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Health  
Adviser

Dr.  
Jonathan  
Woodson,  
M.D.

Assistant  
Secretary  
of Defense  
for Health Affairs

Director  
TRICARE  
Management Activity

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**Brig. Gen.  
Jess A. Scarbrough**

Joint Program Executive Officer  
Chemical and Biological Defense



Telehealth ☆ Occupational Health and Safety ☆ Pain Management  
Tactical Medical Evacuation



# Military Health System's **Pain Management** Strategy

**ADVANCES IN BURN CARE, PATIENT EVACUATION AND TRAUMA SURGERY HAVE ALL BEEN DEVELOPED AS THE MILITARY RESPONDED TO THE NEEDS OF ITS WOUNDED SOLDIERS, SAILORS, AIRMEN AND MARINES.**

**By ERIN FLYNN JAY**  
**MMT CORRESPONDENT**  
**JAYE@KMIMEDIAGROUP.COM**

Wounded servicemembers present the MHS with complex challenges in managing pain from the battlefield, across the evacuation chain and through the ongoing recovery/rehabilitation process. The services are collaborating to improve equipment, procedures and guidelines to optimize acute and chronic pain management. This includes expanding utilization of regional anesthesia and improved risk stratification and oversight for patients requiring long term opioid use.

More than 50 million Americans suffer from chronic pain. According to the Centers for Disease Control and Prevention and the American Academy of Pain Medicine, pain is the most frequent reason patients seek physician care in the United States. Pain affects more Americans than diabetes, heart disease and cancer combined.

When including health care expenses, lost income and lost productivity, the annual cost of chronic pain in the U.S. is estimated by the National Institutes of Health at \$100 billion. "Treating pain is one of medicine's oldest and most fundamental responsibilities. Yet modern medicine continues to be challenged in its efforts to understand acute and chronic pain mechanisms and to relieve pain and suffering," said

Dr. Warren Lockette, chief medical officer of TRICARE. "In the U.S. health care system today there is considerable variability in the practice of pain management as a result of several factors."

To begin with, Lockette said each medical provider has a unique understanding and approach to pain management that is significantly influenced by each physician's academic medical training, mentors, cultural beliefs and personal experiences with pain. In addition, there is a lack of clear ownership of pain medicine by any one medical specialty. According to the American Academy of Pain Medicine, pain medicine is a relatively new medical specialty that is evolving along with its place in the medical hierarchy.



**Dr. Warren Lockette**

Although there are many modalities available for the management of acute and chronic pain, the most commonly used continue to be both over-the-counter and prescription medications. While the use of medications may be an appropriate, required and effective way to treat pain, overreliance on medications may have other unintended consequences, such as the risk of diversion

and misuse. According to the Office of National Drug Control Policy, prescription opioid analgesics are the most commonly abused prescription drugs in the U.S., with the highest rate of abuse occurring among those ages 18-25. “Clinicians are faced with a dilemma—how to safely incorporate opioids into treatment plans that maximize the possibility of successful pain control while minimizing the risk of misuse or abuse,” said Lockette.

Opioids are not the only answer to treatment of moderate or severe pain. Pain is most effectively treated when it is identified early and treated in the acute stage to minimize development of chronic pain and associated complications. “No single modality or approach works for everyone, so practitioners must have access to a wide range of evidence based therapies and modalities. Effective pain management requires focusing efforts across the entire pain continuum,” Lockette said. “This includes emphasizing the importance of injury prevention and instituting early interventions such as physical therapy to minimize the adverse effects of pain or the need for opioid analgesics.”

Ideally, Lockette said, pain medicine should be managed by integrated care teams that employ a biopsychosocial stepped care model of pain management. The goal of these teams is to provide care for most pain conditions in the primary care setting, to decrease overreliance on medication driven solutions to include opioids, and to create an interdisciplinary approach that encourages collaboration among providers from differing specialties.

While the MHS does have experts in pain management, it is important to emphasize that per Joint Commission and Accreditation Association for Ambulatory Health Care requirements, every patient who is seen at a military treatment facility (MTF) receives an appropriate assessment for acute and chronic pain at each and every medical facility at which they seek care.

## **MILITARY PAIN MANAGEMENT SPECIALISTS**

To effectively manage patients with acute and chronic pain, health care providers must possess a core level of knowledge and experience commensurate with the type of care they provide. Providers must also be trained to recognize when the pain care needs of the patient exceed their capabilities, and when and how to refer the patient to external resources for additional care. “The services are currently working to ensure these training programs are available and appropriate to ensure all of their providers are appropriately trained,” Lockette said. “The Military Health System also has a cadre of pain management specialists available both within MTFs and in the purchased care sector for those beneficiaries who require the expert level of chronic pain care that these individuals can provide.”

History shows that combat has always been a significant catalyst for medical innovations. Challenges facing military health care providers during wartime have resulted in medical advances benefiting both military and civilian medicine. Advances in burn care, patient evacuation and trauma surgery have all been developed as the military responded to the needs of its wounded soldiers, sailors, airmen and Marines.

Over the last 10 years, enemies’ use of improvised explosive devices (IEDs) has resulted in significant numbers of complex traumatic injuries. However, Lockette said the use of body armor and improved battlefield evacuation and surgical capabilities have resulted in increased percentages of servicemembers surviving devastating injuries that were often fatal in previous conflicts. These patients

present the MHS with complex challenges in managing pain from the battlefield, across the evacuation chain and through the ongoing recovery/rehabilitation process.

The services are collaborating to improve equipment, procedures and guidelines to optimize acute and chronic pain management. Lockette said this includes expanding utilization of regional anesthesia and improved risk stratification/oversight for patients requiring long term opioid use.

“Providing world-class medical care to all those for whom we are responsible, particularly our wounded warriors, is an expectation of our leadership and our beneficiaries,” Lockette concluded. “The MHS pain management strategy not only involves working to minimize a patient’s pain, but also focuses maximizing function and quality of life.”

“The modern model of pain management is definitely a team approach,” said Jason T. Smith, Ph.D., director of marketing and clinical affairs for LiteCure LLC. “The U.S. military is facing more servicemembers coping with pain management, increasing rates of discharge due to repetitive stress injuries and chronic pain. Also, there is an increase in the prescription rates and abuse of pain medications.”

## **ACUTE AND CHRONIC PAIN**

“Acute pain is pain felt after injury, and the level of pain declines as normal healing takes place, for example after surgery, or after athletic injury,” said Ian M. Rawe, Ph.D., consultant for BioElectronics. “Acute pain is relatively easy to manage with analgesic pain medications taken for the needed period of pain relief, and generally care is managed by one medical practitioner. The pain medication used depends on the severity of pain being experienced.”

Acute pain can progress into chronic pain if it persists longer than six months. “Chronic pain persists despite the fact that an injury has healed. Pain signals remain active in the nervous system for weeks, months or years. Chronic pain may have originated with an initial trauma/injury or infection, or there may be an ongoing cause of pain,” Rawe said.

The typical pain management team for chronic includes medical practitioners, clinical psychologists, physiotherapists, occupational therapists, and nurse practitioners and requires the coordinated efforts of the treatment team.

Pain is a leading cause of disability, and acute and chronic pain afflicts military personnel and veterans in proportions exceeding the general population, and is thought to be more complex. “Characteristics of modern warfare produce serious, but survivable, injuries to bodily tissues and to the peripheral and central nervous systems that cause acute pain and, in many cases, lead to chronic pain. Providing a continuum of adequate pain management, from the time of injury through to recovery of function and quality of life, is crucial to the well-being of military veterans,” Rawe said.

According to data from the Department of Defense, the number of prescriptions for pain medications written for military servicemembers and vets is up more than 438 percent since 2001—many of them for disabled veterans suffering from chronic pain. DoD also says that prescription drug abuse is more than twice as common among members of the military as it is in the civilian population—and it’s on the rise. Clearly the rise in the incidence of chronic pain in military personnel is a contributing factor in the increased health costs: \$53 billion now, compared to \$19 billion in 2001, added Rawe.

BioElectronics products are based on the science of radio fre-



quency energy that has been shown to be effective in controlling pain and decrease healing time for many years. “New research has demonstrated this form of therapy is safe and effective in treating pain and promoting healing, including chronic wounds. Our innovative design has miniaturized the once office-based therapy into a convenient wearable form, economical to use, that is able to effectively fight pain and promote healing. Our product was one of the winners in the WSJ technology innovation award,” Rawe said. “The wearable design, allows therapy 24/7, without the need for repeated office visits to receive treatment, and has been shown to decrease the need for pain medications when recovering from surgery. It is an effective therapy for muscle-skeletal injury, and research has shown a rapid recovery in patients suffering from plantar fasciitis [heel pain] for example.”

“The modern model of pain management is definitely a team approach,” said Jason T. Smith, Ph.D., director of marketing and clinical affairs for LiteCure LLC. “The U.S. military is facing more servicemembers coping with pain management. Increasing rates of discharge due to repetitive stress injuries and chronic pain. Also, there is an increase in the prescription rates and abuse of pain medications.”

## DEEP TISSUE LASER THERAPY

Deep tissue laser therapy with LiteCure’s LCT-1000 gives medical professionals a powerful drug-free, surgery-free alternative for treating pain. “Laser therapy is being used to treat patients with chronic back pain, tendinopathy and repetitive stress injuries,” said Smith. “Some patients are able to use laser therapy to reduce or eliminate their need for pharmaceutical pain management. Patients are also benefiting from laser therapy to reduce pain and inflammation in post-surgical rehabilitation.”

Deep tissue laser therapy has been used as a therapeutic modality for many years and has great potential to be used in the military clinic for the reduction of pain and inflammation, and to aid in the healing process. Recently studies and meta-analyses have demonstrated the benefits of laser therapy for the treatment of neck pain, back pain, carpal tunnel syndrome and tendinopathy. Smith said laser therapy is emerging as a conservative, drug-free, surgery-free alternative for the treatment of chronic and acute pain and inflammation.

Laser therapy works by a process known as photobiomodulation. Within the cell there are molecules called chromophores that are known to absorb light. When a chromophore absorbs energy from the laser, its biological activity can be modulated, leading to a wide range of downstream signaling events. The most frequently studied mammalian chromophore is cytochrome C, which resides in the mitochondria and is a crucial component of the electron transport chain driving cellular respiration. At a cellular level light has been demonstrated to increase cellular proliferation, ATP production and endorphin levels and reduce inflammatory signaling.

Our servicemen and women carry the weight of the world on their shoulders, sometimes more literally than others. “Recent data has shown back pain second only to psychiatric disability as the leading cause of military personnel non-return to duty,” Smith said. “Results from a recent study conducted at the University of Colorado Denver using the LCT-1000 by LiteCure show promising improvement with laser therapy treatment. A patient population with chronic low back pain was randomized to receive either chiropractic manipulation or manipulation plus laser therapy.



LCT-1000 deep tissue therapy laser by LiteCure. [Photo courtesy of LiteCure.]

Initially pain scores were similar for both groups however after a series of three treatments the laser population had a 42 percent improvement over control in VAS pain score. Mean VAS values for the patients in the experimental group dropped from 6.50 to 1.75.”

The first rule of health in the infantry has always been to take care of your feet. Despite many efforts to minimize podiatric complaints, plantar fasciitis remains a significant problem.

The following case study is an example of the potential of laser therapy in this difficult application. A 38-year-old female presented with chronic plantar fasciitis to the right foot. She had found some relief while walking by wearing a soft boot. Her treatment was six sessions of laser therapy at 10W and 4,800J in cw mode with roller-ball hand piece. The initial treatment produced significant reduction in Achilles tenderness and pain intensity along the foot fascia. Following the full course of treatment, Smith said the patient has achieved 90 percent improvement, with 10 percent residual. She is walking without a supportive boot and maintains an essentially pain-free workout program. The laser therapy program has been well-tolerated and 100 percent improvement is anticipated.

Smith concluded that this positive patient response demonstrates clinical effectiveness of Class IV laser therapy in chronic plantar fasciitis. ★

For more information, contact *MMT* Editor  
Brian O’Shea at [briano@kmmidiagroup.com](mailto:briano@kmmidiagroup.com)  
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