders (AWB).

> [AWB] provided hurricane relief services to approximately 8,000 people in the New Orleans area starting in October 2005. The free community acupuncture brought hope, promise, and peace of mind to the people of New Orleans. With the experience and expertise of bringing community style acupuncture to the people of Louisiana; AWB is now bringing this service to veterans and their families. The Military Stress Recovery Project provides free acupuncture treatments for veterans returning from Iraq or Afghanistan, but also welcomes veterans from all other past conflicts or wars as well as the veterans' family members [37].

According to Diana Fried, the founder and executive director for AWB, "Veterans with PTSD that have been treated with acupuncture report better sleep with fewer bad dreams, improved mental clarity, less anxiety, and a reduction in stress" [37].

In the aftermath of the 2010 Haiti earthquake, AWB quickly organized teams of providers to administer acupuncture for PTSD. Acupuncture for PTSD had been previously unavailable in Haiti. It was AWB's team 6 that included the first medical acupuncturist that performed the first known IM acupuncture treatment at the General Hospital in Port-au-Prince, Haiti, on May 20, 2010. The treatment, which included the National Acupuncture Detoxification Association (NADA) ear protocol, was for patients with PTSD and painful orthopedic injuries [38]. This experience was later advanced by a trauma surgeon who used a modification of the Battlefield Acupuncture technique [39] for quick relief of acute traumatic pain. These are examples of individual medical providers using IM techniques in remote and challenging environments. Results were so successful in Haiti that the health department partnered with AWB to develop an acupuncture curriculum and school to train Haitian students in the NADA ear protocol at Université Quisqueya in Port-au-Prince. The first graduating class was in 2011.

Veterans' Experience with Acupuncture for PTSD

AWB's Military Stress Recovery (Veterans) Project provides free acupuncture treatments for veterans returning from Iraq or Afghanistan, but also includes veterans from all other past conflicts or wars as well as veterans' family members.

According to the AWB Web site, the Military Stress Recovery Project began in 2006 with a pilot clinic in Albuquerque, New Mexico. Other locally run clinics are now operating nationwide in locations such as the Boston, Massachusetts, area (several clinics); Chicago, Illinois; Washington, DC; Fort Myers, Florida; and Seattle, Washington. There are currently over 20 clinics in operation and many others are in the process of opening.

Acupuncture treatment for PTSD is based on the NADA ear protocol, which has proven to be extremely powerful in alleviating symptoms of stress and trauma. During treatment, people sit fully clothed in a circle of chairs, and the licensed acupuncturist places 5 tiny needles on each ear. The recipients are invited to close their eyes and rest for 30 to 45 min during the treatment session.

Veterans at these clinics reported full nights' sleep for the first time in years and fewer bad dreams, improved mental clarity, less anxiety, and reduced

stress. Acupuncture is currently being investigated by the Walter Reed Medical Center in Washington, DC, as a viable treatment modality for PTSD in returning veterans, and the military has started using acupuncture in the battlefield to help with pain.

Community-Based Wounded Warrior Sustainability Initiative

An innovative treatment method that combines the knowledge gleaned from AWB's Military Stress Relief Project and the IM model is discussed here. What makes this model unique is that treatment is under the direction of a primary or specialty care medical provider. This IM approach is a more comprehensive, efficient combination of treatments offering immediate, effective, and easily accessible treatment for large numbers of people. Furthermore, this IM method incorporates conventional treatment modalities, such as medication and counseling, as well as integrative approaches that incorporate acupuncture, nutrition, exercise, and other evidence-based methods of treatment.

The Community-Based Wounded Warrior Sustainability Initiative (CBWSI) is an innovative treatment model using IM principles for the treatment of veteran patients with PTSD and their families. IM views health as a vital state of physical, mental, emotional, social, and spiritual well-being, which enables a person to be engaged more fully in life. Physicians typically partner with patients in their care and doing so empowers and informs patients in the decision-making process. Interventions are designed to treat the illness as well as the whole person, and in addition, patients are taught how to recognize, manage, and decrease stress. Social determinants of health such as unemployment, abuse, neglect, and financial status are considered in the care, which is coordinated and transparent across providers. Each patient is given an individualized healthcare plan based on his or her unique needs and circumstances in which prevention and health promotion are emphasized. IM makes use of all appropriate and available therapeutic approaches. By adopting IM practices and principles, CBWSI aspires to transform healthcare by reducing costs and improving accessibility and outcomes to produce stronger, more resilient veterans. By combining the unique experience of AWB's Military Stress Relief Project and the IM model, CBWSI will mitigate the effects of PTSD on veterans and their families, communities, and society.

The Model

The CBWSI model involves organizing providers in communities to meet at designated times and locations to administer various treatments to veterans with PTSD. Community centers, healthcare facilities, and faith-based community centers are commonly available with enough space to provide community-based treatments, which may include as many as 30 people at the same time.

The patient-flow though the IM clinic can be seen in the **Figure**. In an initial consultation, an IM practitioner obtains a medical history, performs a physical examination, determines a diagnosis, and develops a treatment program with a set of goals. EMRs are generated and maintained in the same manner as with all other patient documents and in accordance with local, state, and Federal laws and regulations. The initial medical workup and maintenance of ongoing medical documentation are unique features of the CBWSI model.

In cases of PTSD for which MA is recommended, the NADA ear protocol can be administered privately

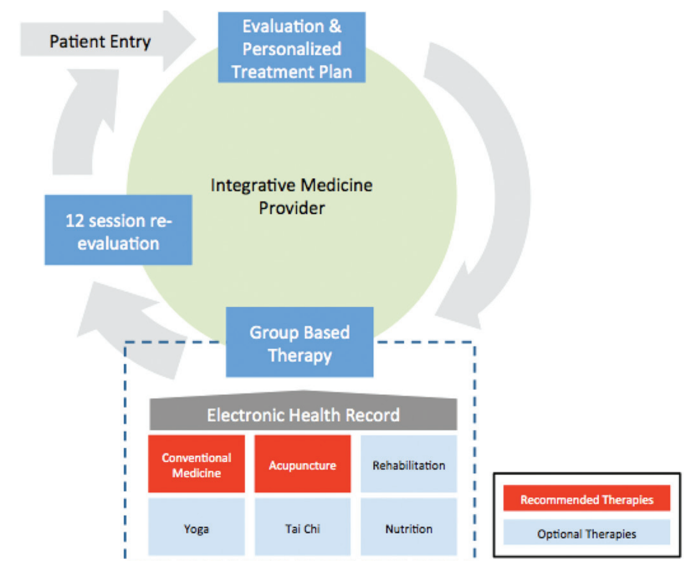

Figure.
Patient-flow through community-based integrative medicine clinic.

or, if volume requires, in a community setting in which as many as 30 people can be treated simultaneously, depending on how many providers are available.

This acupuncture community-based treatment component of the CBWSI model is similar to AWB's procedure used in many disaster relief missions, including those in New Orleans and Haiti. The CBWSI model incorporates a comprehensive combination of IM treatments, including MT, pharmacotherapy, yoga, exercise, nutrition, etc.

One example of CBWSI in current practice is the District of Columbia Military Acupuncture Clinic (DCMAC), which provides care using the IM model with advice and treatment regarding exercise, rehabilitation medicine, nutrition, acupuncture, counseling, and pharmacotherapy to veterans with PTSD and their families. When needed, additional therapeutic input can be obtained from other nearby providers, including instructors in yoga, tai chi, Pilates, psychotherapists, etc.

DCMAC is a 2,800 square-foot facility that opened in 2009 and is located near the Foggy Bottom Metro Station between the George Washington University (GWU) Medical Center and the GWU Medical School. DCMAC is the first of its kind to provide free MA to veterans with PTSD and family members using the IM model.

Most communities already have many of the various providers needed to make an effective CBWSI facility. These providers may include a physician, physician specialist(s), psychologist, acupuncturist, physical therapist, and instructors in yoga and other disciplines. Note that now more than 6,000 medical doctors have been trained in MA and interest in learning more about IM is increasing. Even at current levels, most communities can make IM services available to combat veterans with PTSD in their communities, and the DCMAC prototype can be easily replicated.

Finally, another unique feature of IM, which partly accounts for its increased popularity within the healthcare professions, is that providers of any specialty can practice IM. For example, a psychiatrist can provide better care to patients with depression or PTSD by incorporating MA into their armamentarium. A white paper on the use of MA for the treatment of PTSD and related symptoms has been reviewed by the Defense Centers of Excellence [40]. Skilled providers can effectively use the principles of IM once they have mastered the knowledge and skills and understand associated indications and contraindications unique to their area of specialization.

DISCUSSION

As the VA prepares for more wounded warriors to return from OIF/OEF, local communities must also begin to plan for the return of injured combat veterans who have experienced the invisible wounds from these wars. This editorial reviews important medical concerns associated with the treatment of PTSD as well as significant economic and social factors that influence and complicate veterans' transitions back into their communities.

The VA has gone to great lengths to identify and treat vulnerable combat veterans early. Research being performed at the National Center for PTSD and implementation of programs such as online and telephone hotlines and group meetings will benefit veterans immensely; however, these services are often insufficient or unavailable to veterans when they move from the VA system back into their communities. The scientific literature on the current and most widely used conventional medical methods for the treatment of combat PTSD reveals that they are provably ineffective or woefully inadequate.

A novel approach to address these issues has been introduced and described, promoting a community-based strategy that offers evidence-based, safe, effective, and efficient treatment at the primary care level, with an eye on cost. CBWSI is an innovative project that combines a tried and true community-based treatment approach with established IM methods that, in effect, brings needed treatment to the veteran with PTSD to the community, where it did not exist before. I described a successful pilot project using the

CBWSI concept, and its implementation can be easily replicated in most communities.

CONCLUSIONS

Combat PTSD has reached epidemic proportions and can be expected to be in the forefront of the U.S. healthcare system for the veteran patient, the VA, our communities, and our society for several generations. CBWSI brings primary and secondary stakeholders together to provide a safe, effective, and efficient way of getting treatment to those in need while keeping costs low. CBWSI can help ease the burden to veterans who experience PTSD and their families, while providing an opportunity for healthcare providers to partner with local and national businesses, community leaders, and the general public toward a common goal to mitigate the untoward effects of PTSD.

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Disclaimer: This community practice guideline is not intended as a sole source of guidance. Rather, it is designed to assist clinicians by providing an evidence-based framework for decision-making strategies. The community practice guideline is not intended to replace existing methodologies or establish a protocol for all individuals and may not provide the only appropriate approach to diagnosing and managing PTSD.

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