

# PTSD and Chronic Pain

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# Disclosure

- The presenter has no financial relationship to this program.

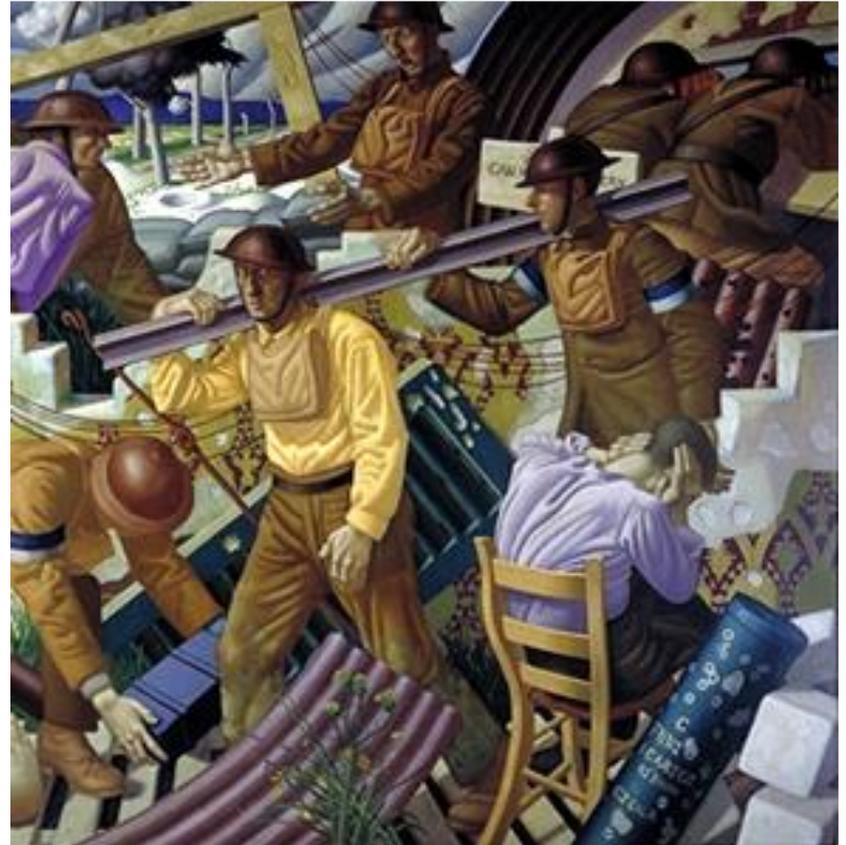
# Objectives

- Recognize the link between PTSD and Chronic Pain
- Learn about some theoretical models explaining the co-occurrence of PTSD and chronic pain
- Appreciate some treatment approaches

# PTSD- Definition and Mechanisms

# Posttraumatic Stress Disorder (PTSD)

- Experienced, witnessed, or confronted by threat of death or serious injury
- Response is intense fear, helplessness, or horror
- Persistent reexperiencing: intrusive recollections, distressing dreams, flashbacks, intense psychological or physiological distress at exposure to a cue reminiscent of the trauma
- Persistent avoidance: avoids thoughts, activities, feeling detached, restricted affect, sense of foreshortened future
- Persistent arousal: insomnia, irritability, poor concentration, hypervigilance, exaggerated startle



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- Duration > 1 month

# The Fear Structure

- A fear structure is a program for escaping danger
- It includes information about:
  - The feared stimuli
  - The fear response
  - The meaning of stimuli and responses

# Trauma Memory

- A specific fear structure that contains representations of:
  - Stimuli present during and after the trauma
  - Physiological and behavioral responses that occurred during the trauma
  - Meanings associated with these stimuli and responses
  - Associations may be realistic or unrealistic

# Characteristics of early trauma structure

- Large number of stimuli
- Excessive responses [PTSD symptoms]
- Erroneous associations between stimuli and “danger”
- Erroneous associations between responses and “incompetence”
- Fragmented and poorly organized relationships between representations

# Early PTSD symptoms

- Trauma reminders in daily life activate trauma memory and the associated perception of “danger” and “self incompetence”
- Activation of the trauma memory is reflected in re-experiencing symptoms and arousal
- Re-experiencing and arousal lead to avoidance behavior

# Recovery Process

- Recovery is the norm!!!
- Repeated activation of trauma memory and emotional engagement
- Incorporation of corrective information about “world” and “self”
- Activation and disconfirmation occur via confronting trauma reminders [thinking about, and contact with, trauma reminders]
- Corrective information consists of absence of anticipated harm

# Chronic PTSD

- While avoidance may be helpful short term, over long term it is harmful
- Persistent cognitive and behavioral avoidance prevents change in trauma memory by:
  - Limiting activation of trauma memory
  - Limiting exposure to corrective information
  - Limiting articulation of trauma memory and thus preventing organization of the memory

# Erroneous cognitions underlying PTSD

- The world is extremely dangerous
- People are untrustworthy
- No place is safe
- I am extremely incompetent
- PTSD symptoms are a sign of weakness
- Other people would have prevented the trauma

# PTSD and Chronic Pain- Epidemiology

# Chronic Pain is Prevalent Among Individuals with PTSD

- 66-80% of combat vets with PTSD report chronic pain [Beckham et al., 1997; Shipherd et al., 2007]
- 45% of veteran firefighters with PTSD report chronic pain [McFarlane et al., 1994]
- 30-50% of MVA survivors with PTSD report chronic pain [Chibnall et al., 1994; Hickling et al., 1992]
- 22-49% of PTSD patients meet criteria for fibromyalgia [Amir et al., 1997; Amital et al., 2006]

# Chronic Pain is Prevalent Among Individuals with PTSD

- Sareen et al. [2007]: Compared people with and without PTSD in a community sample of 36,984
  - PTSD: 46% chronic back pain
  - NO PTSD: 21% chronic back pain
  - PTSD: 33% migraines
  - NO PTSD: 10% migraines
  - Pain symptoms also more likely to persist in those with PTSD [Dirkzwager et al., 2007]

# PTSD is prevalent among individuals with chronic pain

- Up to 33% of patients in pain clinics exhibit PTSD symptoms [Beckham et al., 1997; Benedict et al., 1996; MacFarlane et al., 1999; Meltzer-Brody et al., 2007]
- Rates of PTSD in patients with pain secondary to MVA are 30-50% [Hickling et al., 1992; Chibnall et al., 1994; Taylor et al., 1995]

# PTSD is prevalent among individuals with chronic pain

- In a sample of 113 Veterans referred for pain treatment at VA Boston, 35% (n=50) met criteria for PTSD based on a PCL cutoff score of 50.
- In a sample of 30 OEF/OIF veterans referred for pain treatment at VA Boston, 73% (n=22) of the sample met criteria for PTSD based on a PCL cutoff score of 50.
- Morrison, J., Scioli, E, Schuster, J., & Otis, J. (March, 2009). *The Prevalence and Impact of Comorbid Chronic Pain and PTSD on U.S. Veterans*. Poster presented at the 29th annual meeting of the Anxiety Disorders Association of America, New Mexico.

PTSD + Chronic Pain =  
Worse Outcomes

# PTSD + Chronic Pain = Worse Outcomes

- Chronicity of pain [Olsen et al., 2007; Dirkzwager et al., 2007]
- More intense pain [Geisser et al., 1996]
- More affective distress from pain [Geisser et al., 1996]
- Higher levels of life interference from pain [Turk et al., 1996]
- Lower pain threshold, and greater disability from pain [Sherman et al., 2000]
- Higher levels of depression and anger [Chibnall et al., 1994]
- PTSD related re-experiencing associated with pain severity, self-reported physical symptoms, and limitations in functional ability

# Etiologic Models of co-occurring PTSD and Chronic Pain

# Models unsupported by data

- One causes the other
- They are independent and unrelated to each other

# Mutual maintenance

- Physiological, affective, and behavioral components of PTSD maintain and exacerbate pain AND vice versa
- **Example:**
  - Person with PTSD and musculoskeletal pain experiences pain and arousal
  - Pain and arousal are constant reminders of trauma that caused the pain
  - Trauma recollection leads to physiological arousal
  - This leads to avoidance of pain-related activities
  - This leads to deconditioning, which then worsens pain
  - Vicious cycle of distress and functional disability

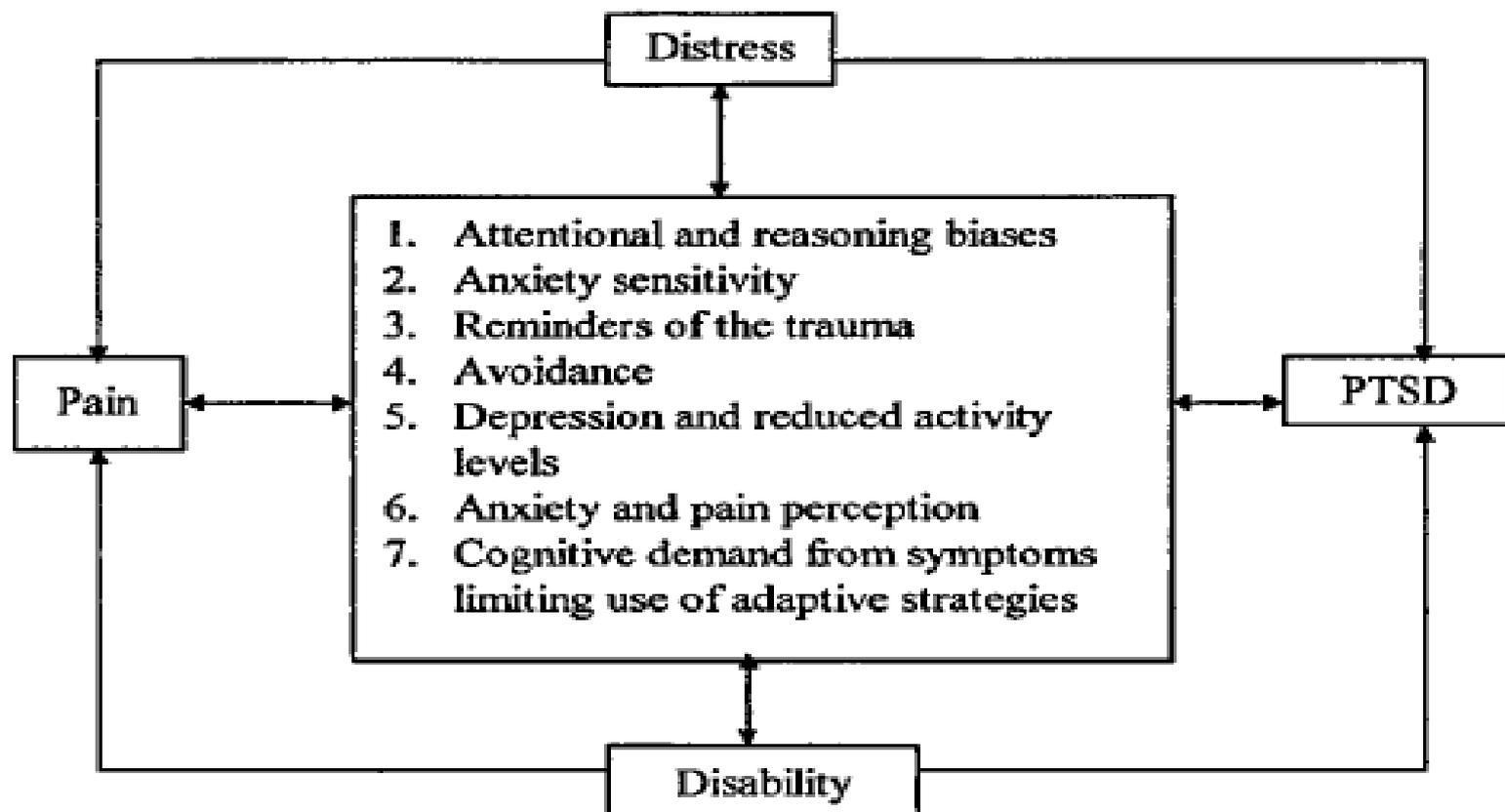


Figure 2. Mutual maintenance model. From Sharp TJ, Harvey AG: Chronic pain and posttraumatic stress disorder: mutual maintenance? *Clinical Psychology Review* 2001;21(6):857-77, p. 870. Copyright 2001. Reprinted with permission from Elsevier Science.

# Clinical Examples

- “When ever I'm laying in bed at night and my shoulder starts hurting, I start having thoughts of when I was shot.”
- “When I think about the day my car had the accident, I can feel the pain in my back flare up right where I was hurt.”
- “I tried my PT exercises but the pain started increasing and I started thinking about what I saw and heard in Iraq so I just said the heck with it and called it quits for the day.”
- “I managed to avoid dealing with my PTSD all of my life, but when the other car hit me it brought all of the feelings to the surface (feeling powerless).”

# Shared vulnerability

- Mutual maintenance factors may be related to some shared vulnerability
- Combination of genetics and environmental factors

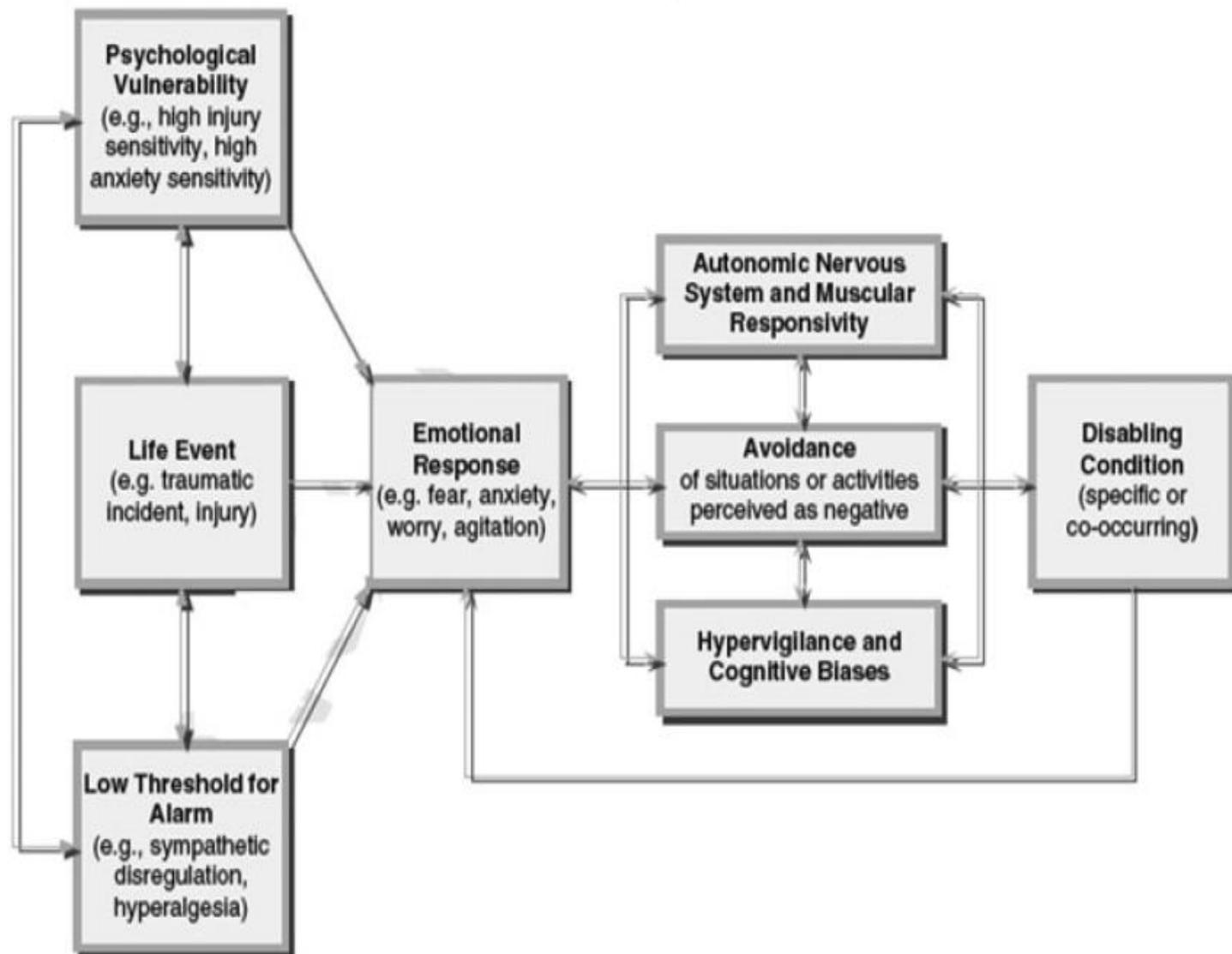


Figure 3. Shared vulnerability model. From Asmundson GJG, Abrams MP, Collimore KC: Pain and anxiety disorders, in Health behaviors and physical illness in anxiety and its disorders: Contemporary theory and research. Edited by Zvolensky MJ, Smits JAJ. New York: Springer, 2008, pp 207–235, p. 216. Copyright 2008. Reprinted with permission from Springer Science and Business Media.

# PTSD and pain

- **AVOIDANCE** is critical to maintaining PTSD
- It may also worsen pain outcomes
- Often, the same event that led to chronic pain also led to the PTSD
- Pain related avoidance may worsen PTSD

Psychological mechanisms  
underlying pain-  
PTSD relationship

# Anxiety sensitivity [AS]

- Fear of anxiety based on belief that anxiety may have harmful consequences
- Increased in most anxiety disorders
- May also be increased in some chronic pain conditions [Asmundson et al, 2000]
- AS correlated with PTSD severity
- AS correlated with severity of labor and dental pain
- AS increases the risk of pain-related avoidance and disability following physical injury in adults and children with chronic pain
- Influenced by genetic and environmental factors
- Catastrophizing – exaggerated beliefs and expectations that events will lead to negative outcomes.

# Selective attention to threat

- Directing attention to feared objects or situations
- Robust findings for many anxiety disorders
- Less robust findings for chronic pain
- Patients with greater pain severity and pain-related disability more likely to selectively pay attention to trauma related stimuli than those with less pain [Beck et al., 2001]

# Lower threshold for alarm

- Pain and anxiety both lead to physiologic arousal
- Prolonged states of arousal can be detrimental to health
- Anxiety disorders, particularly PTSD, see increased sympathetic activity
- This can lead to further avoidance

# Avoidance!

- PAIN: The avoidance of physical activities
- PTSD: The avoidance of feared thoughts/situations

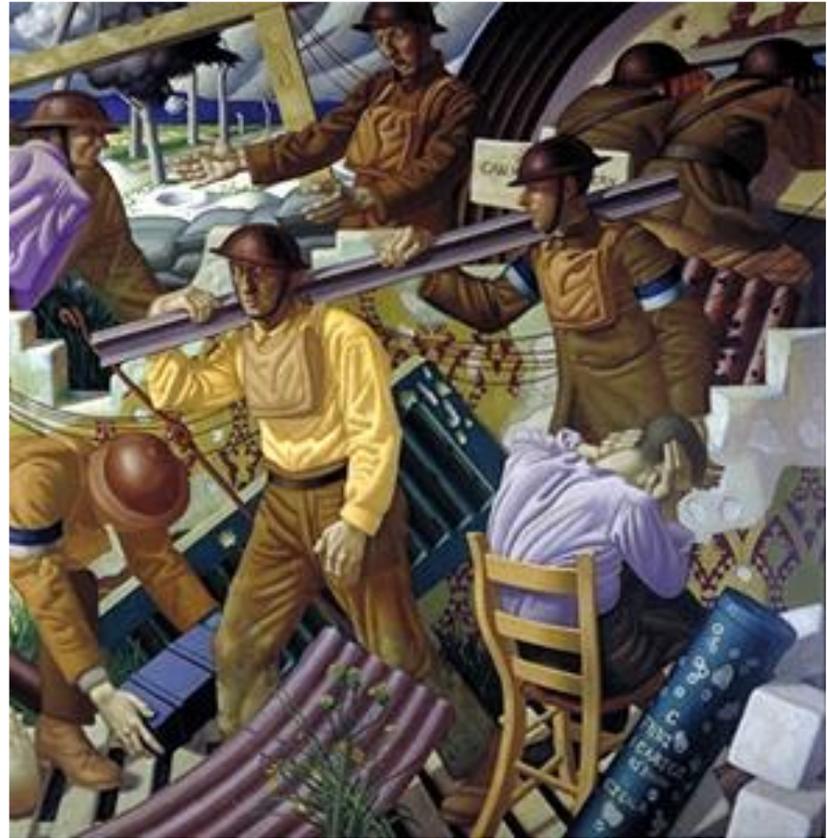
# **TREATMENT APPROACHES**

# Psychosocial treatments

# Posttraumatic Stress Disorder (PTSD)

## Non-Medication Treatment

- Exposure Therapy [evidence: Ia]
- CBT/Cognitive Restructuring [evidence: Ia]
- EMDR [evidence: Ia]
- Seeking Safety



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# Non-pharmacological approaches

- Woods & Asmundson [2008]: Graded in-vivo exposure demonstrated significant improvements in:
  - fear of pain and movement
  - fear-avoidance beliefs
  - pain-related anxiety
  - pain self-efficacy
  - Anxiety and depression
  - Pain catastrophizing
  - [compared to wait list and graded activity]
  - Only 8 sessions; improvements maintained over 1 month f/u

# Need for integrated treatment

- Parallel Treatment

- Poor collaboration among providers
- Different philosophies of treatment
- Patient receives no treatment because no one takes responsibility

- Sequential Treatment

- Untreated disorder worsens the treated disorder
- Disagreement as to which should be treated first
- Clinicians don't follow through with referral for the untreated disorder

# Need for integrated treatment

- Liedl and Knaevelsrud [2008]
  - Psychoeducation
  - Physical activation to break the cycle of avoidance
  - Relaxation techniques to reduce hyperarousal [progressive muscle relaxation, diaphragmatic breathing, biofeedback]

# **INTEGRATED TREATMENT MODEL [OTIS AND KEANE]**

# Treatment Components

## CBT for Pain

- Education re: pain
- Relaxation training
- Cognitive restructuring
- Stress management
- Activity pacing
- Pleasant activity scheduling
- Anger management
- Sleep hygiene
- Relapse prevention

## CBT for PTSD

- Education re: PTSD
- Cognitive restructuring vs Prolonged Exposure therapy
- Teach coping skills
- Social support
- Anger management & sleep
- Reprocessing the meaning of the event

# Integrated Treatment

- Session 1 Education on Chronic Pain and PTSD
- Session 2 Making Meaning of Pain and PTSD
- Session 3 Thoughts/Feelings related to Pain and PTSD & Cognitive Errors
- Session 4 Cognitive Restructuring
- Session 5 Diaphragmatic Breathing and Progressive Muscle Relaxation
- Session 6 Avoidance and Interoceptive Exposure
- Session 7 Pacing and Pleasant Activities
- Session 8 Sleep Hygiene
- Session 9 Safety/Trust
- Session 10 Power/Control/Anger
- Session 11 Esteem/Intimacy
- Session 12 Relapse Prevention and Flare-up Planning

**Table 2. Selective Serotonin Reuptake Inhibitor and Serotonin Norepinephrine Reuptake Inhibitor Antidepressant Options**

Medication	Anxiolytic Efficacy*	Advantages	Disadvantages
Fluoxetine	Panic, <sup>†</sup> PTSD*	Generic available; long half life (no withdrawal)	Most stimulating; longer half life
Paroxetine	Panic, <sup>†</sup> GAD, <sup>†</sup> SAD, <sup>†</sup> PTSD <sup>†</sup>	Generic available; most extensively studied across these anxiety disorders; least stimulating; no P450 3A4 effects	Most sedating; shorter half life and worse withdrawal
Sertraline	Panic, <sup>†</sup> GAD,* SAD, <sup>†</sup> PTSD <sup>†</sup>	Well-studied across these 4 anxiety disorders; least P4502D6 effects; minimal P4503A4 effects; intermediate half life (less withdrawal)	Most diarrhea
Citalopram	Panic*	Generic available; no P450 effects	
Escitalopram	Panic,* GAD, <sup>†</sup> SAD*	No P450 effects	
Venlafaxine ER	Panic, <sup>†</sup> GAD, <sup>†</sup> SAD, <sup>†</sup> PTSD	No P450 effects, pain effects	Short half life; withdrawal with missed dose or sudden discontinuation; increased blood pressure at >225 mg
Duloxetine	GAD <sup>†</sup>	Pain effects	Unclear efficacy for other anxiety disorders; more stimulating

\*Randomized controlled trials but no Food and Drug Administration-approved indication.

<sup>†</sup>Food and Drug Administration-approved indication as of January 2006.

GAD, generalized anxiety disorder; PTSD, posttraumatic stress disorder; SAD, social anxiety disorder.

# Basic Steps to pharmacotherapy

- Step 1: Try an SNRI or an SSRI
- Step 2: Augment with anti-anxiety medications [non-benzodiazepines first, then benzodiazepines]
  - Early in tx for faster response/”bridge”
  - Later for breakthrough anxiety
  - Consider use of gabapentin, pregabalin
- Step 3: Switch SSRI/SNRI or anti-anxiety medications
- Step 4: Continued lack of response: Consult with a specialist
- <http://hsc.unm.edu/som/psychiatry/crcbh/docs/COD%20Manual%20-%20FINAL%20-2-2010.pdf>

# Posttraumatic Stress Disorder (PTSD)

## Medication Treatment

- Prazosin [evidence: Ib]
- SSRIs [evidence: Ia]
- SNRIs [evidence: Ib]
- Antipsychotics [evidence: Ib] works best for those that do not respond to SSRI/SNRI
- Bupropion, Trazodone [evidence: IIa]
- Mirtazepine [evidence: IIb]



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Davidson, et al. Archives of General Psychiatry, 2006;63:1158-1165

Rothbaum, et al. Journal of Clinical Psychiatry, 2008;69:520-525 (less promising: Krystal, et al. JAMA, 2011)

Tyrer & Silk, Effective Treatments In Psychiatry, 2008, Cambridge University Press

# Conclusions

- Chronic pain and PTSD co-occur at higher than expected rates
- Co-occurrence related to worse outcomes
- There may be mutually maintaining underlying mechanisms
- These mechanisms can often be addressed through non-pharmacologic means
- Medications can also play an important role in treatment