Advancing the Pain Agenda in the Veteran Population

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Key Points:

- 1) Pain is more prevalent and more complex in Veterans whose wounds from severe injuries including blasts are also frequently complicated by post-traumatic stress disorder and traumatic brain injury.
- 2) Pain management should begin as soon as possible after injury to prevent the chronification of pain.
- 3) Pain management should be continuous and multi-modal, reflecting the influence of somatic, psychological and social factors on pain perception, psychological response, and treatment outcomes.
- 4) The Stepped Care Model is an evidence-based approach to providing patient-centered biopsychosocial pain care at the level of the Veteran's needs based on complexity, co-morbidity, refractoriness, and risk.
- 5) Methods to provide outcomes measurement to assist real-time clinical decision-making are needed.

Abstract:

The Veterans Health Administration, a 152 facility health care system spread across the United States, provides medical care for Veterans after leaving the military. The combination of multiple deployments and battlefield exposures to physical and psychological trauma results in a higher prevalence and complexity of chronic pain in Veterans than in the general public. Starting at injury, effective longitudinal pain care must aim to prevent pain chronification that leads to persistent pain states and their related co-morbidities, suffering, and disability. Once chronification occurs, patient-centered interdisciplinary treatment teams must identify and address somatic and psychosocial perpetuating factors, including neuroplastic changes in the central nervous system that can be reversed with integrated, biopsychosocial care. The VHA and the Department of Defense work together to develop a single standard of stepped pain management appropriate for all settings from moment of injury or disease onset. This article describes the education, academic detailing and clinical programs and policies that are transforming pain care in the VHA.

Introduction: Pain, a Public Health Problem

Pain leadership in the Veterans Health Administration (VHA) has outlined six essential elements of effective pain management (Box 1). Its efforts to be successful in implementing these elements system-wide are outlined in this article. Transforming pain care in the VHA occurs in the context of a gradual, decades-old cultural shift in attitudes towards pain in the United States and globally. Although chronic pain has been identified as a public health problem by our field for at least 2 decades (1-3) only recently has chronic pain been presented in more public-facing media as a national and global health burden. The *Economist's* recent article on global disability (4) discussed the economic implications of a World Health Organization (WHO) study (5) implicating low back pain as the most common cause of disability world-wide, including in North America, South America, Europe, Australia, Indonesia and most of Asia. Low back pain and other chronic pain syndromes, such as the most common disabling disease in South Africa, HIV / AIDS, are commonly co-morbid with and precede depression, which is the most common disabling condition in several of the most populous African and South American countries and in India and Pakistan.

Insert Box 1 about here

In the United States, the concept of pain as a major public health problem gained traction in a wider sector of American society during the last decade, fueled by three intersecting societal problems discussed in Congress, academic, and health policy circles and covered in the press.

First, hundreds of thousands of American troops were returning home with painful conditions from the Middle East for care in military and VA facilities, many with co-morbidities such as PTSD and post-concussive syndrome; as substance abuse and suicide rates rose in this population, pain was discovered to be a driving factor (6-8).

Second, economic studies suggested how chronic pain contributed to our nation's rising health care costs and impacted the competitiveness of America's businesses and over-all economic health (9) IOM 2010).

Third, the rising rates of prescription analgesic drug abuse and overdose deaths and its impact on public health (10-12) in the general population and in Veterans and service members raised national awareness of the importance of effective and safe pain management.

While organized medicine, beset with its rising costs and inefficient systems, had been unable to address the public health problem of pain, patients and their families spoke up and Congress listened, passing three pain bills: 1) the Veterans Pain Care Act (2008) (13); 2) the Military Pain Care Act (2009) (14), both requiring yearly progress reports from these agencies; and 3) on the coat tails of these first two bills, the requirement in the 2010 Patient Protection and Affordable Care Act (2010) (15) that the Institute of Medicine (IOM) complete a national study of pain. The IOM study documented that about 100 million (approximately 30% of American adults) suffer from some form of chronic pain, and that

the cost of chronic pain, \$565-635 billion yearly, exceeds the combined costs of cancer and heart disease. (9). The IOM Report cited myriad actions required to begin addressing this enormous public health problem, including:

- Health care provider organizations should promote and enable self-management of pain as the starting point of management
 - Develop educational approaches and culturally and linguistically appropriate materials to promote and enable self-management
- Population strategy should include developing strategies to overcome barriers to care
 - Strategies should focus on ways to improve care for populations disproportionately affected by and undertreated for pain
- Health professions education and training programs, professional associations, and other groups should provide educational opportunities in pain assessment and treatment in primary care
 - Education should improve knowledge and skills in pain assessment and treatment
- Pain specialty professional organizations and primary care professional associations should support collaboration between pain specialists and primary care clinicians, including greater proficiency by primary care providers along with referral to pain centers when appropriate
- Payers and health care organizations should revise reimbursement policies to foster coordinated and evidence-based pain care
- Health care providers should provide consistent and complete pain assessments

Pain in Military Personnel and in Veterans

While about 30 percent of the United States' adult population experiences chronic pain, the rate in Veterans enrolled in the VHA is much higher. In older Veterans the rate approaches 50% (16) and their pain tends to be more complex, with higher rates of psychiatric and social co-morbidities such as substance abuse, depression, PTSD, and early work disability. This rate has grown steadily over the last two decades as aging warriors from earlier military service have retired and sought VA care for chronic illness management that the VA excels at providing relative to the general health sector. They bring with them pain from service-related and battlefield injuries as well as pain from the diseases and their treatments associated with aging such as cancer, arthritis, spinal conditions and neuropathies. The survivors of war, such as those who served in Vietnam, also suffer its mental health consequences, with higher rates than the general population for PTSD and other mental scars of exposure to the battlefield.

Rates of pain are even higher in VA enrollees from the recent Middle Eastern wars. Almost 60% suffer musculoskeletal conditions such as lower back pain (17). More serious injuries, such as penetrating wounds and mine blasts that had low survival in Vietnam (40%), now lead to 90% survival due to advances in personal battlefield armor and combat casualty care. These Veterans enter the VHA with permanently damaged, painful musculoskeletal tissues and peripheral nerves, including amputations and spinal cord injuries, and often with several somatic and neuropathic sources of pain (18-22) that affect longitudinal function (23). All Veterans with battlefield exposure risk post-traumatic stress disorder from their exposure to the dangers and horrors of war. Those exposed to blasts may suffer traumatic

brain injury with high rates of pain and PTSD together (54%) and pain alone (70%) (24-25). Collectively these conditions impact Veterans' longer-term physical, emotional and social well-being as well as their successful reintegration to family and community life, and lead to consequences such as depression, substance use disorder, disability, overdose and suicide .

An additional problem related to pain management facing the nation and the Departments of Defense and Veterans Affairs, the greatly increased availability of opioids, has contributed to the "opioid epidemic" of rising overdose rates (26). This has many causes (10).)The VHA, which unlike the private sector has the capacity to study its de-identified administrative database for a complete sample of all enrolled Veterans, has conducted some of the studies identifying factors that increase risks for overdose, such as higher daily doses, co-prescription of benzodiazepines, and the co-morbidities of substance use disorder, depression and PTSD (10-12, 27). This database also provides the opportunity for studying the impact of an intervention, such as the Opioid Safety Initiative (which will be discussed below) to address such a public health problem.

The Prevention and Reversal of Pain Chronification

Animal studies detailing the neurobiology of the development of chronic pain following injury, and human studies detailing the clinical course of pain after injury, have led to a new modelling of pain's progression from acute to chronic pain, termed "chronification" (27-30). Figure 1, the Chronification Cycle (31), simplistically diagrams the complicated phenomenological process involved in the longitudinal course of pain and its consequences. The figure suggests that an effective health care system must have the capacity for timely intervention at each stage to minimize the chances of progression to pathological structural and neurobehavioral changes, and attendant social morbidities, as well as to treat and, whenever possible, to reverse them.

Primary prevention: The focus in primary prevention is that of actively shifting attitudes towards health, through engagement in healthy activities and lifestyles that prevent pain-causing disease and injury. The use of protective devices against injuries such as body armor and seat-belts, smoking avoidance and cessation, weight control, exercise, and forms of stress management (e.g., yoga, meditation) are conceptualized. Establishing a platform of sound health practices provides a self-management foundation for longitudinally effective pain care.

Secondary prevention: The focus in secondary prevention is on effective pain care after injury/disease onset. Care aims to:

- avoid unnecessary pain and secondary sensitization of the CNS through peripheral pain control with timely application of neuromodulation (e.g., ice, TENS, neurostimulators), medications, and neural blockade with regional anesthesia;
- reduce central pain perception and suffering through appropriate and safe use of medication and self-management techniques;

- reduce structural and neurobehavioral damage from the injury itself and from its treatment (e.g., surgery, chemotherapy/radiotherapy, medication toxicities);
- promote healing and disease modification to restore and maintain a person's function and quality of life, including support from family and community.

Tertiary Prevention: The focus of tertiary prevention is functional restoration when a painful condition persists and becomes a chronic nociceptive or neuropathic stimulus leading to “pain chronification”. Treatments target pathophysiologic neuroplastic changes to the spinal cord and brain affecting pain perception, emotions, cognition and maladaptive behaviors. Early recognition, prevention and management of , mood, sleep, and substance use disorders are key objectives.

Insert Figure 1 about here

As suggested in Figure 1, the course of chronification is determined by a person's somatic pain condition interacting with their emotions and interpersonal and physical environments, including their health care system. The behavioral neuroscience of this interaction underpins the principles of designing and assembling a health system that provides safe and effective pain care to a population .

- Once the pain-causing disease process or injury is effectively managed, and pain treatment commences, the salience of emotions and the social environment to pain perception and behavior becomes apparent.
- Pain is powerfully conditioning, its relief is highly rewarding, and whomever and whatever achieves that relief is greatly appreciated by the organism. Simply put:
 - Actions that bring relief are highly reinforced. Thus when a movement hurts, the brain automatically says “don't move again”, or “move in a way that does not hurt”, and the pain does not occur, or is relieved if it did occur. The pain ceases, or is avoided when the organism does not move that way. This sequence activates the reward centers in the brain and is remembered. Thus, patients need instruction in healthy movement, and reinforcement for learning to overcome the fear of healthy movement, even if it activates pain no longer directly related to ongoing tissue injury or disease..
 - Similarly when a medication such as an opioid, reliably relieves the pain, the effect of that rewarding experience is the motivation is to use it again when the stimulus recurs or the brain's opioid level drops, unmasking the painful stimulus.
 - Patients with substance use disorder (SUD), or a genetic predisposition, are vulnerable to the rewarding characteristics of the opioid molecule on top of the reward of pain relief. This characteristic may lead to continued and increased use, even when the pain stimulus is well-controlled or is eliminated. Hence an effective care system must both identify such predisposition and provide closer monitoring.
 - Other pathways may also promote the chronification process, such as neurogenesis-dependent, hippocampal-associative learning mechanisms that are known to be associated with emergence of persistent pain from acute pain, and the interaction of depression with pain. (32).

- The clinical care system must be designed to account for the reality that not all chronic pain is the same. People differ in the peripheral stimulus, their CNS-mediated response to the activation of pain, the reward of pain relief, and the reward of opioids (particularly for those with SUD). There is also considerable variability in how those within the patient's healthcare system understand and manage those differences in each patient and their respective social network (33). All of these factors taken together will determine outcomes of treatment. Especially, identifying SUD or risk for SUD, and tailoring treatment accordingly, is paramount for good population outcomes.

Knowledge of the framework outlined above is essential for developing competency in pain assessment and biopsychosocial formulation and goal-oriented management planning, with an individualized array of choices for each patient and clinician to achieve safe and effective relief and to restore function and quality of life.(34)

The large proportion and sheer number of Veterans with complex pain conditions requires that the VHA and DoD make important structural and process changes in the approach to pain care that assures effective and safe pain management. For example, data suggests that optimal acute pain care after battlefield or other injury might include one or more of the following, each targeting a separate process in the acute pain experience:

- regional anesthesia for neural blockade shortly after injury to prevent access of the pain stimulus to the CNS (35);
- early use of ketamine to prevent wind-up and sensitization(36);
- opioids when needed to reduce suffering and its activation of central stress pathways contributing to chronification (37);
- cognitive-behavioral/psychophysiologic stress control techniques (38);
- the development of goal-oriented management plans that include (39)
 - careful longitudinal monitoring to assure safe and appropriate use of medications and other interventions
 - the early integration of behavioral and integrative strategies such as cognitive-behavioral/psychophysiologic training, acupuncture, yoga and meditation
 - careful transition plans from hospital care to outpatient care
 - effective communication about the plan of care and key information in the transition of care to the VA and/ or community clinicians following discharge from the DoD.

Structural Challenges

The VA's obligations to its Veterans required immediate and sustainable transformative changes in pain management in a population-based, public health approach to the management of pain, and support for the health system's research needed to guide implementation. There are no easy solutions and many challenges in designing and implementing an effective, population-based model of pain care in a health system.

The VHA and the private health system are burdened by:

- inadequately trained workforce in pain management, including both primary care and specialists (9,40) ;
- the lack of clinical practice guidelines/algorithms that are supported by good evidence, particularly combined treatments that can be used in primary care;
- poor fiscal support or credit for effective non-medical pain management interventions;
- measuring quality by volume and number procedures, rather than clinical outcomes;
- Inter-specialty competition for lucrative procedures associated with specialty care, impeding cooperation and collaboration.

VHA's challenges that differ from the private health care system include:

- A capitated system with fixed budgets which precludes:
 - the development of “profit centers” that in the private system generate revenue; thus lower salaries may affect personnel recruitment.
 - a business model allowing for a quick response to rapid **increases** in demand such as occurred following 9/11 and the subsequent wars that created hundreds of thousands of new Veterans with pain and co-morbidities.
- An obligation to care for all Veterans (i.e., no “cherry picking” of cases). Clinical teams must care for all cases, regardless of complexity. They cannot be discharged from care as they might be in private practice where insurance for behavioral treatments of vexing co-morbidities is limited. Thus, more complex patients tend to selectively seek the VHA for their care and are a higher time and cost burden.
- Public scrutiny supports health systems research that finds flaws in care and gaps in the VA's health delivery and publishes those findings in the lay press and in medical journals (41). Although this level of transparency eventually may spur system interventions to correct problems, these reports bring negative congressional and constituent attention to the VA.

The VHA's advantages over private health systems include:

- Administrative databases and the electronic medical record provide complete samples of its patient population to discover gaps in care and also provide baseline data for outcome studies of system interventions to correct gaps (42-44).
- Decisions about system design and clinical processes are not pressured to generate income to the degree they are in the private health sector, providing greater opportunity for studying innovations, and if successful, their system-wide deployment.
- A National Pain Management Program office that advises VHA on pain management policy and implementation is supported by the National Pain Management Strategy Coordinating Committee (Table 1) with representatives from all relevant VHA national offices.
- A workforce self-selected to be mission-focused, not income-focused. In VHA many clinicians prefer the teamwork and support for good pain care that is sometimes harder to achieve in a private or university setting where generating revenue is paramount.

- No reinforcement of the models of pain care in the community that perpetuate fragmented, ineffective care (45, 46):
 - *The sequential specialty/sub-specialty care model:* Patients with pain are referred amongst specialists seeking to find and eliminate the somatic pain source with more tests and procedures without formulating the dynamic interaction of biopsychosocial factors, translated through behavioral neuroscience, that influence the course and outcomes of any one patient's pain. Chronification occurs and costs accrue.
 - *The multi-disciplinary pain center model:* Patients fail traditional, sequential care, at high cost, including disability, facilitating chronification and its consequences, and are then referred to a costly program to reverse chronification and its morbidities (47) .
 - *The managed care model:* Access to pain medicine specialty team care is not available or if available is limited to costly procedures, not expert biopsychosocial care. They tend to be placed on escalating doses of medications, such as opioids, with their complications, and due to ineffective care, often are unable to return to work or other role functioning.
 - The ability to adopt new models of care delivery that promise to address these structural, socioeconomic, and clinical process issues in a community or health system caring for a defined population of patients. To this end, a new model of care is proposed: The Pain Medicine and Primary Care Community Rehabilitation Model (PMPCCRM)(45,46). It is designed to emphasize the critical role of clinical teams in a community, anchored by competent primary care providers with access to pain medicine specialty teams. In the community:
 - *Primary care providers (PCPs)* and their clinical teams add expert evidence based pain management clinical algorithms for pain management to their skills in longitudinal, comprehensive chronic care (48-52 Weiner). Combined with their more intimate knowledge of general health maintenance and management techniques, family and other psychosocial factors, and community resources that might importantly influence the outcome of pain treatment, PCPs can tailor a biopsychosocial care plan that is individualized to their patients' respective needs (34).
 - *Pain medicine specialty teams*, including integrative, behavioral, and physical therapies, actively collaborate with a community's primary care network to be easily accessible for consultation and specialty treatment to reduce chronification when PCP treatment is ineffective.
 - *Interdisciplinary pain rehabilitation centers*, in the CARF model, are accessible when, despite the collaboration of primary care and pain medicine teams, chronification progresses to disability and its related co-morbidities.
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Insert Table 1, NPMSCC, about here

The Stepped-Care Approach

In response to these challenges and building on principles of the PMPCCRM the VHA has designed a population-based, stepped approach to pain management that focuses on primary, secondary and tertiary prevention. A progression of activities led to the publication and dissemination in 2009 of a policy Directive, written by this author and Dr. Robert Kerns, then the National Pain Director, with the support and input of pain colleagues and the inter-professional National Pain Management Strategy Coordinating Committee (NPMSCC) representing various clinical offices in the VHA (Box 1). The Directive (53) outlined a new standard of care for pain for the entire VA, Stepped Pain Care, which directed that a biopsychosocial model of patient-centered chronic pain care be provided seamlessly and collaboratively in primary care, secondary care and tertiary care with movement between sectors depending on complexity, treatment refractoriness, co-morbidities, and risk as illustrated in Figure 2. This model is consistent with the medical home model in the Affordable Care Act in that it requires the partnership of an informed patient and a proactive health care system that is designed to engage patients in their health care planning and decisions. The model emphasizes the value of interdisciplinary teamwork in providing biopsychosocial, patient-centered pain management in primary care with easy access to consultation and collaborative models of care with necessary specialists, particularly an interdisciplinary pain specialty team, and underpinned by a strong institutional culture of a shared mission and responsibility.

To fully implement a public health model of pain management in its target populations, the VA must work closely with the Department of Defense (DoD), within whose sphere (combat) pain usually starts. In 2009 Lieutenant General Dr. Eric Schoomaker, the Army Surgeon General, chartered the Army Pain Task Force, including pain experts from the Army, Navy, and Air Force, with the author representing the VA. The Task Force completed an intensive, six-month, in depth study of pain management in the military, making dozens of site visits to highly reputed practices as well as holding 3 retreats, and published a 163 page report (54) which thoroughly outlined then current deficiencies in care. From these activities and insights, the group made over 100 recommendations for transforming pain care in the military. Key among these was adoption of the VHA's Stepped Care Model of pain management. Subsequently, the VA-DoD Health Executive Council, Co-chaired by their Under-Secretaries for Health, chartered a Pain Management Working Group (HEC - PMWG), Co-chaired by this author and Dr. Chester (Trip) Buckenmaier, which was charged with establishing a single system of continuous, collaborative and effective pain care, research and education for the VA and DoD. The Defense and Veterans Center for Integrated Pain Management (DVCIPM) is a newly functional office chartered under the lead of the Army, and now under the Uniform Services University of the Health Sciences, to help operationalize the work of the HEC – PMWG (55)

Early descriptions of the VA's Stepped Care Model (56), i have been updated with an increased emphasis on teaching self-management (57) as well as system support for primary care by pharmacists

through medication and opioid management (58,59). Also added are behavioral health technicians for screening and management of aberrant illness behavior and mental health co-morbidities (60,61), and access to evidence-based guidelines and clinical algorithms (62, 48-52). The evidence base for this model is emerging from clinical trials and cohort studies in primary care systems. Notably, all of these have been conducted in the VHA, wherein specific primary care enhancements have been shown to improve outcomes in primary care practices managing pain. Examples of these “stepped programs” include:

- Dobcha et al (42), in a blinded cluster-randomized controlled trial, compared the impact of an “assistance with pain treatment” intervention (APT) with “treatment as usual” in 401 veterans with musculoskeletal pain cared for by 42 primary care physicians over a 12 month period. They found significant improvements in pain disability, patients’ ratings of global impression of change, and depression severity in those with depression.
- Kroenke et al (63) completed a randomized controlled study (Stepped Care for Affective Disorders and Musculoskeletal Pain [SCAMP]) of the impact of a 12 week stepped program versus treatment as usual in Veterans with musculoskeletal pain and depression. The stepped program, consisting of optimized anti-depressant therapy and participation in a pain self-management program, substantially improved depression and moderately reduce pain severity and disability.
- Wiedemer et al (58,59) studied the impact of creating a structured pharmacist-run clinic for Veterans with aberrant behavior, when prescribed opioids in a primary care setting. Almost half of those referred with aberrant behavior and all those with risk factors for abuse without aberrancy were able to be managed effectively. The use of urine drug screens for patients on long-term opioids in primary care rose significantly, and provider satisfaction was high.
- Bair et al’s study “Evaluation of Stepped Care for Chronic Pain (ESCAPE)” (64) in Veterans of the Iraq-Afghanistan war with musculoskeletal pain found that the combination of algorithm-guided analgesics, self-management training and brief cognitive behavioral therapy provided by trained nurses, resulted in significant improvements in pain severity as well as in pain-related disability and interference.

Insert Figure 2, Stepped Care Model, about here

To promote this transformation in all 142 VHA medical facilities and their related outpatient clinics, the VHA established a National Pain Management Program office (NPMP) which is responsible for policy development, coordination, oversight, and monitoring of the VHA National Pain Management Strategy in collaboration with other relevant VHA Program Offices such as Primary Care, Mental Health, Pharmacy Benefits Management Services, Nursing, Integrative Health and the other national offices and programs listed in Box 1.

The NPMP is supported by and supports a number of task forces in addition to the NPSMSCC, Co-chaired by Drs. Friedhelm Sandbrink and Robert Sproul, and work groups that enable VHA to achieve its goal of implementing a patient-aligned, stepped care model of team-based pain care system-wide.

Monthly meetings include:

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- NPMSCC (Box 1) for advice and support from the other VA clinical and operational offices monthly
 - the National Pain Leadership Group consisting of 22 VISN (regional) and 142 facility Pain Points of Contact with whom new VACO programs and policies are shared and who provide feedback to VACO from the field
 - The Primary Care Task Force that supports the PACT Pain Champions in the facilities across the system
 - The interdisciplinary Pain Medicine Specialty Team Work Group, that aims to standardize accessible, effective, pain specialty consultation and collaboration and referrals to Step 2 across the system (65)
 - The CARF Pain Rehabilitation Task Force that provides training and standardization of CARF functions across the system (66-67)
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National, regional and facility responsibilities within the VHA network are outlined in the VHA Pain Management Directive 2009-053 (53), which, besides outlining the Stepped Care Model, requires the following:

- Standards for education and training that would generate a clinical workforce with the competencies needed to provide good pain care
- A system of monitoring care system-wide to assure safety and effectiveness

A system of identifying quality improvement and implementation research successes to develop evidence-based stepped care “strong practices” or “bright spots”. A system of communicating about such practices and for implementing them system-wide.

Insert Table 1 – Task Forces and functions - about here.

Providing Education and Training

To inform the field of challenges, goals and plans, late in the last decade VHA conducted national and regional workshops for ‘Pain Champions’ and pain experts from regions (VISNs) and facilities across the country. Following recommendations (40, 9) that training improve both in post-graduate and graduate medical education, a VHA workgroup identified “core competencies” for VHA primary care providers in pain management, as listed in Table 2, now further developed by national workgroups (48-

52,60, 68-70). Programs to address these competencies encompass office-based procedures and interventions, such as taught by the VHA's Pain Mini-Residency(71).

Insert Table 2 - Core Competencies in Primary Care Pain Management – about here

VHA and DoD have developed several national education and training programs to improve the pain management competencies of its present and future work force.

- **VA-DoD Tiered Acupuncture Training Across Clinical Settings (ATACS)** aims to train physicians in medical acupuncture and providers in “battlefield (auricular) acupuncture (BFA)” across both DoD and VA health systems, so that Veterans have access to acupuncture as a first line treatment for pain (72,73). Already, training has occurred for several thousand front-line clinicians in battlefield acupuncture and for almost 100 medical acupuncturists in a 300 hour course, leading to them becoming BFA Faculty (Instructors) who are distributed across the health system to sustain the expansion of this workforce so all Veterans will eventually have access.
- **VA-DoD Joint Pain Education Project (JPEP):** JPEP (74) convened subject matter experts in the broad domains of pain management knowledge and skills to create a virtual textbook of 35 modules of evidence-based instruction in pain management. These are released for use in all VA-DoD educational programs such as SCAN ECHO, the mini-residency, asynchronous on-line trainings, and integration into medical residency programs and other professional training programs has begun (the VA provides full or partial training to about 70% of USA-trained physicians).
- **Pain Mini-Residency for PCPs:** This curriculum (71) emphasizes the development of competencies in history, physical examination, and goal-oriented biopsychosocial treatment planning for common regional pain syndromes. Important components of the development of PCPs' skills include:
 - Recognizing when and how to treat a given condition utilizing an array of medical, behavioral, and integrated health treatment options, including training in specific office-based procedures such as battlefield acupuncture (BFA) and trigger point injections;
 - Recognizing when and how to make appropriate referrals to a specialty care pain service;
 - Learning the communication skills to effectively discuss a biopsychosocial plan of care with veterans.

The program uses instructional materials from an approved standardized national curriculum (JPEP) and includes a virtual learning phase, a three-day face-to-face component, and a follow-up preceptor phase using existing training programs such as SCAN ECHO, academic detailing and local preceptor instruction and support.

- **Pain SCAN-ECHO:** The VHA's pain management SCAN ECHO (44) program derives from the University of New Mexico's ECHO model of using videoconferencing technology to teach providers chronic pain management skills beyond that of their previous training (75). In the model of a resident case conference, interdisciplinary teams of clinicians (pain medicine specialists, pain psychologists, psychiatrists, social workers, pharmacists, integrative health clinicians, and physical

therapists) supervise simultaneously several providers whose patients have difficulty accessing specialty pain care due to one or more factors such as distance, transportation, and illness severity. Using checklists for gathering standard clinical information regarding the patient's condition, the pain specialty team helps providers complete an assessment and develop an individualized treatment plan which in turn is then tracked at important milestones unless an urgent/emergent issue arises. The specialty team and PCP will modify the treatment plan as needed. A didactic presentation (professional education credit included) related to the cases presented accompanies each session. Ultimately, the program aims to create a knowledge network, with ECHO trainees in the primary care site having a "force multiplier" effect that improves the pain management skills of other clinicians in their setting. SCAN ECHO, which is particularly beneficial in rural and underserved geographic areas where veterans have low access to pain specialty care, has been adopted in 6 different regions of the VHA. Benefits of this program include:

- Reduced travel burden by delivering pain management closer to veterans' homes
- Lower utilization of specialty care
- Improved quality of care through PCPs' development of clinical competencies in pain management
 - Early results, comparing two similar hub and spoke systems in the VHA, one with SCAN-ECHO, the other without, demonstrated that providers who participated in Pain SCAN-ECHO showed increased use of non-opioid pain medications and physical therapy (44),
- Higher provider and veteran satisfaction

- **Opioid Safety Initiative (OSI):** The OSI (76) project monitors targeted safety practices in opioid pain management, such as reductions in prescribing high dose opioids and opioids and benzodiazepines together, and increases in use of urine drug screens and evidence-based non-medical therapies such as cognitive behavioral therapy and complementary and integrative health treatments, both which are now required to be available in all facilities. Several projects support OSI.

- **OSI Toolkit:** An expert, interdisciplinary team provides detailed, evidence-based and peer-reviewed education and guidance for both providers and patients. The Toolkit, with public-facing materials available on the VA's Pain Management Internet site (77) and clinician-facing materials on the VA's Pain Management Intranet site, has been widely presented throughout the VHA in multiple educational formats and communications. For example, the Toolkit has detailed instructions about guiding safe medication tapers from opioids when clinically indicated. Besides clinical guidance, interested readers can find many other public-facing assets in the toolkit.
- **Signature Informed Consent for Long-term Opioid Prescribing:** VHA Directive 1005, Informed Consent for Long Term Opioid Therapy for Pain, ensures that all Veterans on long-term opioids (more than 3 months and not for palliative or cancer care) have an informed discussion with their prescriber and healthcare team on the risks and benefits of chronic opioids for the management of chronic pain and alternative therapies for pain. This discussion is guided by a detailed review of the document, "Taking Opioids Responsibly" (78). This approach standardizes the essentials of safe opioid prescribing in VHA by normalizing provider-Veteran discussions and the use of routine

urine drug screens and by fostering shared decision-making about pain management options and medication safety. Many Veterans find the process most helpful when presented in groups where discussion is encouraged in a supportive environment that tends to destigmatize the process.

- **Opioid Therapy Risk Report:** To further strengthen OSI by supporting clinicians in clinical decision-making, VA recently accelerated the deployment of a state-of-the-art dashboard tool, the Opioid Therapy Risk Report (OTRR) for Veterans prescribed long-term opioids (79). Dashboards appearing directly in the VHA electronic medical record provide clinicians with point of care (real time) access to veteran-specific data and information. OTRR provides clinician/team point of care access to a dashboard for data on each individual Veteran's pain related diagnoses, clinic visits, opioids prescribed, last urine drug screens, psychiatric co-morbidities, and completion of the informed consent document. Thus OTRR supports providers' panel management and care coordination as well as supporting safe opioid prescribing.
- **Academic Detailing:** One of the major benefits of clinical pain practice in the VHA is the important and growing role of pharmacists trained in pain management as active members of the clinical pain team in facilities. One such project, the Opioid Renewal Clinic (58), has been described and replicated as Pharmacy Pain Management Clinics across the VHA. Another project is the Academic Detailing (AD) Service (80), established by the Pharmacy Benefits Management (PBM) Office to support the Opioid and Psychotropic Drug Safety Initiatives. AD creates and provides patient and provider level tools and that are designed to be used during AD visits to facilities where AD meets with Pain Teams and with individual providers needing support to facilitate discussion and address questions related to medications and other treatment modalities. Academic Detailing is a proven innovation of the academic and private sector to aid in post-training continuing education (81,82).
- **STORM:** This project uses the VHA's administrative database to generate data on the effectiveness of the OSI in achieving goals for safer opioid prescribing and by providing evidence as to the impact of specific changes, such as increasing the use of urine drug screens, on reducing risk of opioid overdose. (83).)
- **OEND:** This project has created and distributed trainings throughout the VHA promoting awareness of the risks for overdose and training of families and others in the use of naloxone rescue kits to reverse opioid-related overdose. To date, over 100 potential overdose deaths have been averted (84).)
- **Pain Nursing :** The pain management nursing work group, in conjunction with the University of Wisconsin, continues the Pain Resource Nurse (PRN) program (85), designed specifically to meet the needs of Veterans at all VA sites. Training of Nursing Pain Champions at Tampa VAMC has resulted in trained representatives at 40 VHA facilities.

These Pain Champions are now beginning to develop PRN Programs within their local facilities.

VHA Pain Research

The VA's pain research enterprise (86-88) ranges from studies of the neurobiology of disease to implementation research. The nidus of the VA's pain research effort lies in the Pain Research Working Group (PRWG), led by Dr. Robert Kerns of VA Connecticut and Yale University in monthly phone meetings for many years and almost yearly in face-to-face meetings in various venues. These meetings facilitate dialogue amongst pain investigators and the VHA's Office of Research Development (ORD) and introduce new investigators to the VA pain research enterprise. They foster dialogue and collaborations amongst VHA investigators and research centers. Dr. Kerns, as National Advisor for Pain Research, meets weekly with the National Pain Program office to coordinate discussions with PRWG members about national clinical priorities. VHA's pain research enterprise addresses our society's important need for implementation research, a recognized 'donut-hole' of the NIH research portfolio. Our administrative database, built on the electronic health record, enables studies of trends and gaps in care, the effects of larger scale practice interventions and policy changes, and epidemiologic studies that inform hypotheses for prospective studies, clinical trials and implementation research. Our research enterprise remains challenged to develop a system of uniform longitudinal pain assessment that provides both meaningful measurement yielding real-time decision support in the clinic as well as building a robust data registry to support large scale studies, although several efforts are presently underway (89,90).

Conclusions

Pain management, historically a footnote in the medical battle to cure disease and fix injury, is now being recognized by society as addressing one of its most pressing, longstanding and costly public health issues. The American people, through their representatives in Congress, now also demand attention to pain, and the VA has responded as outlined in this paper. VHA's pain enterprise is vibrant and growing, fueled by the compassion of a workforce dedicated to the mission of relieving the suffering of the men and women who have served our country. The structural problems perpetuating ineffective pain management that are so carefully delineated in the IOM Report (9) have resulted in HHS's National Health Strategy (91) which proposes specific steps in this enterprise, including training and structural changes. Congress asks that we improve the competency of our clinicians and facilities in providing compassionate, safe and effective care. Working in collaboration with the DoD, VHA has taken up the challenge of developing effective training, both at the graduate and post-graduate levels. We must now work with our academic partners to ensure the uniform effectiveness of that training system-wide. Similarly, when we demonstrate successful interventions through clinical trials, we must further develop our capacity to implement the interventions system-wide. To achieve our goals, we must support clinicians and their teams as they attempt to engage Veterans in the mission of achieving a health-oriented approach to pain management focused on their function, sense of well-being, and over-all quality of life.

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Box 1: The Six Steps to Good Chronic Pain Care

Outlining the Challenge: Transforming VA Pain Care *The Six Steps to Good Chronic Pain Care*

1. Educate Veterans/families and promote self-efficacy
2. Educate/train all team members
3. Develop non-pharmacological modalities
4. Institute safe medication prescribing including safe opioid use (universal precautions)
5. Develop approaches to bringing the Veteran's expanded team together (virtual pain consulting and education as well as ongoing communication between team members)
6. Establish metrics to monitor pain care

From U.S. Department of Veterans Affairs. VHA Pain Management, Dec 16 2015. Available at: <http://www.va.gov/painmanagement/>. Accessed Dec 21 2015.

Figure 1: Chronification of Pain and the Chronic Pain Cycle

From Gallagher RM. Management strategies for chronic pain. In: Krames ES, Peckham PH, Rezai AR, editors. Neuromodulation. New York: Academic Press; 2009: 313-332; with permission.

Table 1: The National Pain Management Coordinating Committee (Field Advisory Committee)

National Pain Program office: Director, Deputy Director, Research Advisor, Program Coordinator	
<ul style="list-style-type: none"> - Primary Care (2) - PM&R - Pain Medicine(2) - Addictions - Neurology - Mental Health Integration - Pain Psychology - Patient Education 	<ul style="list-style-type: none"> - Anesthesiology - Geriatrics - Post-deployment Health (2) - Pharmacy (PBM) - Nursing (2) - EES (2) - Women's Health - Research - Integrated Health

Table 2: Core Competencies in Primary Care Pain Management

Primary Care Competency	Educational Strategy	Measurement of achievement	Strategies for sustainability
<i>Conduct of comprehensive pain assessment</i>	<ul style="list-style-type: none"> >Web-based training >In-person training sessions >Manuals from Pain.Edu 	<ul style="list-style-type: none"> >Completion of training (mini-residency, SCAN-ECHO, TMS (asynchronous) >Chart review 	<ul style="list-style-type: none"> >Panel size adjustments and increased visit time for pain patients >Performance measures/monitors > PACT Pain Champions
History including assessment of psychiatric/behavioral comorbidities, addiction, and aberrant behavior (diversion)			
Conduct of routine focused physical/neurological examinations			
Judicious use of diagnostic tests/procedures			
<i>Optimal patient communication</i>	<ul style="list-style-type: none"> >Web-based training >In-person training sessions >Manuals from Pain.Edu >Motivational interview training 	<ul style="list-style-type: none"> >Completion of training >Patient feedback >Patient satisfaction surveys, but must account for skew due to disgruntled patients, secondary gain, >Ongoing reassessment of treatment plan >Appropriately soliciting patient questions and concerns 	<ul style="list-style-type: none"> >Availability of wellness programs, >Behavioral management/pain psychology >Patient support groups >Templates for functional evaluation and re-evaluation > PACT Pain Champions
How to encourage realistic evidence-based expectations			
How to provide reassurance and discourage negative behavior			
How to foster pain self-management			
Negotiating behaviorally specific and feasible goals			
<i>Pain Management</i>	<ul style="list-style-type: none"> >Web-based training >In-person training sessions >Manuals Pain Website >List of available services >Service agreements >Web-based info on local arrangements >Links to practice guidelines > Use of Academic Detailing Program. 	<ul style="list-style-type: none"> >Completion of training >Medication utilization monitoring (long acting vs short acting opioids, non-opioid therapy) >Utilization of adjuvant therapy, other interventions >Chart review 	<ul style="list-style-type: none"> >Separate problem patients from regular PC pain population >Identify and review outliers >Availability of wellness/integrative health programs, >Behavioral management/pain psychology >Performance measures/monitors > PACT Pain Champions
Knowledge of accepted clinical practice guidelines			
Rational, algorithmic based polypharmacy and goal-oriented biopsychosocial care plans			
Institute safe and effective opioid management procedures			
Knowledge/use of common metrics for measuring function			
Determining the need for stepped care with behavioral, integrative health, and physical therapies and integrating them into care plans appropriately. Determining the need for secondary consultation and creating functional consultation and collaborative care processes			

Figure 2: Continuum of VHA Stepped Pain Care

From Gallagher RM. Pain Medicine and Primary Care: The Evolution of a Population-based Approach to Chronic Pain as a Public Health Problem. In Deer, T.R.; Leong, M.S.; Buvanendran, A.; Gordin, V.; Kim, P.S.; Panchal, S.J.; Ray, A.L. (Eds.) Comprehensive Treatment of Chronic Pain by Medical, Interventional, and Behavioral Approaches. The American Academy of Pain Medicine Textbook on Patient Management. New York; Springer, 2013; with permission.

Chronification to Maldynia (Bad Pain): The Chronic Pain Cycle