Pain and Emotional Comorbidities: When Pain Treatment Alone is NOT Enough

Michael E. Clark, Ph.D.
MHBS Pain Programs Leader, Tampa VA
Co-Chair, VA National Pain Management Workgroup
Member, VA National Pain Management Strategy Coordinating Committee
Associate Professor, Dept. of Psychology, University of South Florida

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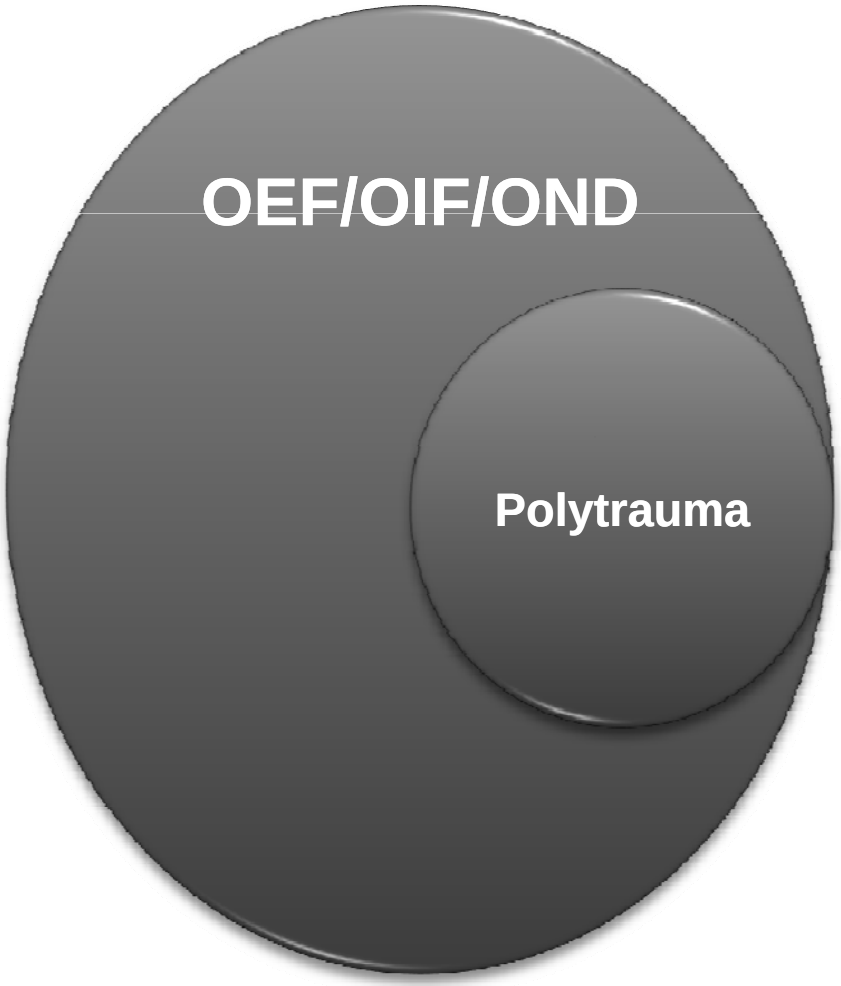
- Any opinions or conclusions presented are those of the author and do not necessarily reflect those of the Department of Veterans Affairs.

Objectives

- Briefly review the pain characteristics associated with OEF/OIF/OND injuries.
- Describe the constellation of symptoms and prevalence that characterize Post-deployment Multi-symptom Disorder (PMD).
- Identify alternative integrated care treatment strategies for PMD, and summarize the initial outcomes associated with this treatment approach.

Primary Patient Populations



- **OEF/OIF/OND**
  - **Active duty or veterans**
  - **Less severe injuries or general health issues**
  - **Mild TBIs common**
- **Polytrauma**
  - **Active duty or veterans**
  - **Present with severe injuries, typically blast-related**
  - **Moderate to severe TBIs common**

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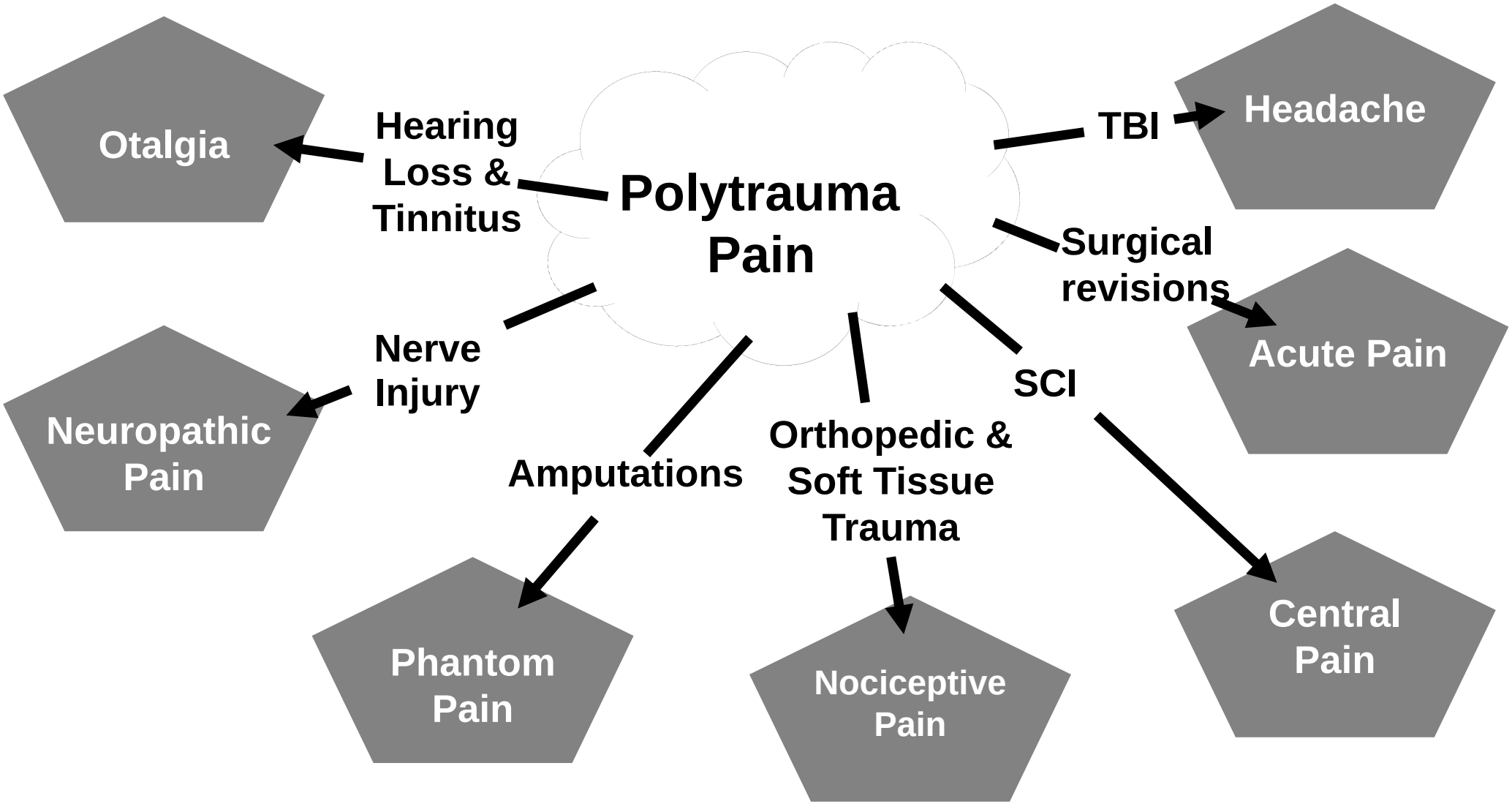
Complexity of Polytrauma Pain



Adapted with permission from Scott, 2008

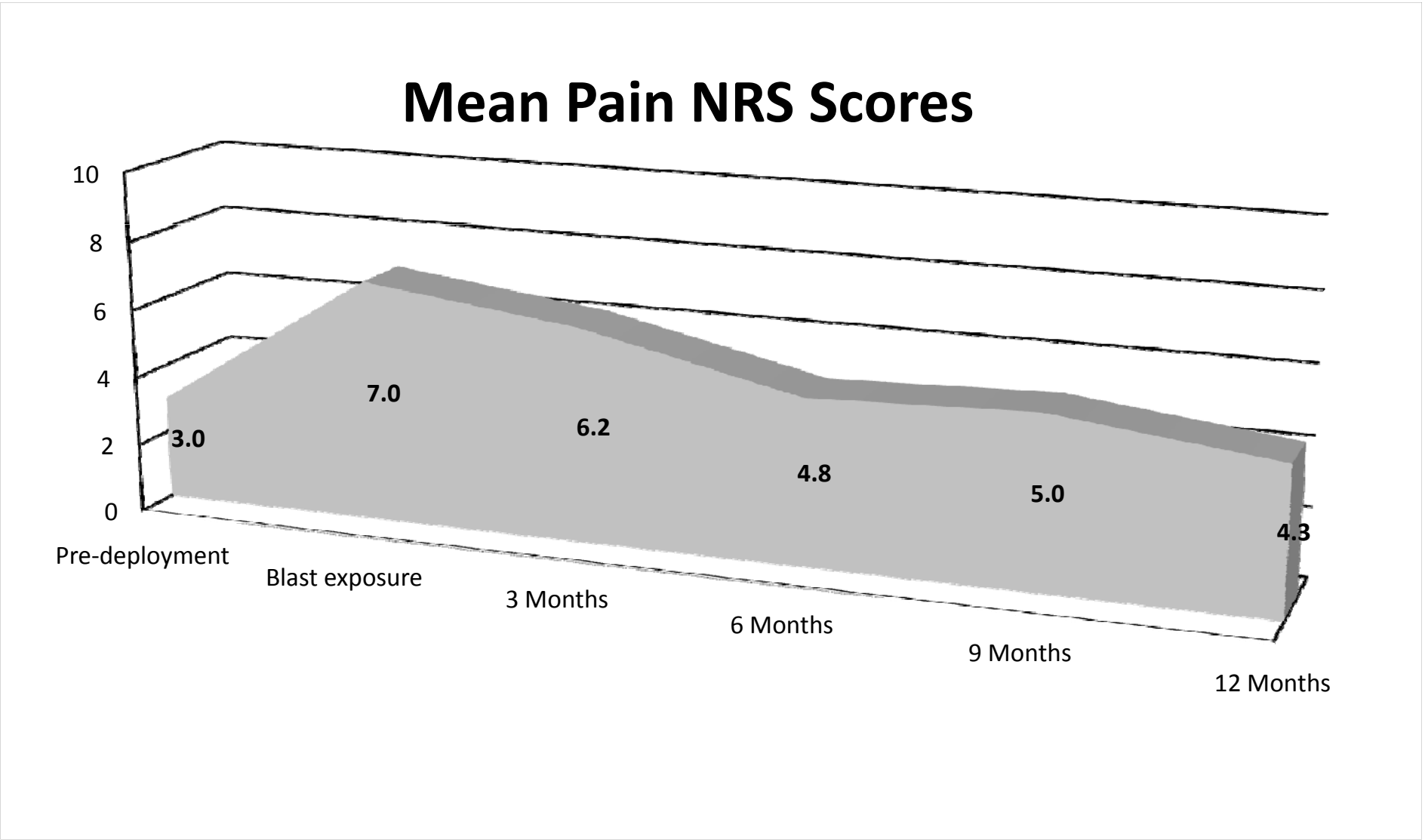
Polytrauma Pain Characteristics

Pain prevalence = 96%

- Headaches and cervical pain from traumatic brain injuries and blast injuries (65%)
- Extremity pain from blast injuries (55%)
- Neuropathic pain from fasciotomies (30%)
- Phantom limb pain from amputations (20%)
- Back pain (20%)
- Burn pain from blast injuries (10%)
- Diffuse pain from numerous soft tissue shrapnel wounds (10%)

Clark, Bair, Buckenmaier III, Gironda, & Walker, 2007
Clark, Scholten, Walker, & Gironda, 2009
Clark, Walker, Gironda, & Scholten, 2009

Polytrauma Pain Course



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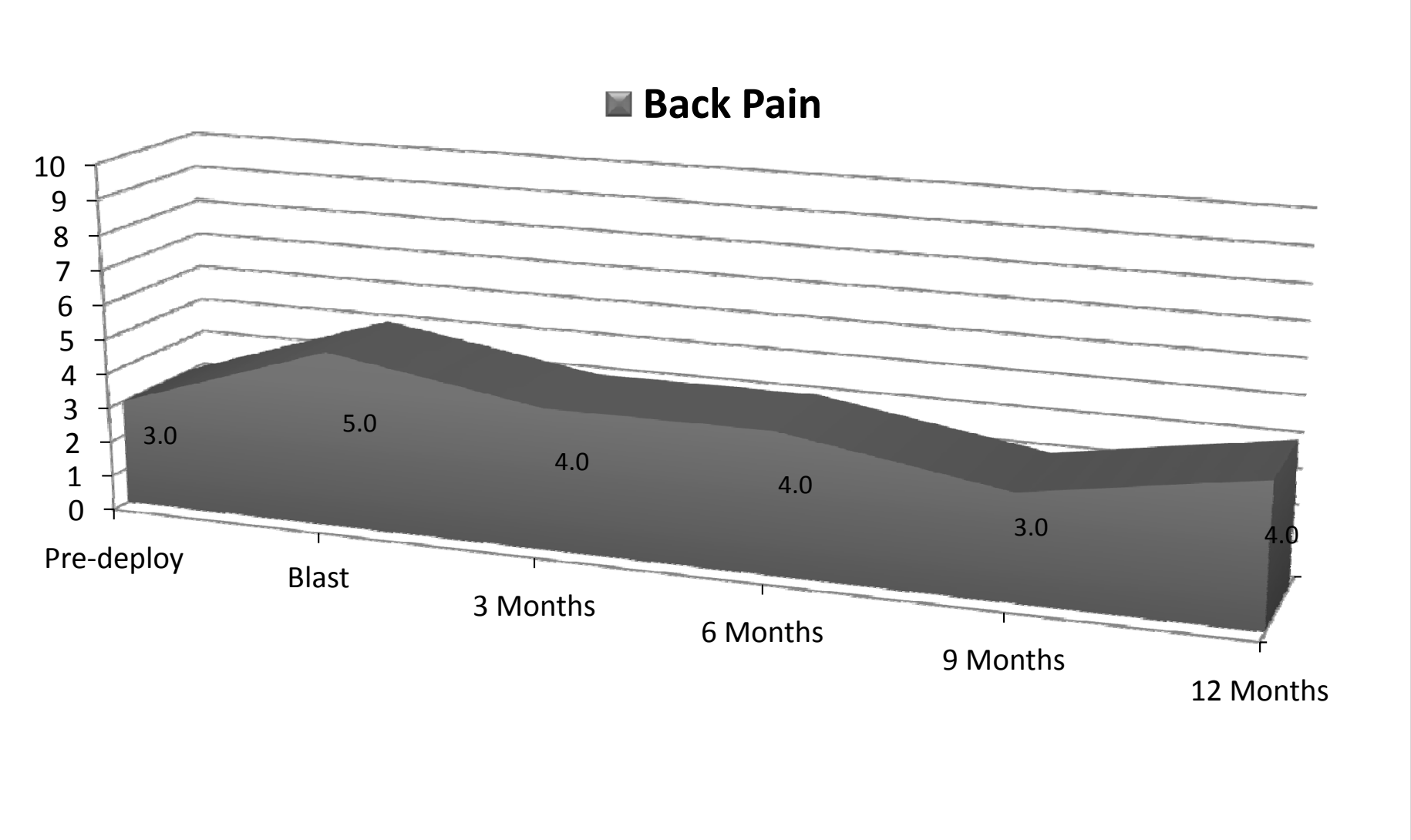
Course of Pain: Predeployment Back Pain



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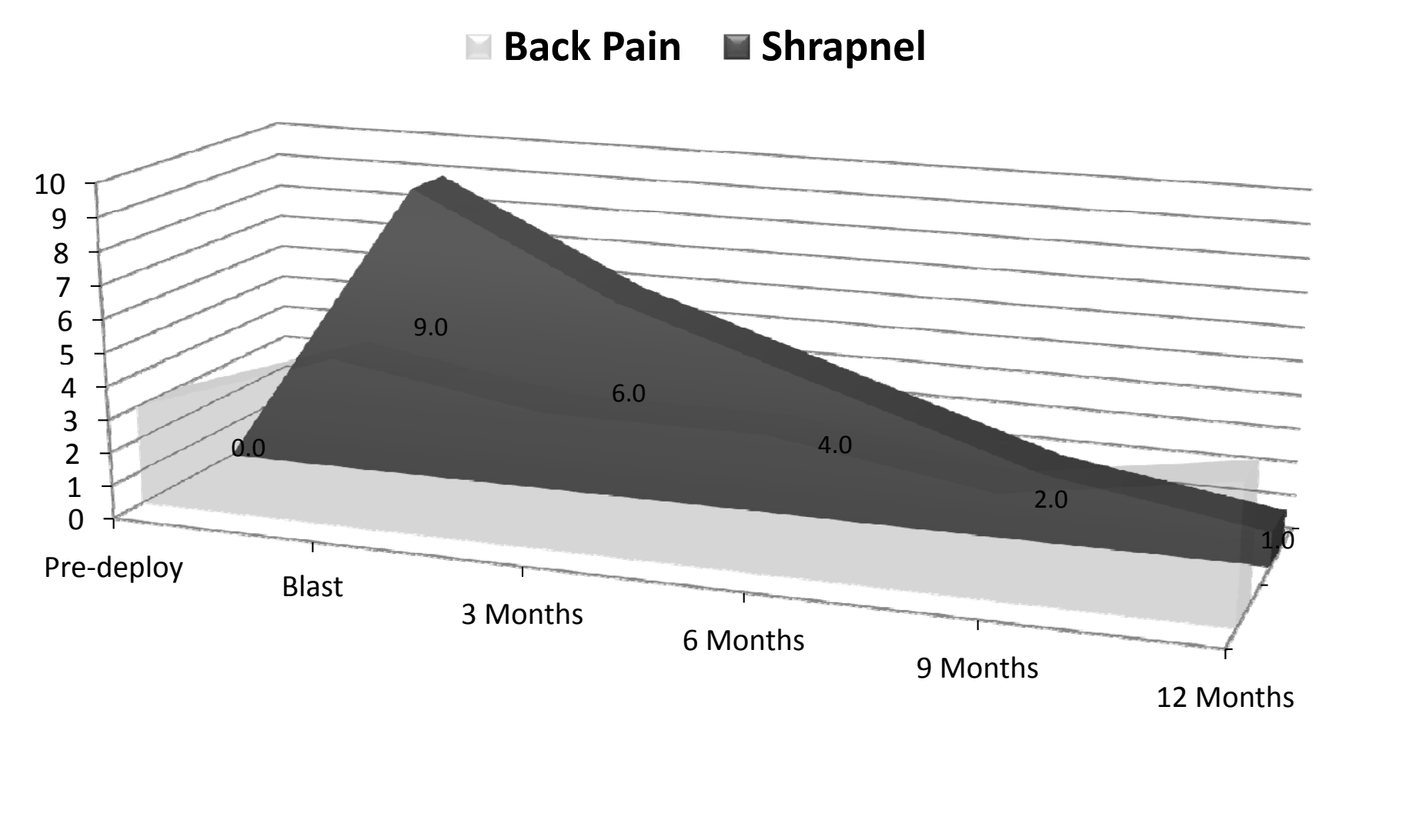
Course of Pain: Soft Tissue Injury



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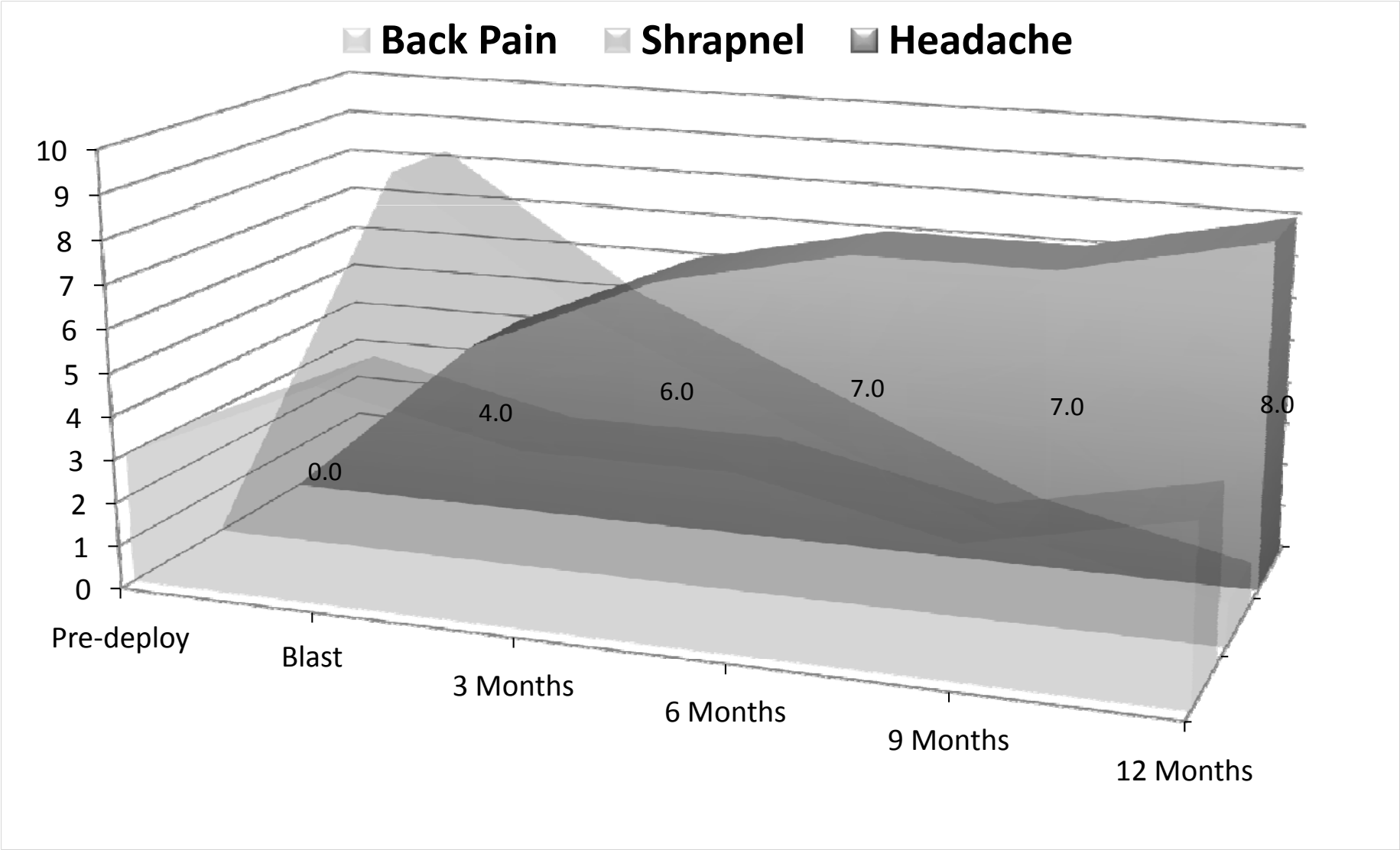
Course of Pain- Blast-related Headache



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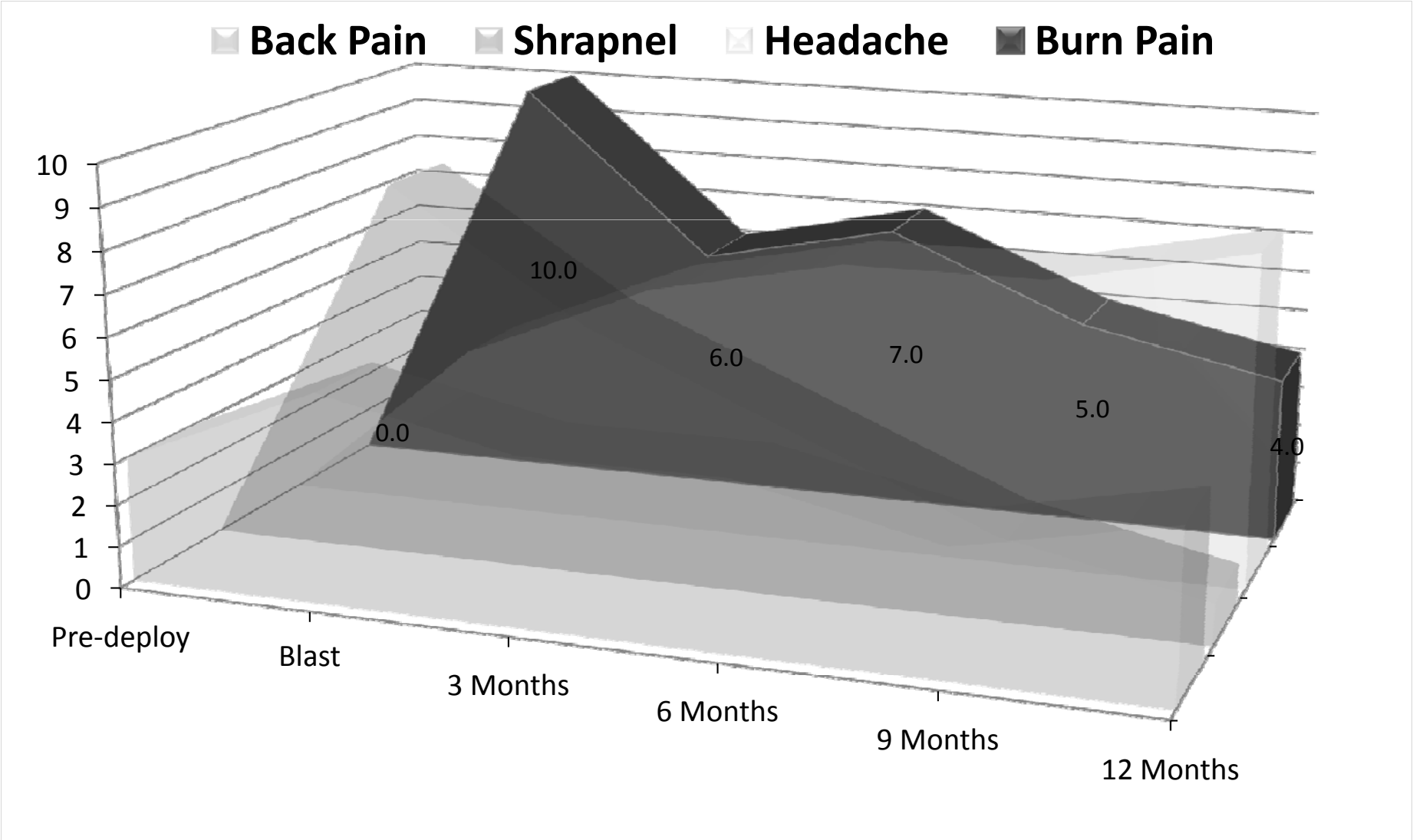
Course of Pain- Burns



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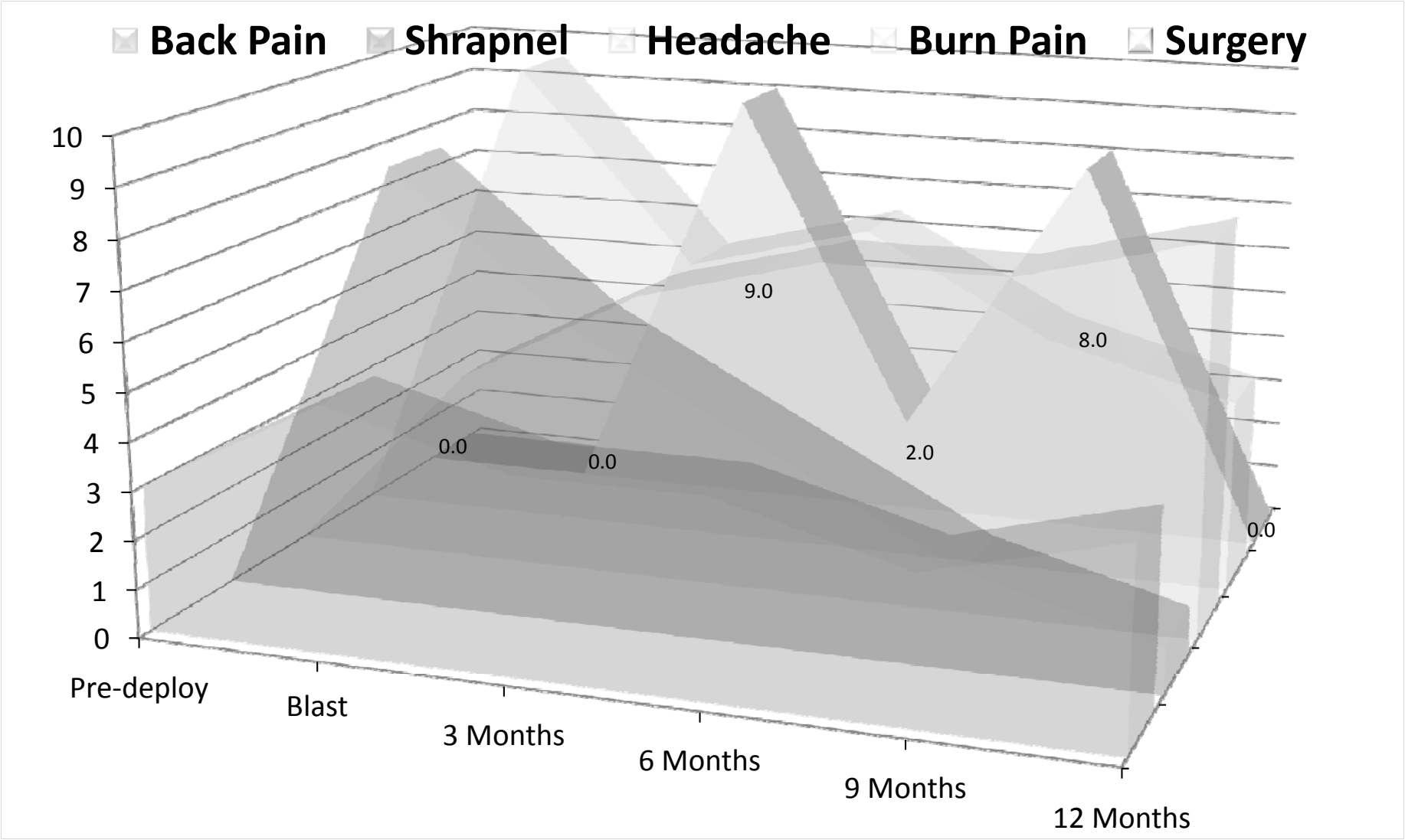
Course of Pain- Surgical Revisions



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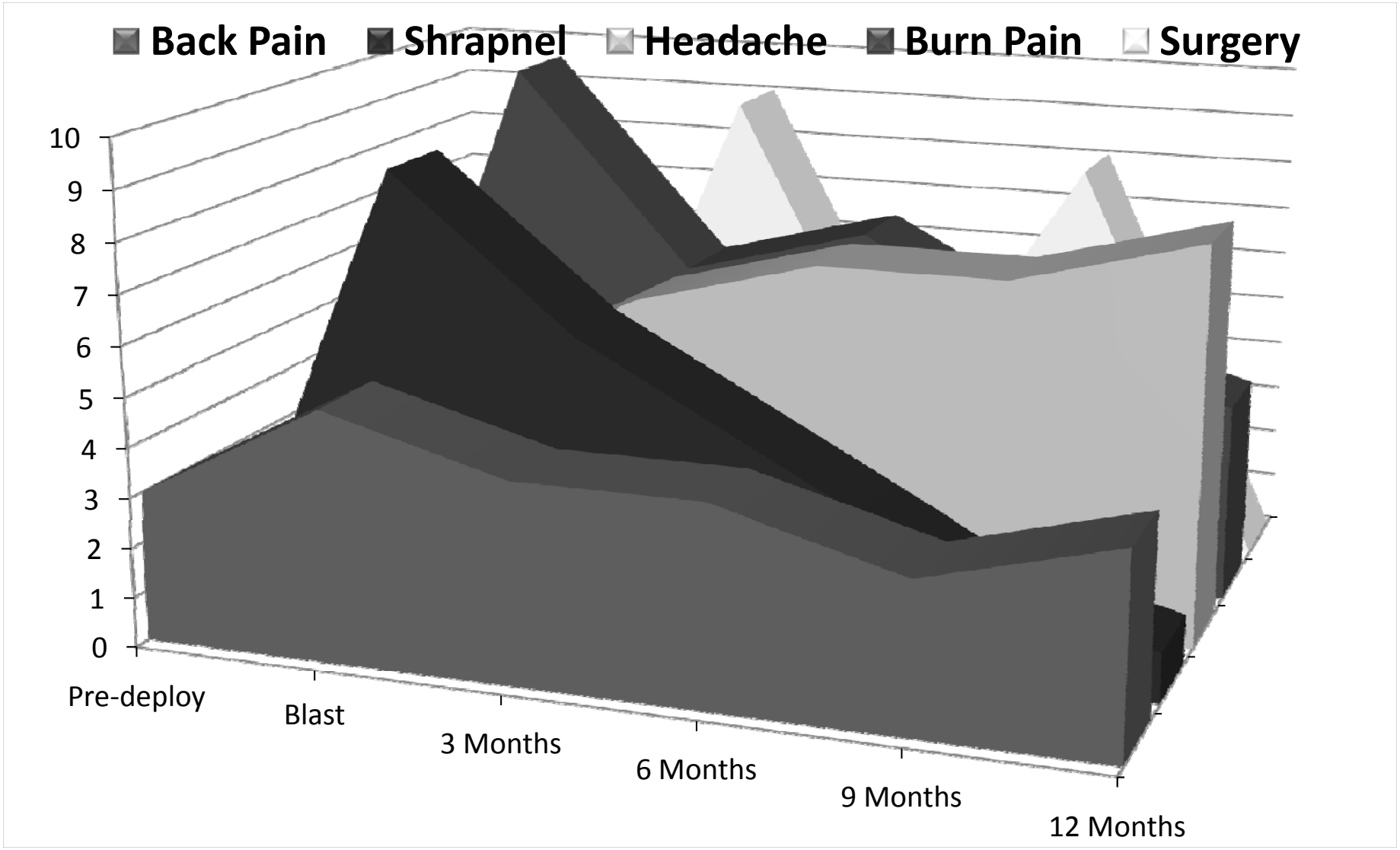
Combined Course of Polytrauma Pain



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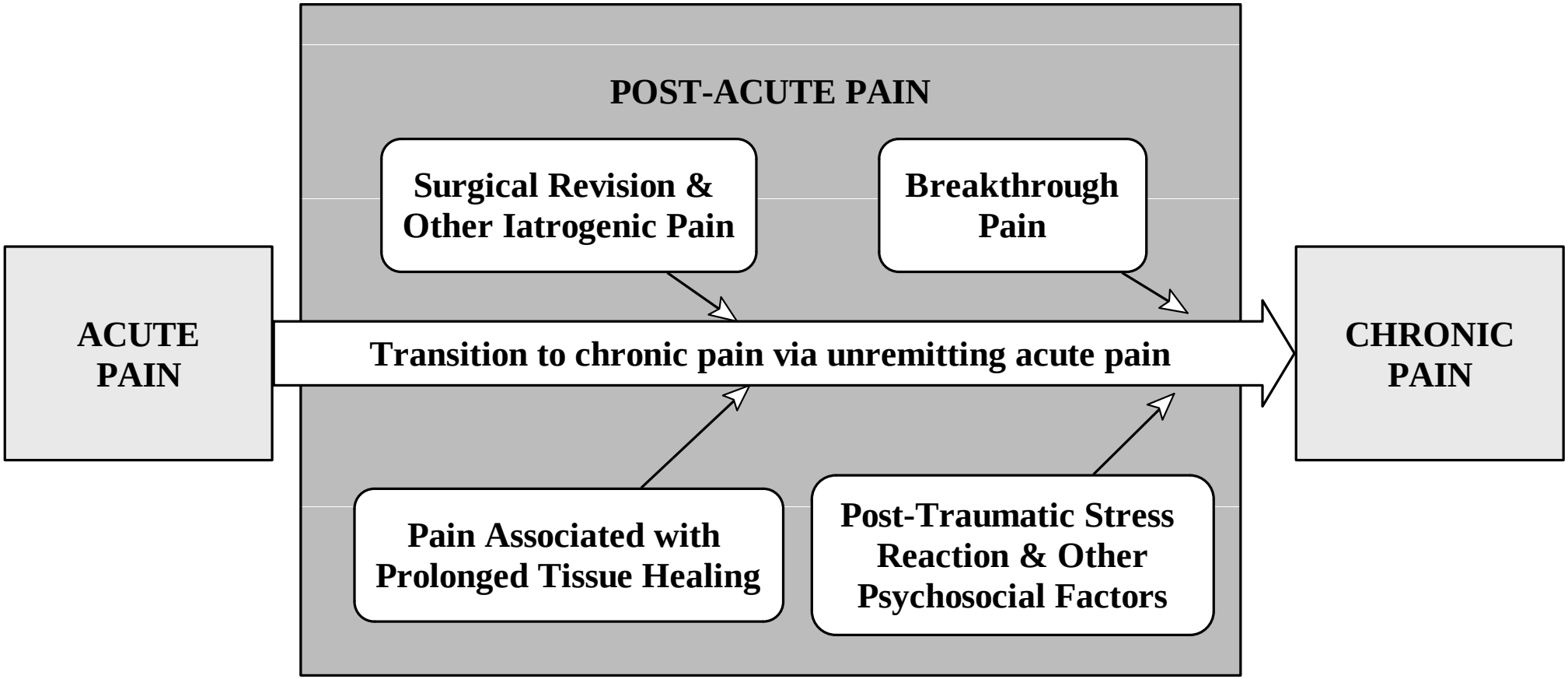
Polytrauma Pain Course



Clark, Bair, Buckenmaier III, Gironda, & Walker, 2007

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Emotional Injuries

Photo by Jim MacMillan, Associated Press, © 2004

Foundations of PMD

2003-2006

- Provided early data on the prevalence of pain among patients with polytrauma (75-88%) and OEF/OIF returnees (40-50%).
- Identified frequent overlap of pain, mTBI, PTSD, and other emotional symptoms

2007

- Initiated first VA funded study examining pain and emotional comorbidities among veterans and service members

2008

- Developed the "P3" description (pain, PTSD, and post-concussive disorder)

2009-2010

- Developed and published the concept of PMD

2010

- Implemented the VA's first interdisciplinary integrated care program to treat PMD

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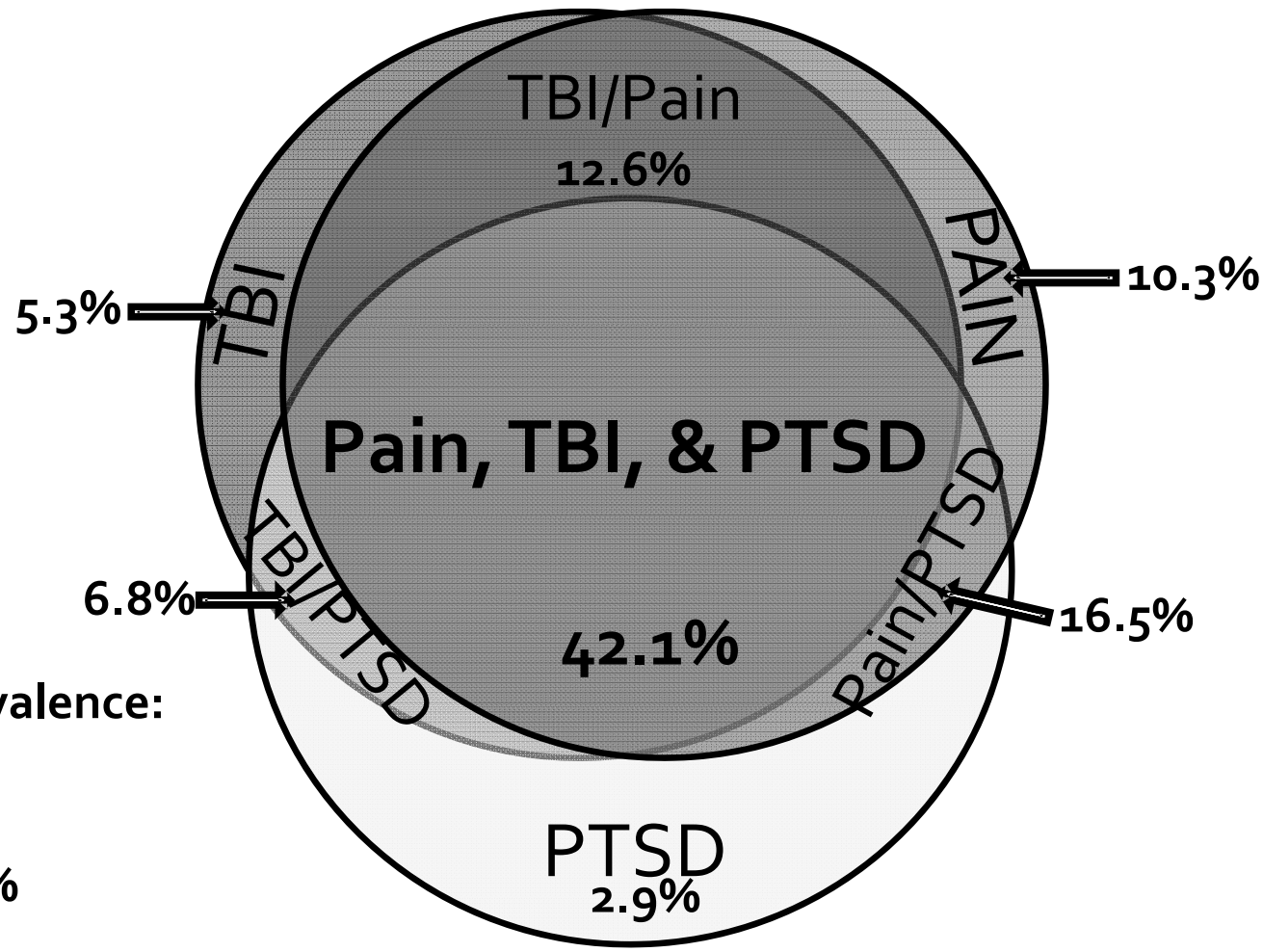
Symptom Overlap (P3)

Lew, Otis, Tun, Kerns, Clark, & Cifu, 2009
Sample = 340 OEF/OIF outpatients at Boston VA



Overall prevalence:
Pain 81.5%
TBI 68.2%
PTSD 66.8%

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PMD Definition

PMD refers to "…a constellation of overlapping physical and emotional symptoms common among OEF/OIF service members that negatively impact Quality of Life, daily function, and transition to life as a civilian."

Walker, Clark, & Sanders, 2010

PMD Symptoms

- Sleep Disturbance
- Low Frustration Tolerance/Irritability
- Concentration/Attention/Memory Problems
- Fatigue
- Headaches
- Musculoskeletal Disorders (i.e. chronic pain)
- Affective Disturbance
- Apathy
- Personality Change
- Substance Misuse (including opioid misuse)
- Activity Avoidance or Kinesiophobia
- Employment or school difficulties
- Relationship conflict
- Hypervigilance

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Latest Data

Research Data

- Longitudinal (12-month) VA-funded two-site study
- 353 participants recruited either from local OEF/OIF/OND registries or the polytrauma network of care
- First study to use validated structured clinical interview (M.I.N.I.) to establish DSM-IV diagnoses along with multiple symptom and function measures

Demographics

Age (years)	35.1	Education (years)	14.5
Sex		Duty Status at Baseline	
Male	91.1%	Active Duty	11.7%
Female	8.9%	Inactive Reserve	10.6%
Race		Active Reserve	20.9%
Caucasian	77.4%	TDRL	1.7%
Hispanic	10.0%	Completed obligations	55.2%
Black	9.5%	Service Branch[1]	
Other	3.1%	Army	48.7%
Marital		Navy	8.1%
Never Married	24.2%	Air Force	8.4%
Married	52.4%	Marines	10.9%
Divorced/Sep	16.4%	National Guard	24.2%
Living with someone	6.7%	Deployed from	
Other	0.3%	Active duty	54.5%
Employment Status		Inactive reserve	30.1%
Full-time	54.3%	Active reserve	15.4%
Part-time	7.5%	Deployed to	
Unemployed/looking	11.1%	OEF only	10.6%
Unemployed/not looking	0.8%	OIF only	69.6%
Disabled	5.8%	Both OEF/OIF	18.1%
Student	15.9%	Total deployment months	14.6
Retired	1.7%	Mean months since return	42.4
Other	2.9%		

[1]Some participants had multiple deployments in different service branches

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Injuries and Pain

Injury Onset*		**Injury Type****	
No Injuries Reported	13.9%	Orthopedic	52.3%
Pre-service	1.4%	Soft Tissue	41.6%
Pre-deployment	12.6%	Closed Head Injury	33.9%
Combat	**37.3%**	Penetrating Wound	9.4%
Non-combat	**38.2%**	Ear	6.6%
Post-deployment	3.6%	Other	5.9%
Post-service	0.6%	Burns	3.3%
Injury Method**		Open Head Injury	1.6%
Blast	**31.3%**	Amputation	1.3%
Fall	16.1%	Eye	1.3%
Vehicular	14.0%	Spinal Cord Injury	0.3%
Shrapnel	4.5%	**Years since injury**	**4.8**
GSW	1.0%	**# Blast Exposures**	**73.9**
Other	46.8%	**Distance from closest blast (feet)**	**324.7**

Primary Pain Location***			
Back	33.5%	**Lower extremities**	**18.9%**
Head/Neck	**25.0%**	Torso	2.1%
Upper extremities	15.8%	Other	4.7%

*Some reported more than 1 injury

**Percent of those reporting injuries

***Percent of those reporting pain

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Mental Health Issues

Current or prior MH problem	**66.9%**	**Reported impairments**	
Onset of MH problem*		Activity	72.0%
Pre-service	5.9%	Sleep	65.8%
Pre-deployment	7.1%	Recreational	62.2%
Combat non-blast related	2.9%	Occupational	54.3%
Combat blast-related	13.8%	Emotional	59.9%
Non-combat/during deployment	13.8%	Social	47.3%
Post-deployment	**50.6%**	Familial	42.0%
Post-service	5.9%	Sexual	35.4%
Resolution of MH problem			
Before deployment	1.3%	After deployment	8.8%
During deployment	2.1%	**Ongoing- not resolved**	**87.9%**

*Percent of those reporting mental health problems

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DSM-IV Diagnoses

Anxiety	
Panic disorder	18.1%
Agoraphobia	28.7%
Social Phobia	9.5%
Obsessive-compulsive disorder	12.5%
Generalized Anxiety Disorder	16.7%
PTSD	**26.5%**
1 or more anxiety disorders	**49.9%**
Depression	
Major Depression	29.5%
Dysthymia	6.6%
Hypomania	23.1%
1 or more depressive disorders	**45.4%**

SUDs	
ETOH dependence	13.9%
ETOH Abuse	9.7%
Opioid Dependence	1.4%
Opioid Abuse	0.6%
Other Substance Dependence	3.1%
Other Substance Abuse	2.8%
Polysubstance Abuse	0.6%
1 or more SUD	**26.2%**
Postconcussional Disorder	**16.2%**
Mood Disorder with Psychotic Features	5.0%
At least 1 M.I.N.I. Axis I Diagnosis*	**67.1%**

Pain

Any Pain Present	**86.6%**
Significant Pain Present	**55.9%**

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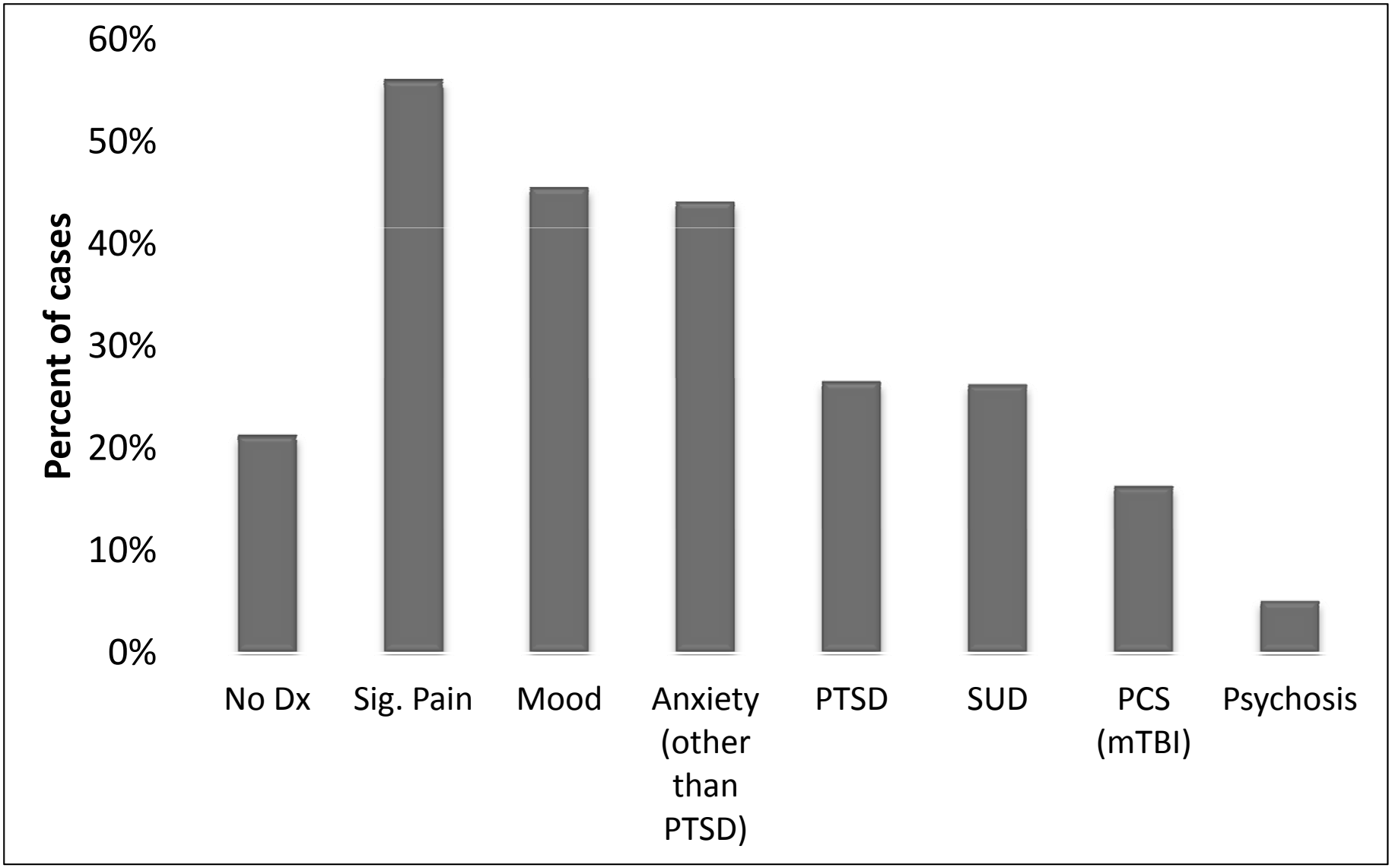
Prevalence of Diagnoses



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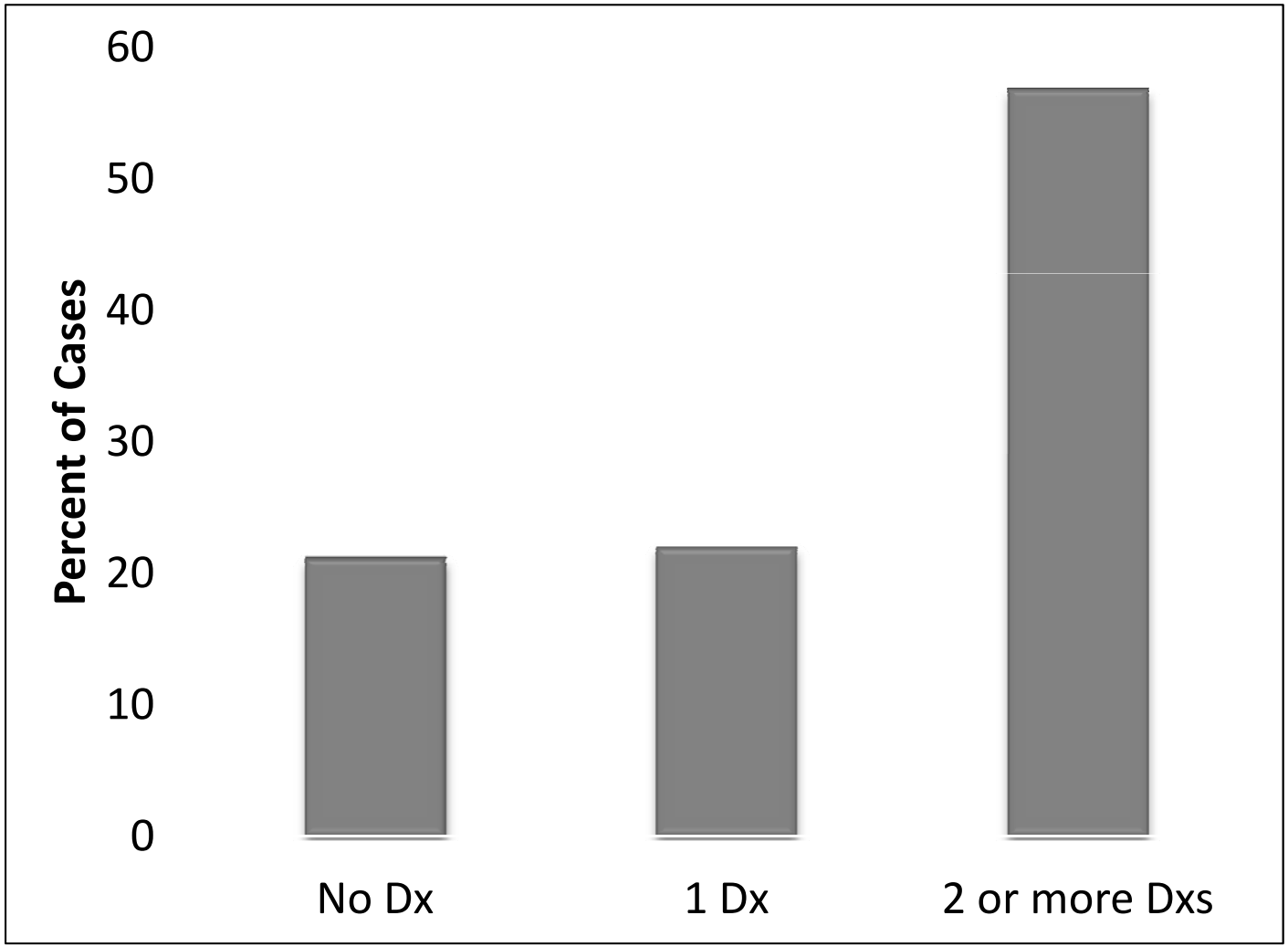
Multiple Diagnoses



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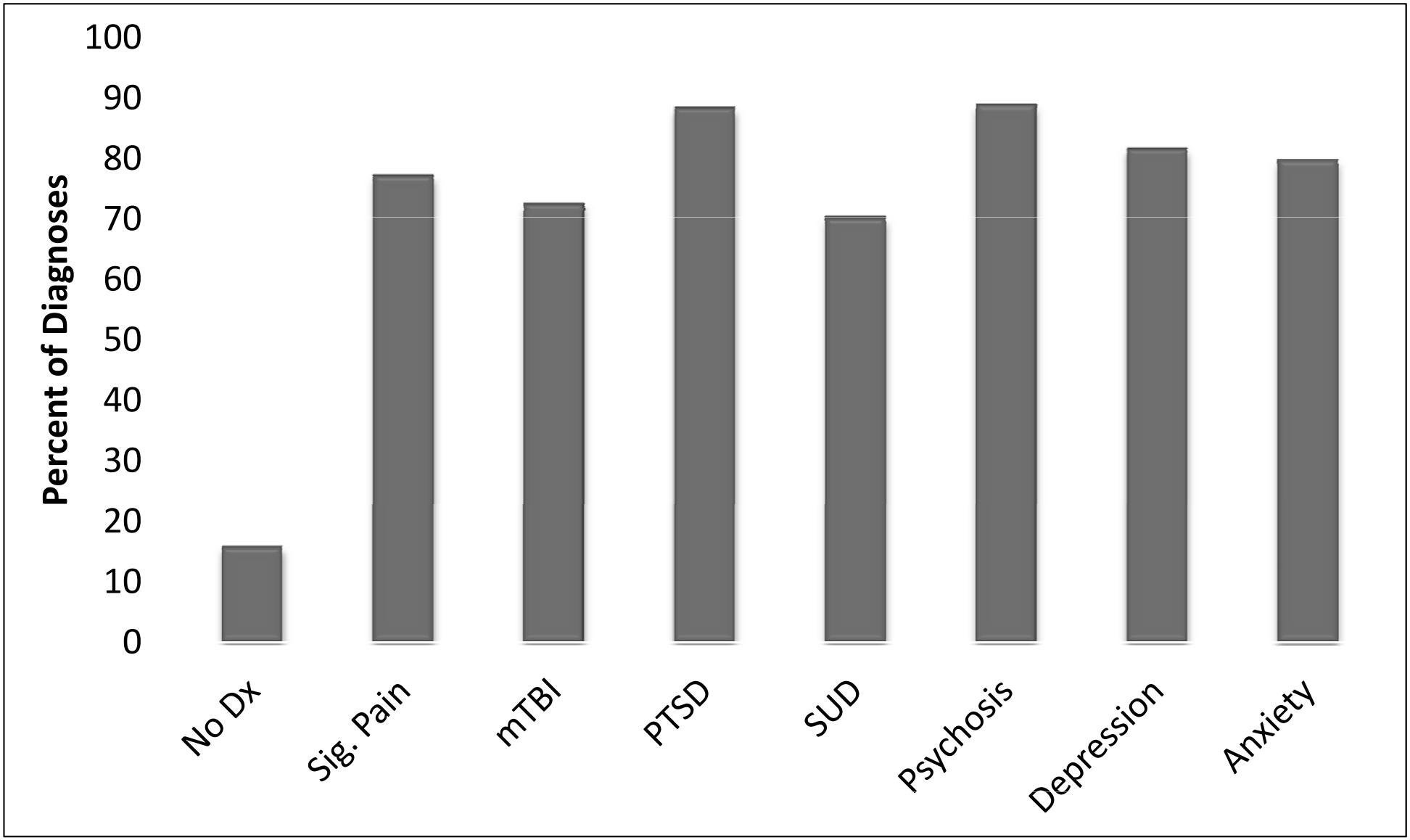
Frequency of Sleep Problems by Dx



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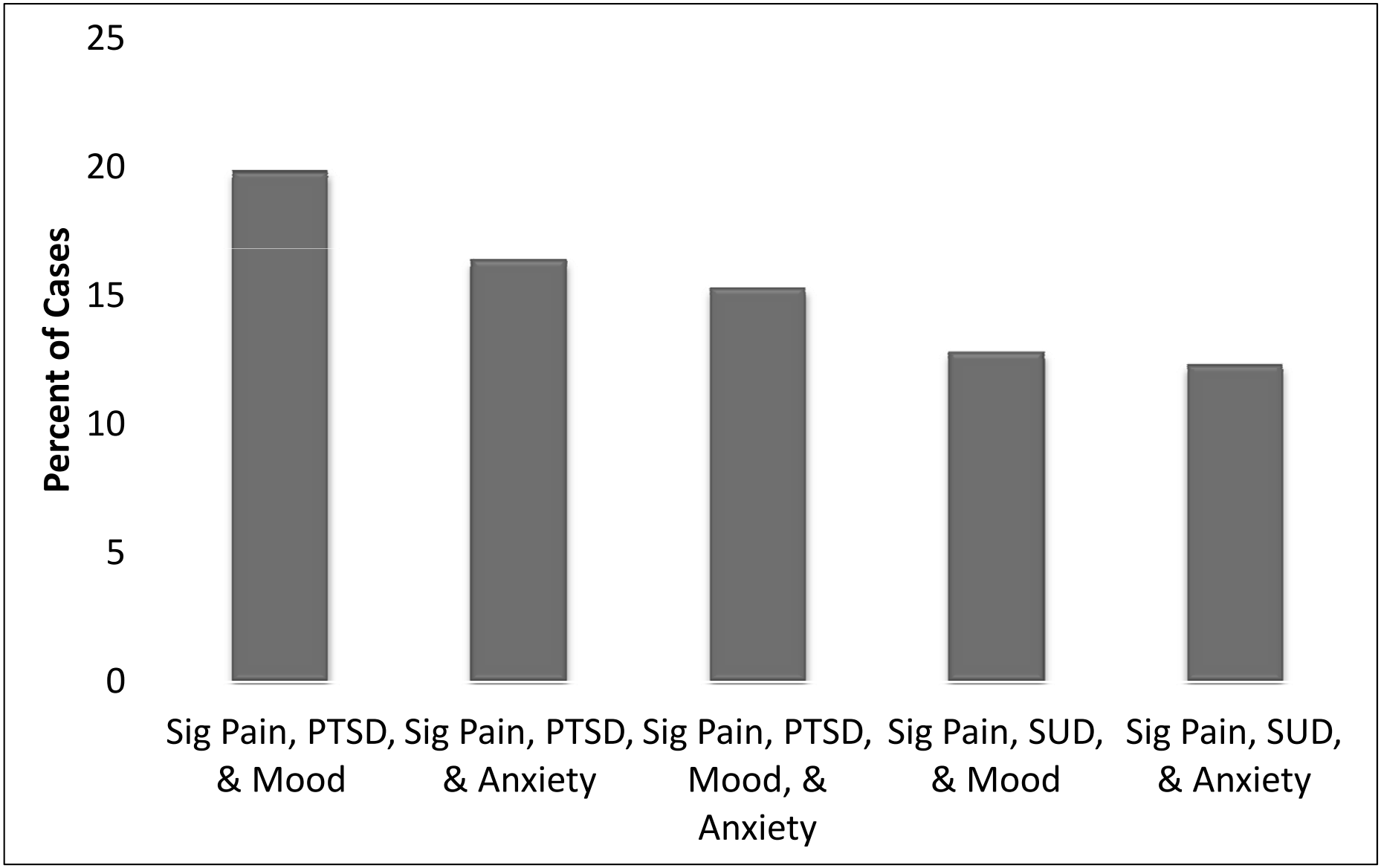
Most Frequent Comorbid Diagnoses



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Summary

- **Almost 2/3rds of participants met criteria for at least 1 emotional disorder**
- **The majority of participants had more than 1 problem that met diagnostic criteria (i.e., PMD).**
- **Most common diagnoses among OEF/OIF/OND personnel receiving or registered for VA care at these two VA sites were pain, mood disorders, anxiety disorders (other than PTSD), PTSD, Substance Use Disorders, mTBI, and psychotic disorders, in that order.**
- **Sleep problems were associated with all diagnoses.**
- **mTBI (1.9%) and PTSD (0.3%) almost never occurred in the absence of the other comorbidities we assessed.**

PMD in Post Deployment Clinic

- Brief review of data previously presented by Dr. Agliata from Tampa VA
- ALL OEF/OIF/OND deployees registering for care at Tampa VA are screened for PMD
- Screening includes an interview with a MH provider and several screening instruments that are used to identify potential problem areas
- Those who verbally report MH or PMD problems or those who score above certain cutoff values on the screening instruments are evaluated more fully and referred for indicated services

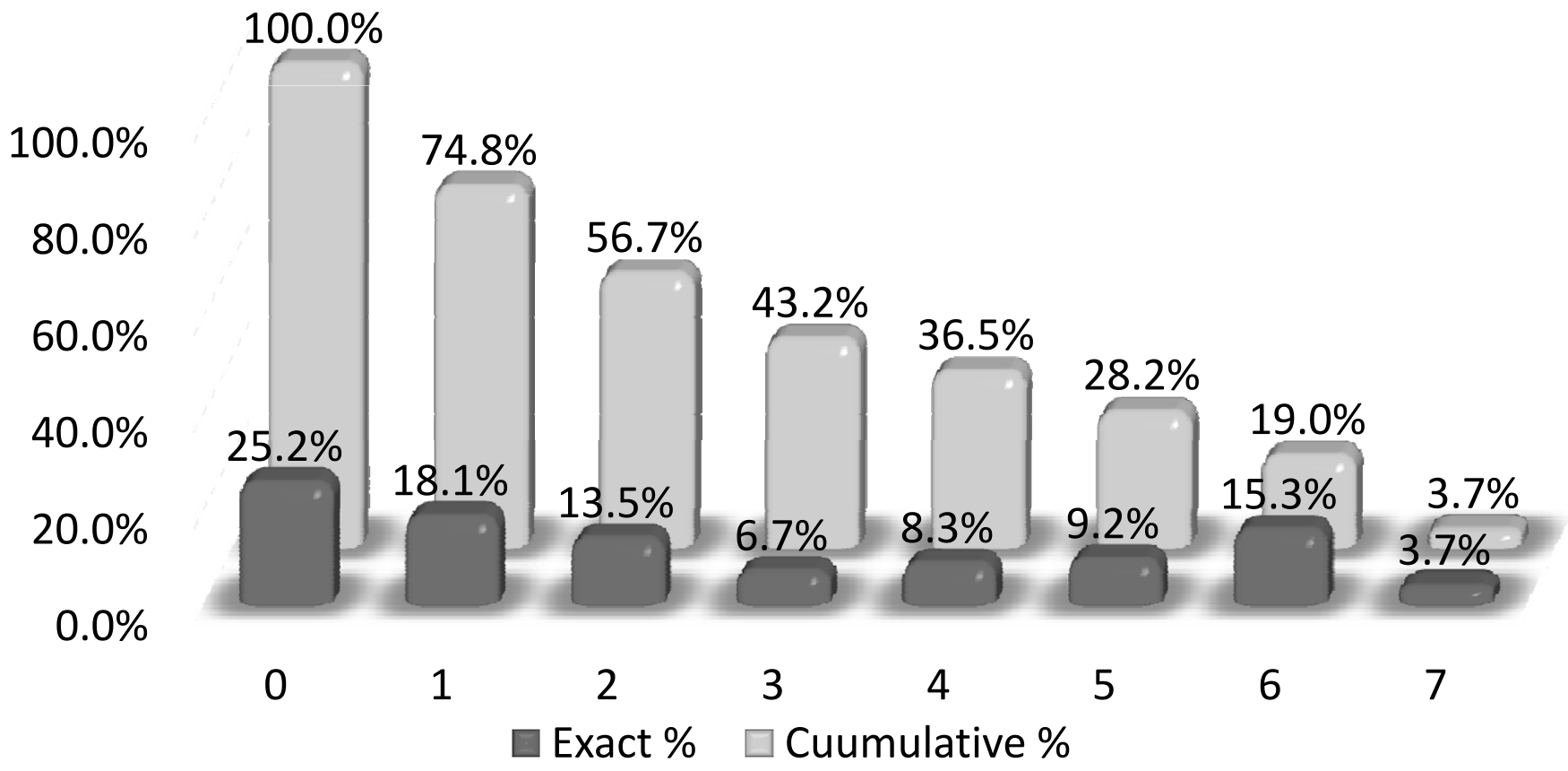
Results (n=356)

Measure	Domain	Range	Threshold*	M	(SD)	% > cutoff
GAD-7	Anxiety	0-21	≥ 10	7.4	6.6	34.8%
PHQ-9	Depression	0-27	≥ 10	7.8	7.0	37.1%
PCL	PTSD	17-85	≥ 50	37.6	19.5	28.7%
SPQ	Sleep Complaints	0-20	≥ 12	9.8	7.1	46.9%
PHQ-15	Health Complaints	0-30	≥ 10	8.5	5.8	39.6%
SA-5	Alcohol Subtest only	# Drinks/week	Male ≥ 15	9.1	14.0	18.0%
	(Composite score = days/wk x drinks/sitting)		Female≥ 8	4.6	6.6	15.4%
NRS	Pain Avg in past wk	0-10	≥ 4	3.6	2.8	46.3%

*Cutoffs reflect MODERATE or higher scores

Agliata, Takagishi, Clark, & Gironda, 2011

Number of Problem Areas



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Implications

- **Deployment-related physical and emotional problems overlap and coexist. <u>PTSD and mTBI almost never occur without other comorbidities.</u>**
- **There is substantial evidence in the literature that <u>these comorbidities can interact</u> (strongest for pain, mTBI, and PTSD).**
- **The complexity and challenges represented by PMD may require alternative treatment methods such as <u>INTEGRATED CARE.</u>**

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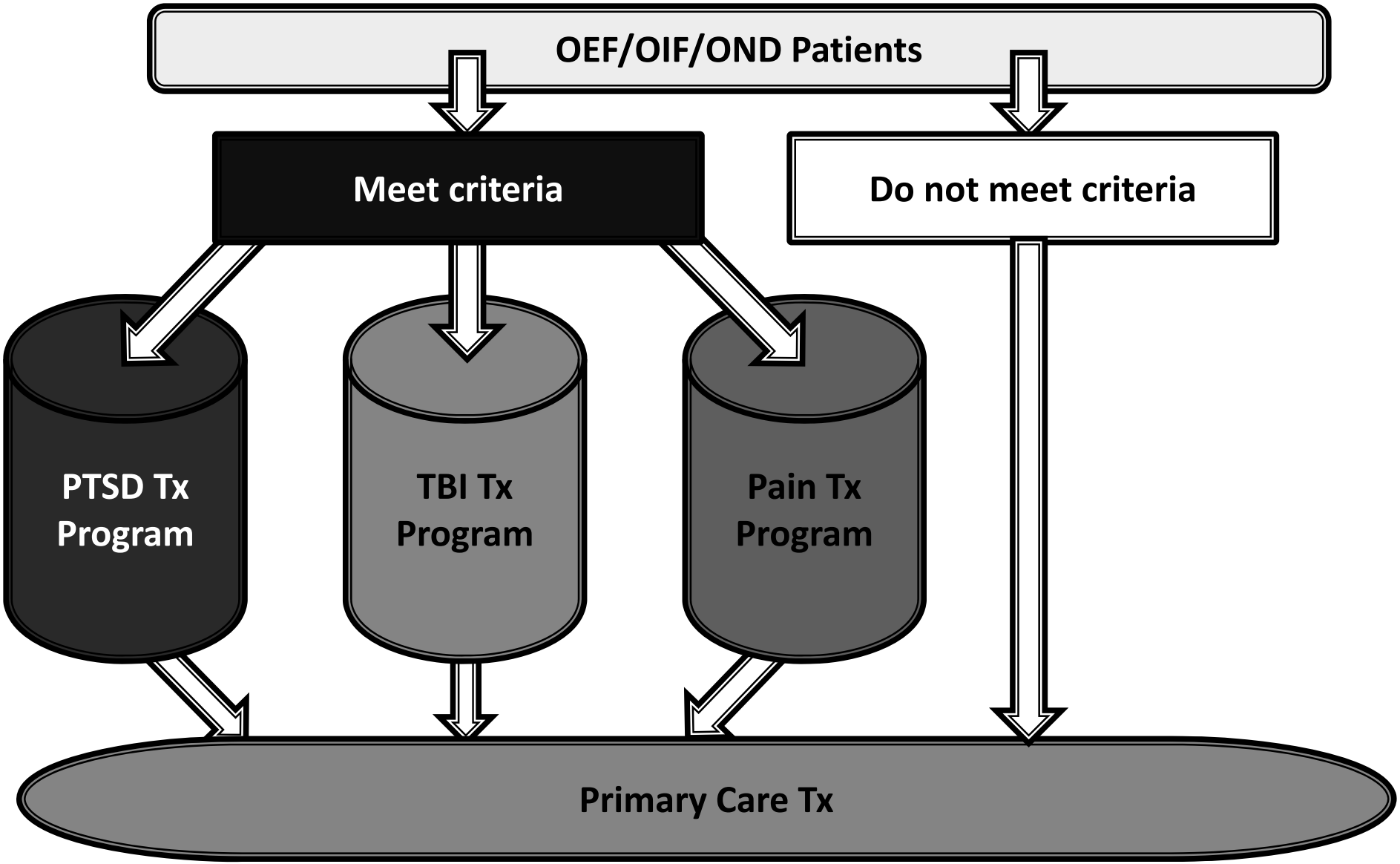
Traditional VA Specialty Care



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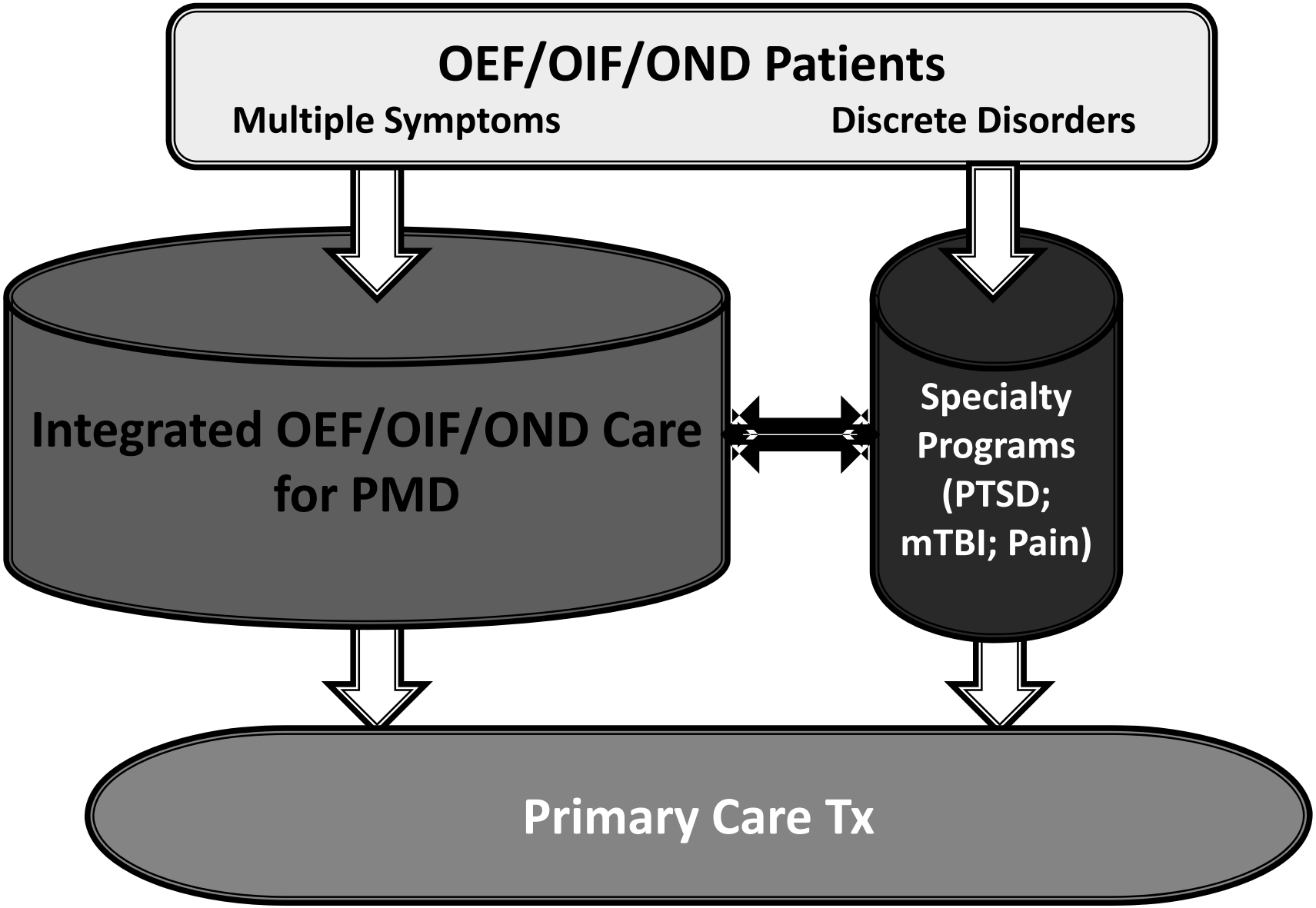
Alternative Model of Specialty Care



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Advantages of Integrated Care

- **Provides comprehensive, multi-symptom care within a single program at a single location by a group of providers who share a common philosophy of treatment.**
- **Integrated evaluations may provide a more complete picture of an individual's functioning than specialty focused evaluations.**
- **Facilitates a continuum of care rather than episodic care.**
- **Addresses the specific problem symptoms as well as their interactions.**

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Center for Post-deployment Health and Education (CPHE) Treatment

- **Interdisciplinary including individual and group therapy, physical therapy, and medication management**
- **Weekly group and individual sessions**
- **Two tracks: Core (mandatory) and modularized Focus (content specific)**
- **Treatment duration averages between 3 (Core) and 5 (Focused) months, range between 8 weeks and 8 months**
- **Outcome measures administered at admission and prior to discharge**

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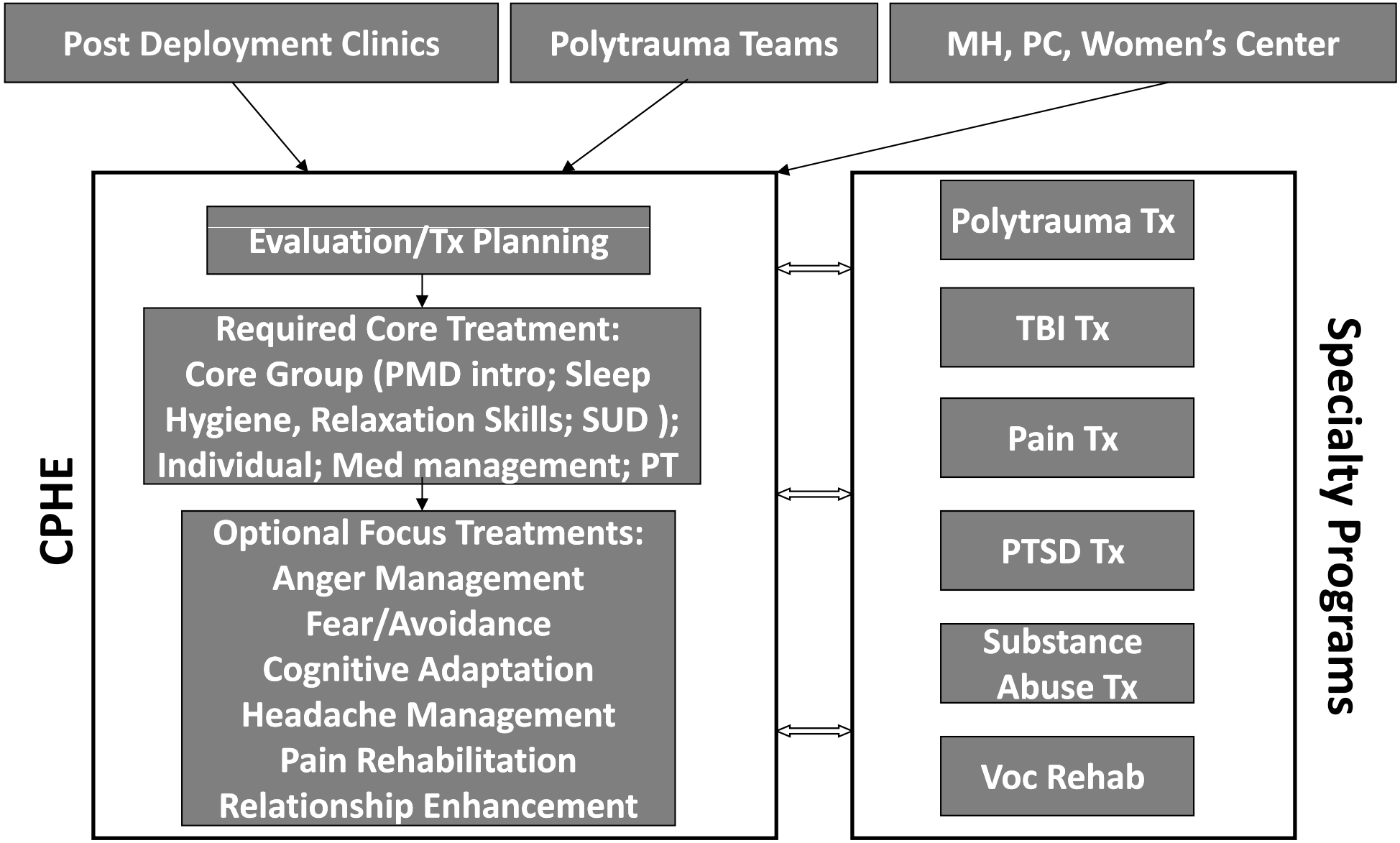
PMD Integrated Care at Tampa VA



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CPHE Measures

- NRS: Numeric pain rating scale (0-10)
- SA5: NIDA alcohol use measure
- POQ-VA: Pain Outcomes Questionnaire, a multi-domain measure of pain-related impairment or disability
  - ADLs\
  - Mobility
  - Vitality POQ
  - Negative Affect
  - Fear
  - SIS (symptom implausibility)
- SPQ: Sleep problems
- M2CQ: Military to civilian transition adjustment (Sayer)
- CES-D: Center for Epidemiologic Studies depression scale
- NSI: Neurobehavioral Symptom Inventory (Postconcussive Symptoms)
- STAI-T: Trait anxiety
- SWL: Satisfaction with Life scale
- PCL-C: PTSD symptoms
- TSS-P: Treatment Satisfaction Scale

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Descriptives (n = 31 graduates)

Mean age	**36.58 yrs**
Mean education	**13.74 yrs**
Mean deployment	**14.78 months**
Male	**86.7%**
Married	**57.8%**
Blast exposure	**53.3%**
Blast injury	**35.6%**
Loss of consciousness	**28.9%**
Headaches	64.4%

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Outcome Measure	Pre Tx	Post Tx	Sig
NRS	**6.16**	**5.06**	**0.022**
SA5	**3.69**	**2.62**	**0.248**
POQ- Mobility	**19.45**	**16.42**	**0.036**
POQ- ADLs	**11.10**	**8.23**	**0.036**
POQ- Vitality	17.73	16.03	0.190
POQ- Negative Affect	**30.27**	**24.03**	**0.001**
POQ- Fear	11.77	11.52	0.799
POQ- SIS	**38.33**	**30.93**	**0.043**
M2CQ	**2.73**	**1.98**	**0.039**
CES-D	**30.10**	**23.90**	**0.011**
NSI	**42.77**	**34.32**	**0.006**
STAI-T	**53.90**	**47.65**	**0.018**
SWL	**14.13**	**17.19**	**0.026**
PCL-C	**57.35**	**50.55**	**0.040**
SPQ	**15.33**	**12.53**	**0.025**

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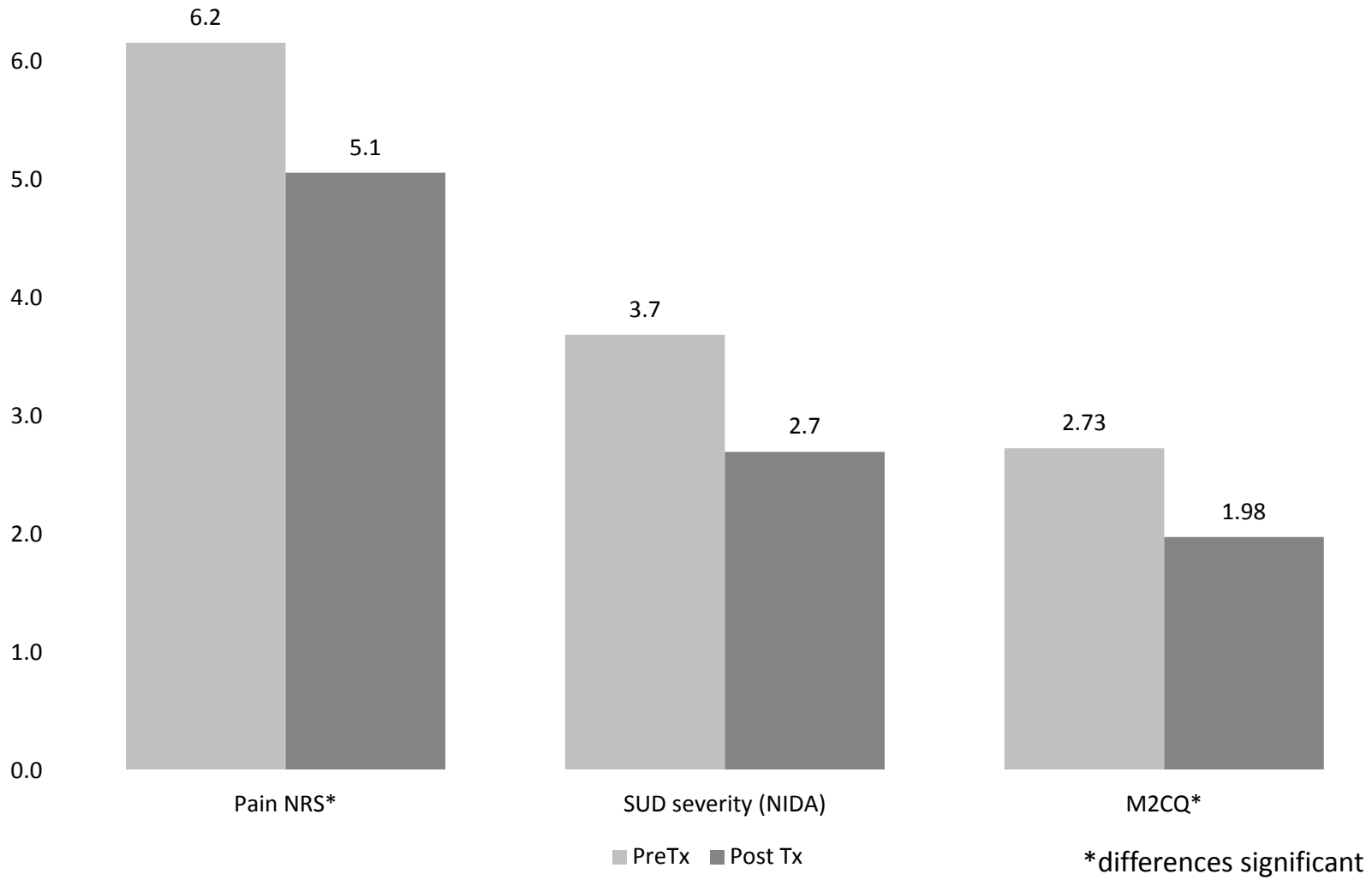
Outcomes 1



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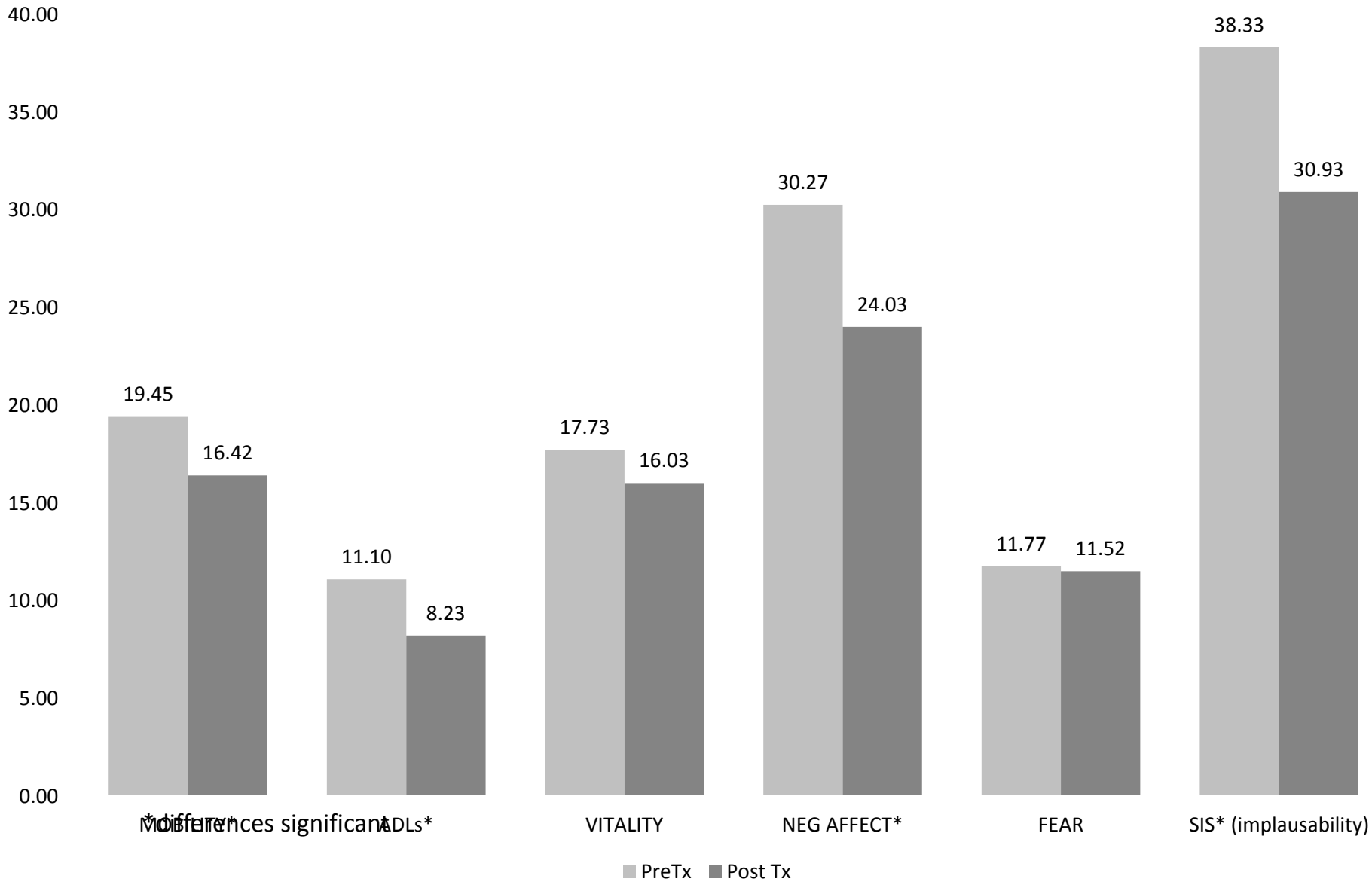
Pain Outcomes Questionnaire-VA



*differences significant

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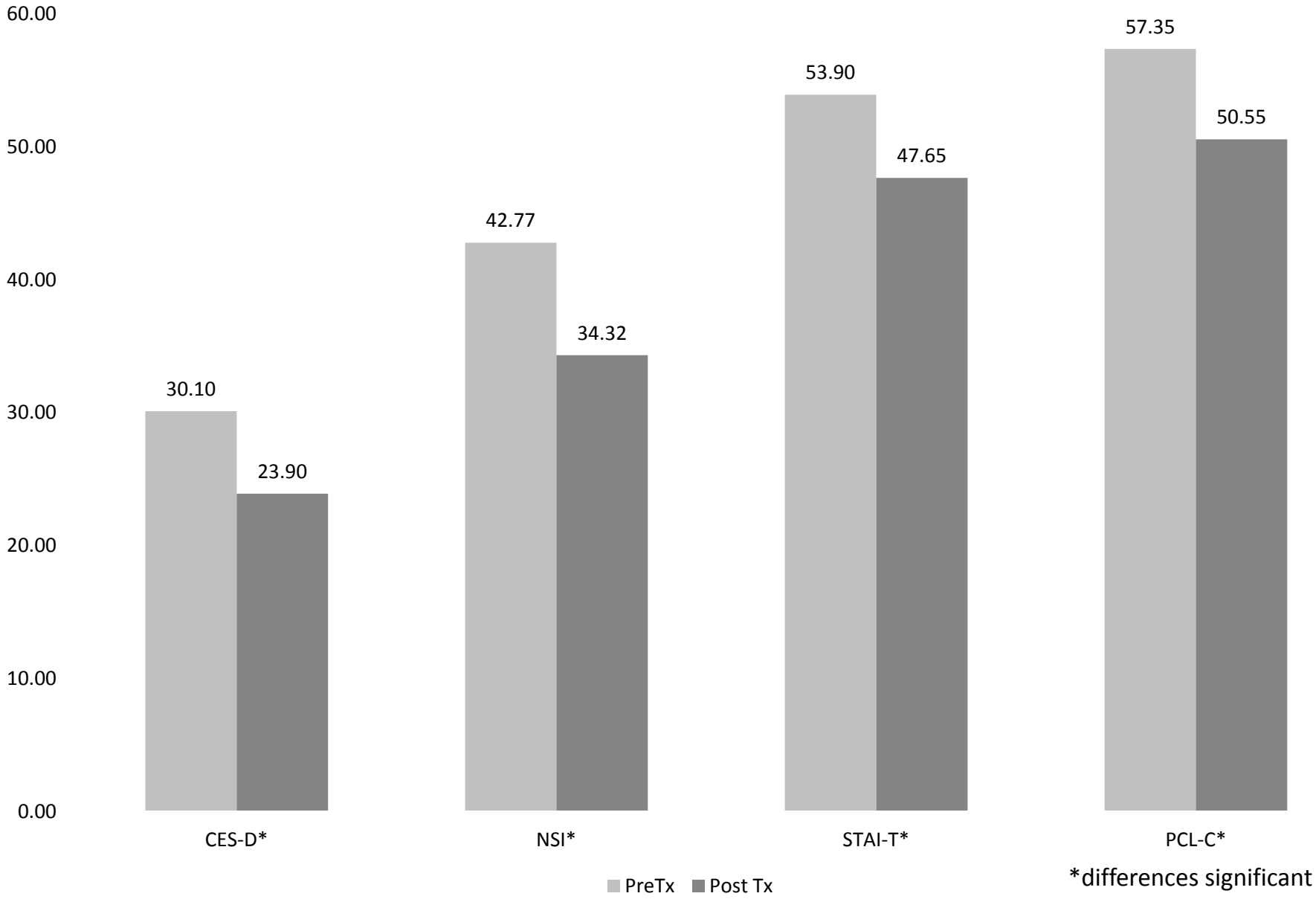
Symptom Measures



*differences significant

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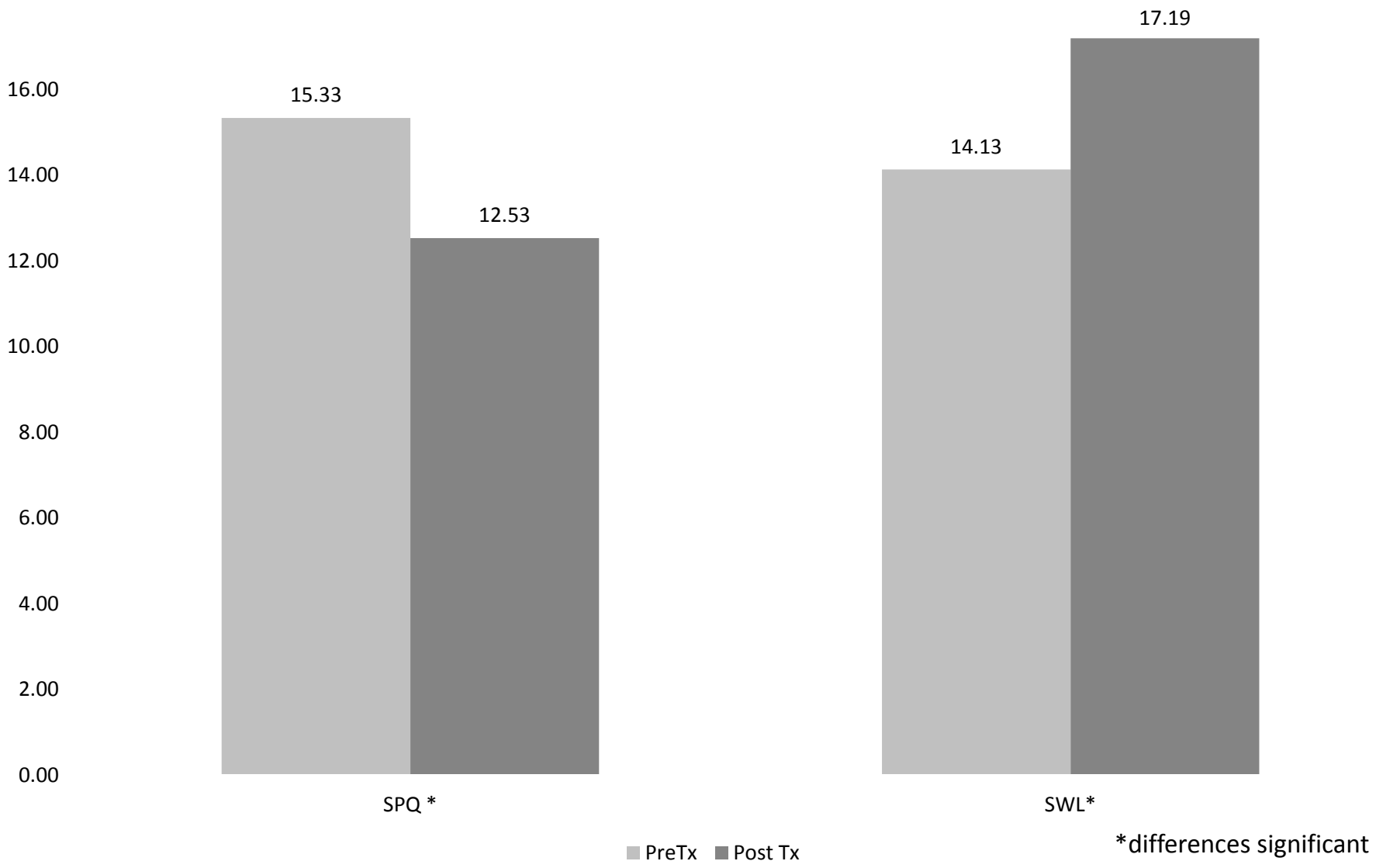
Sleep and Satisfaction With Life



*differences significant

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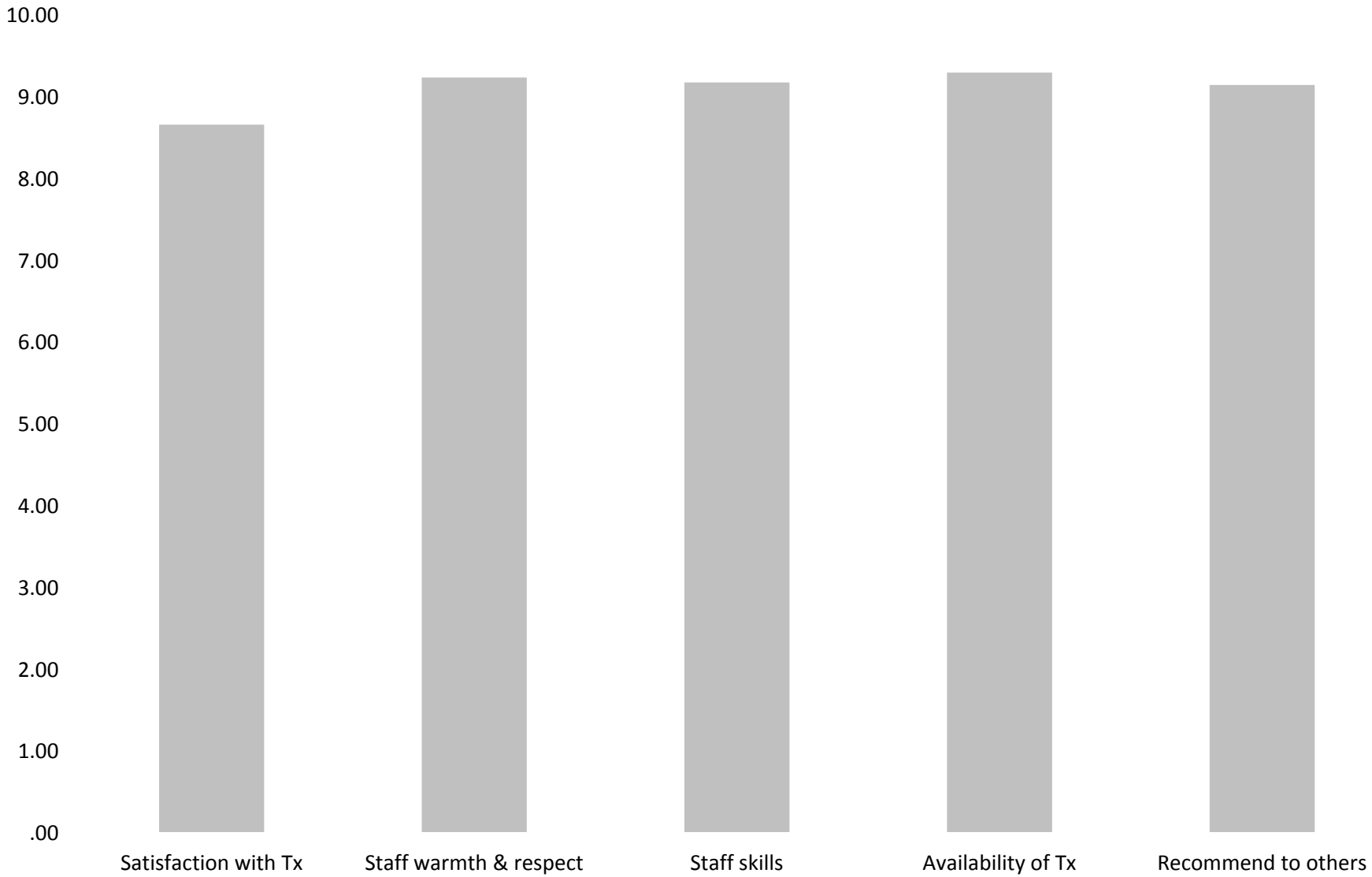
Satisfaction Data



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Case Example

- **24-year-old, married, unemployed male, 3 years of military service, Iraq for 1 yr (2008-2009), d/c 2010, E4**
- **Combat and trauma exposure, multiple blasts, HNP from lifting injury while on active duty**
- **No prior medical problems**
- **No prior mental health history or treatment**
- **Presenting complaints (onset 2009):**
  - LBP secondary to HNP, depression, anxiety, irritability, poor sleep, marital problems, physical aggression towards wife, hypervigilance, feeling overwhelmed, intrusive thoughts (no flashbacks), cognitive difficulties (sluggishness; memory), somatic symptoms (racing heart, SOB, night sweats), loss of appetite, difficulty adjusting to civilian life, recent abuse of "spice"

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CPHE Treatment

- Weekly CPHE core groups (Introduction to PMD; Sleep Hygiene; Relaxation Skills; Substance Abuse)
- Physical Therapy for LBP 1-2 sessions per week with home exercises
- Individual therapy focusing on fear reduction, relaxation training, activation, relationship issues, and substance use
- Meds: D/C muscle relaxant; NSAIDs and Tramadol for pain (via Primary Care)
- Treatment duration approximately 6 months

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Outcomes

Measure	Pre-Tx	Post-Tx
POQ-Pain Score	10	5
POQ-Mobility Interference	35	28
POQ-ADL Interference	28	0
POQ- Vitality (strength & endurance)	26	32*
POQ-Negative Affect (depression & anxiety)	46	41
M2CQ (military to civilian transition problems)	3	3
CES-D (depression)	41	30
NSI (TBI/behavioral symptoms)	43	33
STAI-T (Trait Anxiety)	65	57
SWL (Satisfaction with Life)	5	8*
PCL-C (PTSD checklist- civilian version)	68	54
SPQ (sleep problems questionnaire)	19	14
Alcohol use score (NIDA)	1	3

*higher scores denote improvement

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Qualitative Outcomes and Disposition

- Tramadol and NSAIDs reduced 50%
- Began college- "A" student
- Discontinued use of "spice" (note slight increase in ETOH however)
- Filed for divorce
- Re-established social contacts
- Continues home exercise program
- MH follow up arranged PRN with our Post-deployment clinic PMD staff, but to date he has declined further contact

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