Chronic Pain and Posttraumatic Stress Disorder

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Disclosures

No Conflicts of Interest
Objectives

1. Define chronic pain and posttraumatic disorder

2. Discuss the complex interaction of chronic pain and posttraumatic stress disorder

3. Identify effective treatment approaches to enhance the recovery of our veterans who have both chronic pain and posttraumatic stress disorder
Operation Enduring Freedom (OEF)  
Operation Iraqi Freedom (OIF)

• As of April 9, 2011 --- 5976 American soldiers have been killed in Afghanistan and Iraq.

• Estimates of 50,000-100,000 soldiers have suffered non-mortal wounds/injuries in Iraq and Afghanistan.

• Unprecedented number of injured US soldiers.

Source: http://icasualties.org
Operation Enduring Freedom (OEF)  
Operation Iraqi Freedom (OIF)

<table>
<thead>
<tr>
<th>Campaign</th>
<th>Wounded</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEF/OIF*</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Vietnam</td>
<td>2.6</td>
<td>1</td>
</tr>
<tr>
<td>Korea</td>
<td>2.8</td>
<td>1</td>
</tr>
<tr>
<td>WWI &amp; WWII</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

*Highest wounded to fatality ratio.

Operation Enduring Freedom (OEF)
Operation Iraqi Freedom (OIF)

• Much credit is due to military medicine.

• More soldiers are surviving major combat injuries.

• Medical, psychological and social costs to soldiers, their families and the VA medical system to provide care for our survivors of combat related injuries.

• Multimodal pain management.

• Proactive, not reactive, pain management has emerged to contribute to early rehabilitation.

Chronic Pain

• Leads to distress, suffering, and functional disability.

• Increased use of medical services.

• Workplace absenteeism.

• Most common complaint made by patients to their primary care providers.

• Estimated $75 to $100 billion a year in the US in lost productivity and healthcare costs.

• Long-term mental health and substance abuse disorders.

• Leading cause of short and long term disability among military personnel.
PTSD

• Most people are resilient and can absorb the impact of a traumatic experience and resume their normal lives

• However, a sizeable number cannot

• PTSD in the general population is between 7-12%

• At risk groups (motor vehicle accidents, sexual assault or military combat) rates are substantially higher

• National Vietnam Veterans Readjustment Study found lifetime rate of PTSD 30%

• RAND Study 2008 found rates of PTSD 20% in OEF-OIF veterans; rates closer to 50% with multiple deployments; rates increase with number of firefightes.
DSM IV Defines PTSD as…

• **Experiencing an event that involves one or more of the following:**
  – Actual or threatened death
  – Serious injury
  – Threat to physical integrity

• **Event:**
  – Was personally experienced
  – Was witnessed
  – Happened to loved one/someone close to you and you learned about it (did not necessarily witness it)
PTSD Symptoms
3 Clusters

1) **Re-experiencing** – unwanted thoughts, flashbacks, nightmares

2) **Avoidance** – thoughts, feelings, conversations, activities, places, people, memories, detachment and estrangement from others

3) **Hyper-arousal** – difficulty falling or staying asleep, irritability, difficulty concentrating, hypervigilance, exaggerated startle response
## Frequency of Possible Diagnoses Among Recent Iraq and Afghanistan War Zone Veterans

<table>
<thead>
<tr>
<th>Diagnosis (n = 299,585) (Broad ICD-9 Categories)</th>
<th>Frequency *</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious and Parasitic Diseases (001-139)</td>
<td>33,783</td>
<td>11.3</td>
</tr>
<tr>
<td>Malignant Neoplasms (140-208)</td>
<td>2,611</td>
<td>0.9</td>
</tr>
<tr>
<td>Benign Neoplasms (210-239)</td>
<td>11,056</td>
<td>3.7</td>
</tr>
<tr>
<td>Diseases of Endocrine/Nutritional/ Metabolic Systems (240-279)</td>
<td>61,276</td>
<td>20.5</td>
</tr>
<tr>
<td>Diseases of Blood and Blood Forming Organs (280-289)</td>
<td>6,194</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Mental Disorders (290-319)</strong></td>
<td>120,049</td>
<td>40.1</td>
</tr>
<tr>
<td>Diseases of Nervous System/ Sense Organs (320-389)</td>
<td>98,741</td>
<td>33.0</td>
</tr>
<tr>
<td>Diseases of Circulatory System (390-459)</td>
<td>46,725</td>
<td>15.6</td>
</tr>
<tr>
<td>Disease of Respiratory System (460-519)</td>
<td>57,312</td>
<td>19.1</td>
</tr>
<tr>
<td>Disease of Digestive System (520-579)</td>
<td>92,943</td>
<td>31.0</td>
</tr>
<tr>
<td>Diseases of Genitourinary System (580-629)</td>
<td>30,451</td>
<td>10.2</td>
</tr>
<tr>
<td>Diseases of Skin (680-709)</td>
<td>46,137</td>
<td>15.4</td>
</tr>
<tr>
<td><strong>Diseases of Musculoskeletal System/Connective System (710-739)</strong></td>
<td>137,361</td>
<td>45.9</td>
</tr>
<tr>
<td>Symptoms, Signs and Ill Defined Conditions (780-799)</td>
<td>111,474</td>
<td>37.2</td>
</tr>
<tr>
<td>Injury/Poisonings (800-999)</td>
<td>59,086</td>
<td>19.7</td>
</tr>
</tbody>
</table>

*These are cumulative data since FY 2002, with data on hospitalizations and outpatient visits as of September 30, 2007; veterans can have multiple diagnoses with each healthcare encounter. A veteran is counted only once in any single diagnostic category but can be counted in multiple categories, so the above numbers add up to greater than 299,585.

- VHA Office of Public Health and Environmental Hazards January 2008
- Represents 19% of the 1.6 million service members deployed to Afghanistan and/or Iraq
Persian Gulf War (PGW) Veterans

• Clinical and military registries have found pain symptoms and diagnoses to be among the most prevalent conditions reported since the cease-fire in 1991

• DOD and VA PGW registries most frequently diagnosed medical conditions are:
  - Musculoskeletal pain 25%
  - Connective tissue diseases 36%

• Survey of 15,000 PGW veterans found prevalence rates:
  - Headaches 54%
  - Joint pain 45%
  - Back pain 44%
  - Muscle pain 33%
  - Abdominal pain 23%


Murphy FM, Kang H, Dalager NA et al. The health status of Gulf War Veterans: Lessons Learned From the Department of Veterans Affairs Health Registry. Mil Med 1999; 164:327-31

Chronic Pain and Catastrophic Thinking

- Muscle tension may be misinterpreted as pain.

- Catastrophizing: The experience of pain is interpreted as overly threatening.

- Fear of pain and may lead to a variety of events including **avoidance** of activities that may elicit pain.

- Guarding behaviors and hypervigilance to bodily sensations.
12/19/06 - U.S. Army Soldiers prepare to be extracted from the area by a UH-60 Black Hawk helicopter after conducting an air assault mission in Kif, Iraq, Dec. 19, 2006. The Soldiers are with Bravo Company, 2nd Battalion, 35th Infantry Regiment, 25th Infantry Division. (U.S. Air Force photo by Staff Sgt. Samuel Bendet) (Released)
Chronic Pain and Avoidance

• Depressive symptoms and disability

• Decreased feelings of self-efficacy related to pain

• Negative expectations and beliefs about ability to cope with pain

• Increased disability

• Avoidance of activities and social situations can increase affective distress→further exacerbating the experience of pain

• Depressed and inactive→the cycle of pain is fueled even further, fear and avoidance are further increased
Chronic Pain

• Individuals who confront chronic pain and are active in their pain management program are more likely to have quicker recoveries because of their greater participation in activities.

• Individuals who catastrophize typically have more life dysfunction and dissatisfaction.

• Tendency to catastrophize pain symptoms and avoid activity further drives their pain experience.
10/19/06 - A U.S. Army sniper team from Jalalabad Provincial Reconstruction Team (PRT) scans the horizon after reports of suspicious activity along the hilltops near Dur Baba, Afghanistan, Oct. 19, 2006, after a medical civic action project was conducted by the Jalalabad Provincial Reconstruction Team and the Cooperative Medical Assistance team (}
Complex Interaction of Pain and PTSD

• Rates of PTSD when pain is secondary to a MVA range from 30-50%.

• Burn patients have high rates of PTSD 45% (burned by IEDs, blasts, refueling accidents).

• Report more intense pain and affective distress, higher levels of life interference and greater disability than pain patients without PTSD.

• Re-experiencing symptoms were also associated with increased pain level and pain-related disability.


Complex Interaction of Pain and PTSD

• Pain can become treatment resistant when heightened anxiety is present.**

• Previous research has shown that combat veterans with chronic pain and PTSD heavily endorsed reexperiencing symptoms—specifically nightmares.

• Combat veterans with chronic pain and PTSD were hyperaware of bodily sensations, resulting in greater severity scores of chronic pain.
Chronic Pain and PTSD

Mutual Maintenance Model

Shared Vulnerability Model

Mutual Maintenance Model: Chronic Pain and PTSD

- Anxiety sensitivity
- Pain
- Attentional biases
- Avoidance
- Fatigue and lethargy
- General anxiety
- Cognitive demands
- Depression
- Reminders of the trauma

Patients with high levels of pretreatment pain reported reductions in pain over 16 week PTSD treatment program based on CBT model with exposure therapy.

Shared Vulnerability Model: Chronic Pain and PTSD

- Fear of anxiety symptoms; belief that there are harmful consequences.

- Alarm caused by the traumatic stressor is combined with the alarm of physiological sensations.

- Anxiety sensitivity heightens fear, anxiety and avoidance of activities that may cause pain.

- Increases the chance that pain will be maintained over time.

- Anxiety sensitivity is a vulnerability factor in the development and maintenance of pain-related anxiety and avoidance behaviors.

Symptom Overlap- Chronic Pain and PTSD

Pain: the avoidance of physical activities

PTSD: the avoidance of feared activities

• Anxiety, hyperarousal, avoidance behavior, emotional lability, and elevated somatic focus.

• Stress responses and pain modulation are dysregulated in both conditions
Symptom Overlap - Chronic Pain and PTSD

Impairment in social and occupational functioning

Increased use of health care resources

Hopelessness

Helplessness

Social withdrawal, isolation

Irritability

Excessive guilt

Anxiety

Agitation

Memory and cognitive impairment

Impaired sleep

Suicidal thoughts/behaviors
11/11/06 - U.S. Army Staff Sgt. Corley Burkman, of Delta Company, 2nd Battalion, 27th Infantry Regiment, and an Iraqi army soldier from the 1st Company, 1st Battalion, 2nd Brigade, 4th Iraqi Army Division head upstairs to clear the second floor of an Iraqi home during a cordon and search operation in Hawijah, Iraq, Nov. 11, 2006.
Chronic Pain and PTSD: Co-morbid Depression

• Depression is common with both conditions.

• Fatigue and reduced activity levels exacerbate and maintain both PTSD and chronic pain symptoms.

• Among chronic pain patients, depression prevalence rates were estimated at 30-54%, much higher than in the general population.

• Depression may result as a consequence of pain or may precede the pain and may be related to maintenance of pain.

• Biopsychosocial approach to pain recognizes the relationship between pain and emotional disturbances is likely to be reciprocal.


Symptom Overlap- Chronic Pain and PTSD with Substance Abuse

• Alcohol and other substances are commonly used to cope with the mental health impact of deployment (depression, anxiety, PTSD, pain).

• Under recognition of substance use disorders in those returning from deployment.

• Prevention of ETOH and substance use MUST be a high priority in this population of veterans.

• Target through screening, education, prevention and treatment
Pain in Patients with PTSD

- PTSD symptoms are associated with greater reporting of physical health problems and symptoms.

- 80% of outpatient military combat veterans satisfied the criteria for chronic pain in 1 or more sites, 77% back pain.

- Findings found in all theatres- Vietnam, Persian Gulf War.

- Pain threshold and tolerance are affected by elevations in anxiety.

- PTSD may reduce pain threshold and pain tolerance, influence distress and increase perceived disability levels.

PTSD in Patients with Chronic Pain

• 10-50% of patients enrolled in a pain treatment center have symptoms that meet criteria for PTSD.

• 10% of a random military sample being treated for chronic pain also had PTSD.

• ***35% with musculoskeletal injury from an accident have PTSD***musculoskeletal injuries are the most common injuries in Iraq.

• National Co-morbidity Study found that patients with musculoskeletal pain are 4 times more likely to develop PTSD than those without musculoskeletal pain.


# Pain Characteristics According to PTSD Status

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>PTSD</th>
<th>No PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain Severity</td>
<td>6.90 (2.65)</td>
<td>5.65 (2.68)</td>
</tr>
<tr>
<td>Pain Every Day</td>
<td>58%</td>
<td>21%</td>
</tr>
<tr>
<td>Head</td>
<td>38%</td>
<td>14%</td>
</tr>
<tr>
<td>Neck/Shoulders</td>
<td>29%</td>
<td>11%</td>
</tr>
<tr>
<td>Lower Back</td>
<td>43%</td>
<td>15%</td>
</tr>
<tr>
<td>Upper Limb</td>
<td>13%</td>
<td>6%</td>
</tr>
<tr>
<td>Lower Limb</td>
<td>25%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Note: Pain severity is a global rating of severity scored on 1-10 scale. Standard deviations appear in parentheses.

77 males, 19 female participants who sustained severe TBI

OEF-OIF Veterans

- Substantial number of veterans experience ongoing or new pain post-deployment
- OIF veterans will report pain conditions more frequently than other medical conditions
- 47% report some level of current pain
- 28% reporting pain scores that are associated with functional interference and at the threshold for intervention.
- Diseases of the musculoskeletal system affect 30% of those enrolling in VA healthcare—numbers are far greater

FIGURE.
Schematic of the biopsychosocial model of chronic pain syndromes

Predisposing Factors
- Genetics
- Demographics (Age, Race, SES)

Prior Trauma
- Traumatic Life Events (Sexual and Physical Abuse, other Trauma)

Moderating Variables
- Coping Strategies

Symptom Occurrence
- Psychosocial Symptoms (Anxiety, PTSD, Depression)

Health Status and Treatment Response
- (Medical, Surgical, Psychological)

Type of Chronic Pain
- Biological Mechanisms

Response (Adequate/Inadequate)

Health Outcome

Health Status (Functional Status, Somatic Symptoms, Pain, Health Care Use)

* Figure created by Dr. Meltzer-Brody and previously published in her chapter Meltzer-Brody S, Golden R. “Chronic Pain and Comorbid Mood Disorders.” The Physicians Guide to Depression and Bipolar Disorders. Permission obtained.

OEF-OIF Veterans

• Early severity of physical problems was strongly associated with later PTSD and depression.

• Soldiers with PTSD or depression at 7 months did not meet criteria for either condition at one month.

• Injuries and physical problems provide constant reminders of the events of war.

• Early and aggressive treatment of physical pain can reduce PTSD flashbacks triggered by pain.

11/20/06 - An Iraqi girl talks with U.S. Army Staff Sgt. Michael Marker in Mosul, Iraq, Nov. 20, 2006. Marker, a squad leader with 2nd Platoon, Bravo Company, 5th Battalion, 20th Infantry Regiment, and fellow Soldiers are conducting a joint presence and community engagement with Iraqi army soldiers from 1st Battalion, 2nd Brigade, 2nd Iraqi Army Division.
Blast Injuries

3 Bs- Blast injuries are based on three injuring mechanisms:

1. Ballistic
2. Blast
3. Burn

A large explosion results in a mix of traumatic injury, including penetrating fragment injuries, blast injury and thermal injuries.

Facial and neck injuries are common with blast injuries.
Radiograph of mangled leg from blast injury.
High-energy gunshot wound passing through the knee.
Blast Injuries

Service members injured by blast:

- Broader spectrum of physical injuries
- Higher levels of admission and discharge
- Opioid analgesic use
- Reduced improvement in pain intensity post treatment
- Much higher rates of PTSD and other psychiatric diagnoses than those injured by other means (combat injuries other than blast and noncombat/nonblast injuries).

Common Pain Syndromes: Combat Veterans

• Amputation, heterotopic ossification
• Myofascial pain, musculoskeletal and connective tissue**
  - 82% of those with chronic pain
• Head Injury**
• Chronic daily headaches, migraine headaches**
• Burns
• Compartment syndromes
• Spinal cord injuries
• Polytrauma
• GSW/shrapnel from blasts**
• Persistent Neuropathic Pain**
• Non combat related injuries from day-to-day physical wear and tear of military duty. **
• Pelvic pain – 14% of female soldiers-multiple causes, majority unknown
• Complex Regional Pain Syndrome

** most common pain syndromes seen in PTSD program at Tampa VAMC
Treatment of Chronic Pain and PTSD

- Multidisciplinary approach
- Integrated substance abuse, PTSD and pain management
- Rehab Medicine, physical therapy
- Consult with VA Chronic Pain Programs
- Rapid identification of chronic pain and then referral for evaluation of PTSD as soon as possible
- CBT strategies effective for treatment of both; exposure
- Overarching goal to improve functioning and quality of life


Treatment of PTSD and Chronic Pain

• Education about the function of cognitive and behavioral avoidance.

• Activities to help cope with uncomfortable physical sensations (running in place, engaging in previously avoided activities).

• Decrease avoidance and increase participation in activities; high levels of distress and disability may decrease.

• Increase confidence and gain a more positive outlook on life.

• Increase self esteem-self efficacy.

• Reduce the cognitive and behavioral avoidance (in vivo and imaginal exposure) and aiming to increase activity levels (exposure intervention) are necessary for recovery.
Treatment of PTSD and Chronic Pain

• Help the veteran see links between chronic pain and PTSD.

• Relaxation, social support, anger management.

• Reconceptualize pain as subject to personal control through the influence of thoughts, feelings, speech and actions.

• Modify/reduce re-experiencing symptoms; prazosin.

• Medication Management.

• Reinforce positive self-efficacy beliefs, correct attentional biases, and help reduce catastrophic thinking.
The Big Three
James A. Haley VA Hospital PTSD Clinical Program

1. Headaches*
2. Back Pain*
3. Neuropathic Pain

*Lew et al. Prevalence of chronic pain, posttraumatic stress Disorder, persistent postconcussive symptoms in OIF/OEF Veterans; Polytrauma clinical triad. JRRD. 2009;46(6)697-702
Migraine Headaches

Acute Migraine Treatment

1. Triptans (Serotonin Agonists)
   - Faster-acting (sumatriptan, zolmitriptan, rizatriptan, almotriptan and eletriptan)
   - Slower-acting (naratriptan and frovatriptan)
   - Combination triptan/NSAID (sumatriptan/naproxen sodium)-synergy
   - Tablets, nasal spray, injectables
   - Take at earliest onset of mild pain, before full blown migraine, to maximize a sustained pain-free response
   - Use < 10 days per month to avoid transformation to chronic daily headache and to avoid rebound headaches
   - Caution: Serotonin Syndrome with antidepressant agents
     - Vascular contraindications secondary to vasoconstriction
     - NSAIDS, caffeine, antiemetics for additional relief

2. Ergots (Dihydroergotamine- DHE)
   - Injection and nasal spray
   - Use in those who do not tolerate triptans, failed triptan therapy, or in those with prolonged attacks
Migraine Headaches

Daily Preventive Treatment (Chronic migraine)

- Frequency or disability of migraine is high
- Risk of neurologic injury (hemiplegic migraine)
- Acute therapies are contraindicated, not tolerated or overuse is present
- Decrease hyperexcitability by reducing cortical spreading/neuronal activation
Migraine Headaches

Daily Preventive Treatment (Chronic migraine)

- Overall efficacy of prophylactic classes is similar, selection should be based on treating comorbidities

- Amitriptyline, propranolol, timolol, divalproex sodium, and topiramate

- All of these medications used at appropriate doses for at least 2-3 months, yield ~ 50% reduction in migraine frequency, start low in dose

- Other classes: calcium channel blockers (verapamil), SNRIs (venlafaxine), ACE-I (lisinopril), ARBs (candesartan), clonidine, NSAIDS or natural supplements (magnesium, riboflavin, Coenzyme Q10) have less evidence
Migraine Headaches

PTSD is more common in chronic migraine than in episodic migraine population.

• PTSD may be a risk factor for chronic headaches.

• Treatment of migraine headaches is complicated by the fact that sufferers react in different ways to medications.

• What may work for one patient may not work for another especially in those with PTSD.

Tension Headaches

• Pressing and tightening quality, band-like, surrounding the head, bilateral

• Some consider a variant of migraine headaches

• Thought to arise from myofascial pain sensitivity and increased pericranial muscle activity

• Brought on by physical and psychological stress

• Emotional distress may contribute to muscle contraction

• Exacerbated by poor posture and other ergonomic factors

• Dental complications may predispose some people to tension headaches; may need occlusal adjustments, splints or masticatory exercises (bruxism in PTSD and as a side effect of SSRIs)
# Treatment Strategies for Tension Headaches

<table>
<thead>
<tr>
<th>Abortive Treatments</th>
<th>Prophylactic Treatments</th>
<th>Other Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSAIDS</td>
<td>TCAs (amitriptyline, nortriptyline)</td>
<td>Dental referral</td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>SSRIs</td>
<td>Stress Management</td>
</tr>
<tr>
<td>Aspirin</td>
<td>Venlafaxine</td>
<td>Biofeedback</td>
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<td></td>
<td></td>
<td>Relaxation Training</td>
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<td></td>
<td></td>
<td>CBT</td>
</tr>
</tbody>
</table>
Back Pain

• Leading cause of long-term disability in the United States.

• Injury of vertebrae, facet joints, nerve roots, muscle and connective tissue.

• 60% of patients there is no direct relationship between physical findings discovered on exam or diagnostic testing and the patient’s perceived level of pain, disability, and psychological distress.

• If back pain is disproportionate to findings on exam, greater propensity towards depression and maladaptive cognitive patterns including catastrophic thinking.
# Treatment Strategies for Back Pain

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Return to Activity</th>
<th>Medications</th>
<th>Other Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility Exercises</td>
<td>Return to Activity</td>
<td>NSAIDS</td>
<td>Surgery</td>
</tr>
<tr>
<td>Range-of-Motion Exercises</td>
<td>Return to Activity</td>
<td>Acetaminophen</td>
<td>Spinal Cord Stimulation</td>
</tr>
<tr>
<td>Aerobic Exercises</td>
<td>Return to Activity</td>
<td>Tramadol</td>
<td>Breathing techniques, Relaxation</td>
</tr>
<tr>
<td>Muscle Strengthening Exercises</td>
<td>Return to Activity</td>
<td>Opioid Analgesics</td>
<td>CBT</td>
</tr>
<tr>
<td><strong>harder to rebuild after deconditioning</strong></td>
<td><strong>harder to rebuild after deconditioning</strong></td>
<td>Antidepressants (primarily for patients with co-morbid depression)</td>
<td>Exercise Therapy Acupuncture Massage Therapy Yoga</td>
</tr>
</tbody>
</table>

Persistent Neuropathic Pain

- Treatment of neuropathic pain is difficult to achieve

- Frustrating for many patients and poor pain relief may lead to complete disability

- Requires more complex pharmacology

- Most common causes: Diabetes, HIV, Agent Orange Exposure, Alcohol use, chemotherapies, entrapment neuropathy (carpal tunnel, ulnar entrapment), post-stroke
Persistent Neuropathic Pain

• Allodynia- pain produced by non noxious stimuli

• Hyperalgesia- exaggerated pain response to noxious stimuli

• Dysesthesia- unpleasant sensation, not always painful

• Paraesthesia- pins and needles

• Crawling, electric shock, stabbing, shooting, tingling

• Can cause significant functional impairment, problems with balance, tripping and falls especially for veterans who wake up at night having nightmares and then pace their house.

<table>
<thead>
<tr>
<th>Anticonvulsants</th>
<th>Opiates</th>
<th>Antidepressants</th>
<th>Other Meds</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabapentin 900-3600mg/day</td>
<td>Methadone 5-100mg/day</td>
<td>Amitriptyline 25-200mg/day</td>
<td>Topical capsaicin - 2-4x per day x 6 months</td>
<td>Transcutaneous Electrical Nerve Stimulation (TENS)</td>
</tr>
<tr>
<td>Carbamazepine 600-1200mg/day</td>
<td>Tramadol 50-400mg/day</td>
<td>Nortriptyline 25-150mg/day</td>
<td>Topical lidocaine</td>
<td>Sympathetic Nerve Blocks</td>
</tr>
<tr>
<td>Valproic Acid 750-2500mg/day</td>
<td>Desipramine 25-200mg/day</td>
<td>Lidocaine patch 5% (max 3 patches in 12 hour period)</td>
<td>Hypnosis, biofeedback, relaxation training</td>
<td></td>
</tr>
<tr>
<td>Topiramate 100-200mg/day</td>
<td>Venlafaxine XR 150-225mg/day</td>
<td>Neuragen Gel homeopathic- 2-3 drops 2x day-lasts 8h</td>
<td>Hypnosis, biofeedback, relaxation training</td>
<td></td>
</tr>
<tr>
<td>Clonazepam 0.5-3mg/day</td>
<td>Duloxetine 60-120mg/day</td>
<td>Biofreeze topical cryotherapy 2-4x/day</td>
<td>Tai Chi; improve motor function and balance</td>
<td></td>
</tr>
<tr>
<td>Lamotrigine 200-400mg/day</td>
<td></td>
<td></td>
<td>Acupuncture, OT</td>
<td></td>
</tr>
<tr>
<td>Pregabalin 300-600mg/day</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Opioid Pain Management

• For patients with moderate to moderately severe pain
  ✓ Oxycodone
  ✓ Methadone
  ✓ Hydrocodone
  ✓ Fentanyl
  ✓ Morphine

• Goal to provide sustained analgesia and improvements in sleep, adherence, quality of life

• Careful screening of patients being considered for long term opioid therapy to identify patients who may have difficulties in managing opioids

• These patients should NOT be denied access to opioid therapy; require focused monitoring; increased frequency and intensity

• During therapy prescribers MUST focus on the 4 As:
  1. Analgesia
  2. Activities of Daily Living
  3. Adverse Effects (sedation, cognitive impairment, constipation)
  4. Aberrant Drug-Related Behaviors
Risk Factors for Addiction in Chronic Pain Patients

- Complex interaction between the person at risk and properties of certain drugs
  - long v. short acting medications
  - as needed versus by the clock dosing

- Non-Modifiable Risk Factors for Addiction
  - Family or personal history of substance abuse or addiction
  - Personal psychiatric history of any kind
  - Age (younger age carries a greater risk potential)
  - Current status as a smoker
  - Personal history of preadolescent sexual abuse
## Risk Factors for Addiction in Chronic Pain Patients

<table>
<thead>
<tr>
<th>Probably More Predictive</th>
<th>Probably Less Predictive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling prescription drugs; prescription forgery</td>
<td>Aggressive complaining about need for higher doses- pseudoaddiction</td>
</tr>
<tr>
<td>Stealing or borrowing another patient’s drugs</td>
<td>Drug hoarding during periods of reduced symptoms</td>
</tr>
<tr>
<td>Injecting, chewing, snorting oral formulation</td>
<td>Requesting specific drugs</td>
</tr>
<tr>
<td>Obtaining prescription drugs from nonmedical sources</td>
<td>Reporting emotional effects not intended by the clinician</td>
</tr>
<tr>
<td>Concurrent abuse of illicit drugs</td>
<td>Unapproved use of drug to treat another symptom</td>
</tr>
<tr>
<td>Recurrent loss of prescriptions/medications</td>
<td>Obtaining similar drugs from other medical sources</td>
</tr>
<tr>
<td>Unsanctioned dose escalations (multiple times)</td>
<td>Unsanctioned dose escalation (1-2 times)</td>
</tr>
</tbody>
</table>
Tramadol

• Unique pharmacological effects

• Opiate effects; 1/15\textsuperscript{th} the potency of morphine

• Influences other neurotransmitter pathways
  ✓ Inhibits reuptake of NE
  ✓ Inhibits reuptake of 5-HT
  ✓ Both inhibit the influence of pain mediating neurotransmitters (Substance P) in the dorsal horn of the spinal cord

• Abuse potential previously thought to be low

• However, several reports have shown that tramadol is a medication that patients can become quite dependent on

• One case, patient had been using such large amounts that inpatient methadone detoxification was required

• Adverse effects:
  ✓ Lower seizure threshold
  ✓ Serotonin syndrome

Treatment of Chronic Pain and Combat-Related PTSD

• Acknowledge loss of physical prowess.

• Many of the severely injured in combat hoped for a lifelong military career.

• For many, with medical discharge from the military comes the loss of close friendships, “family” and connection to “something greater than oneself”.

• These factors, independent of war related injuries is devastating for many of our veterans.

• In many cases new life skills and new vocational skills must be taught.

Recovery, Resilience, Reintegration
Future Thoughts

• Increased research on the treatment of acute pain and development of chronic pain in combat veterans.

• The window to PTSD in combat veterans can be provided through chronic pain assessment and management.

• Outreach, education and ongoing changes in the current model of health care delivery.

• Must acknowledge courage and strength in seeking treatment.

• To ensure the recovery of our combat veterans we must appreciate the complexities of PTSD and chronic pain.


12/19/06 - U.S. Army Soldiers prepare to board a UH-60 Black Hawk helicopter after conducting an air assault mission in Kif, Iraq, Dec. 19, 2006. The Soldiers are with Bravo Company, 2nd Battalion, 35th Infantry Regiment, 25th Infantry Division. (U.S. Air Force photo by Staff Sgt. Samuel Bendet)
Information Links

VA Pain Treatment

• http://www.va.gov/pain_management

Additional Resources:

American Academy of Pain Management

• http://www.aapainmanage.org

American Pain Society

• http://www.ampainsoc.org/

American Chronic Pain Association

• http://www.theacpa.org/
Additional References


