HEALTHCARE AND PRESCRIPTION OPIOID USE IN VETERANS WITH PERSISTENT POST-CONCUSSION SYMPTOMS, PTSD, AND CHRONIC PAIN

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Conflict of Interest

None to declare.

Objectives

- Provide background on co-occurrence of persistent post-concussion symptoms, PTSD, and chronic pain in Veterans
- Review recent literature on healthcare utilization, pain management, and prescription opioid use in this population
- Discuss clinical considerations for pain management strategies in Veterans with these conditions

Background

Common Conditions in OEF/OIF Veterans

- TBI History 7-23%
  (Carlson et al., 2011; Hoge et al., 2008; Sayer et al., 2009; Taylor et al., 2012; Tanielian & Jaycox, 2008)
- PTSD 11-42%
  (Grieger et al., 2006; Hoge et al., 2004; Lapierre et al., 2007; Tanielian & Jaycox, 2008)
- Depression 12-31%
  (Karlin et al., 2012; Seal et al., 2009; Vanderploeg et al., 2007)
- Chronic Pain 23-47%
  (Gironda et al., 2006; Helmer et al., 2009; Otis et al., 2011)
- Alcohol/Substance Misuse 5-40%
  (Burnett-Zeigler et al., 2011; Calhoun et al., 2008; Eisen et al., 2012; Jacobson et al., 2008; Milliken et al., 2007; Wilk et al., 2009)

TBI

- Vast majority of TBIs are mild (ACRM, 1993; Howe, 2009; Iverson, 2005; Ryan & Warden, 2003; Taber & Hurley, 2013)
  - mTBI = concussion
- Numerous reviews detail pathophysiology and details on mechanisms of injury (IOM, 2008; Iverson, 2005; MacGregor et al., 2011; McCrea et al., 2009)
- Military personnel at higher risk of sustaining compared to civilians, often due to blast exposure (DePalma et al., 2005; MacGregor et al., 2011; Taber et al., 2006; Walker et al., 2009; Warden, 2006)
- Priority Condition in VHA (Taylor et al., 2012; VA, 2010)

TBI (cont'd)

- Symptoms at time of injury
  - History of TBI ≠ Current TBI
- Important implications for screening results
- CPG exists for guidance on management

(Howe, 2009; VA, 2007; VA/DoD, 2009)

Common Post-Concussion Symptoms

- Cognitive
  - Difficulty concentrating, forgetfulness, difficulty making decisions, slowed thinking
- Affective
  - Fatigue, difficulty sleeping, anxiety/feeling tense, depression, irritability, poor frustration tolerance
- Somatic/ Sensory
  - Dizziness, loss of balance, poor coordination, nausea, vision problems, sensitivity to light and/or noise, hearing difficulty, numbness or tingling sensation, change in taste/smell, loss of appetite, headaches

(Caplan et al., 2010; Cicerone & Kalmar, 1995; Ouellet & Morin, 2006; Vaishnavi et al., 2010)

Expected Recovery Parameters

- MOST patients with mild TBI recover fully
  - Symptoms TYPICALLY resolve in 7-90 days
  - Only a small percentage (5-10%) report persistent post concussion symptoms (PPCS)
- Moderate – severe injuries are associated with longer recovery periods and a greater potential for lasting cognitive deficits

(Iverson, 2005; Ryan & Warden, 2003; VA/DoD, 2009)

Common TBI Co-Morbidities

Depression	53-80%	(Bombardier et al., 2010; Seel et al., 2010)
Anxiety	29-70%	(Moore et al., 2006; Whelan-Goodinson et al., 2009)
PTSD	13-74%	(Bryant et al., 1999; Carlson et al., 2011; Tanielian & Jaycox, 2008)
Substance Misuse	50-79%	(Taylor et al., 2003)
Chronic Pain	32-72%	(Brown et al., 2011; Nampiaparampil, 2008; Taylor et al., 2011, 2012a-b; Walker et al., 2004)
ANY MH diagnosis	85-89%	(Carlson et al., 2010; Taylor et al., 2011, 2012a-b)
≥ 2 MH diagnoses	64%	(Carlson et al., 2010)
Risk for Suicide	1.5-4x	(Bremner et al., 2009)

OEF/OIF with TBI Using VHA

	2009	2010	2011
Number TBI+ Veterans Treated in VHA	22,053	27,126	30,521
Male	95%	95%	95%
Service Connected (Any percentage)	73%	74%	70%
Any MH diagnosis	89%	88%	88%
PTSD	73%	73%	72%
Depression	45%	47%	47%
Any Head/ Neck/ Back Pain	70%	72%	72%
Headache	47%	50%	49%
Any MH + Pain	64%	66%	65%
PTSD + Pain	54%	56%	54%

(Taylor et al., 2011, 2012a-b)

PTSD (DSM-IV-TR)

- **Re-experiencing**
  - Recurrent and distressing recollections, dreams, hallucinations, flashbacks; cues prompt psychological distress and/or physiological reactivity
- **Avoidance**
  - Efforts to avoid trauma cues, memory difficulty (specific to trauma), decreased interest, feeling detached, restricted affect, sense of foreshortened future
- **Hyperarousal**
  - Sleep disturbance, irritability/anger, difficulty concentrating, hypervigilance, exaggerated startle response

Chronic Pain

- **Pain in excess of 90 days** (Mersky & Bogduk, 1994)
  - Headache (Afari et al., 2009; Erickson, 2011; Nampiaparampil, 2008; Patil et al., 2011; Theeler & Erickson, 2009)
  - Back/neck (VonKorff et al., 2005)
  - Neuropathic (Ofek & Defrin, 2007)
- **Polytrauma** (Clark et al., 2009; Otis et al., 2011; Walker et al., 2010)
- **Associations**
  - Sleep difficulty, fatigue, irritability, depression (Iverson & McCracken, 1997)
- **Pain & opioid management** (VA, 2009; VA/DoD, 2010)

Polytrauma Clinical Triad (P3)

- PPCS, PTSD, and chronic pain often co-occur (Lew et al., 2009)
- Reported symptoms show substantial overlap

Challenges in Symptom Management

PTSD-specific
Re-experiencing, Shame, Guilt

Shared Symptoms
Depression, Anxiety, Insomnia, Irritability/Anger, Trouble Concentrating, Fatigue, Hyperarousal, Avoidance

PPCS-specific
Sensitivity to Light, Memory Deficits, Dizziness

(Stein & McAllister, 2009)

Challenges in Symptom Management (cont'd)

- PPCS is a controversial topic (Nicholson, 2000)
- Are lasting cognitive complaints due to:
  - Injury?
    - mTBI (Belanger et al., 2010)
    - Moderate - Severe TBI (Draper & Ponsford, 2008)
  - Psychiatric factors?
    - PTSD (Campbell et al., 2009; Gordon et al., 2011 Marx et al., 2009)
  - Iatrogenic effects?
    - Medications (Arciniegas et al., 2010; Cooper et al., 2010; Iverson, 2005; Martelli et al., 2004; Meares et al., 2006)
  - Normal variation?
    - "Abnormal performance on some proportion of neuropsychological tests in a battery is psychometrically normal" (Binder et al., 2009, p. 45)

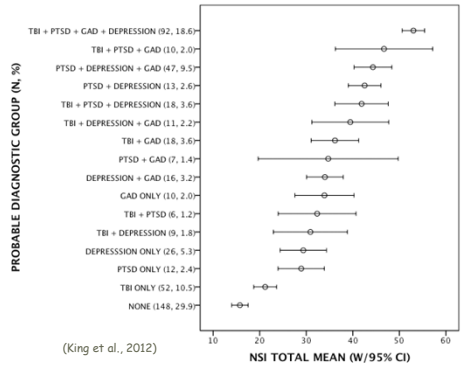
"PPCS" Symptom Influences

- **Depression** (Garden & Sullivan, 2010; Lange et al., 2011; Mooney et al., 2005; Suhr & Gunstad, 2002; Vanderploeg et al., 2007)
- **PTSD** (Brenner et al., 2010; Meares et al., 2011; Pietrzak et al., 2009)
- **Personality** (Garden et al., 2010)
- **Pain** (Gasquoine, 2000; Kilts et al., 2010; Martelli et al., 2004; Meares et al., 2011; Nicholson, 2000; Smith-Seemiller et al., 2003; Stalnacke, 2012)
- **Medications** (Iverson, 2005)
- **Baseline Characteristics** (Marx et al., 2009)
- **Litigation & Malingering** (Mickeviciene et al., 2002; Mooney et al., 2005)
- **mTBI & Blast Exposure?** (Kraus et al., 2005; Lippa et al. 2010; Panayiotou et al., 2010; Vanderploeg et al., 2007)
- **Other** (Ferguson et al., 1999; Iverson & Lange, 2003; Romesser et al., 2011; Warriner et al., 2003)

"PPCS" Symptom Influences (cont'd)

- Symptom onset may be attributable to physiological changes, but persistence is strongly influenced by psychiatric factors (Ponsford et al., 2012)

Post-Concussion Symptom Reports



(King et al., 2012)

Healthcare Utilization, Pain management, and Prescription Opioid Use in this Population

Predictors of Health Care Utilization

- Combat Exposure (Maguen et al., 2007)
- PTSD (Possemato et al., 2010*; Yu et al., 2003)
- Chronic Pain & Depression (Arnow et al., 2009)
- TBI (Calhoun et al., 2002; Hodgkinson et al., 2000; Phillips et al., 2004; Taylor et al., 2011, 2012a-c)

HCU in OEF/OIF with TBI

	2009	2010	2011
Number TBI+ Veterans Treated in VHA	22,053	27,126	30,521
Primary Care Visits	3.9 (4.1)	3.8 (4.2)	3.8 (4.3)
Mental Health Visits	11.8 (25.4)	12.1 (25.5)	12.2 (27.6)

"Annual medical costs for veterans with TBI were nearly 4-times greater than those without TBI and costs increased as clinical complexity increased" (Taylor et al., 2012c, p. 345)

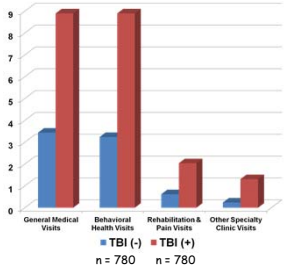
Veterans with History of Closed TBI

	TBI+ (*n* = 780)	Control (*n* = 780)
Age – Mean (*SD*)	30.6 (7.8)	30.6 (7.8)
Male	94%	87%
PTSD	74%	32.4%
Branch of Service		
Air Force	3.3%	11.3%
Army	77.4%	62.3%
Marine Corps	16.2%	18.7%
Navy	3.1%	7.7%
PC – Mean (*SD*)	3.11 (.08)	2.16 (.06)
Outpt MH– Mean (*SD*)	8.9 (.58)	3.2 (.22)

(King , Wade, & Wray, in press)

Outpatient Healthcare Utilization in Veterans with History of Closed TBI- Year 1

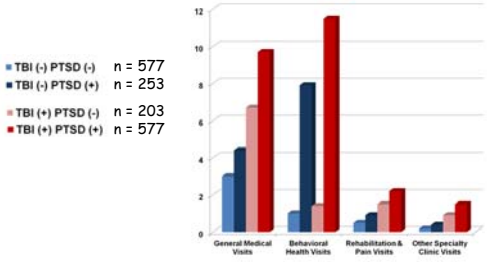
Mean Clinic Visits over 1 year by TBI Status



(King , Wade, & Wray, in press)

Outpatient Healthcare Utilization in Veterans with History of Closed TBI (cont'd)

Mean Clinic Visits over 1 year by TBI/PTSD Status



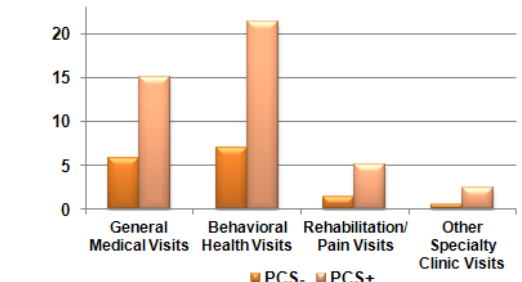
(King , Wade, & Wray, in press)

Veterans with PPCS

	PPCS (*n* = 421)	**Control (*n* = 421)**
Age – Mean (*SD*)	30.3 (7.6)	30.3 (7.6)
No PTSD/No Pain	4.5%	33%
PTSD	87%	42%
Chronic Pain	76%	52%
Back	60%	45%
Headache	50%	21%
Arthritis	54%	63%
Neck	18%	11%
Other	33%	23%
Follow-up yrs (*SD*)	1.93 (1.1)	1.83 (1.07)

(King, Wade, & Beehler, unpublished)

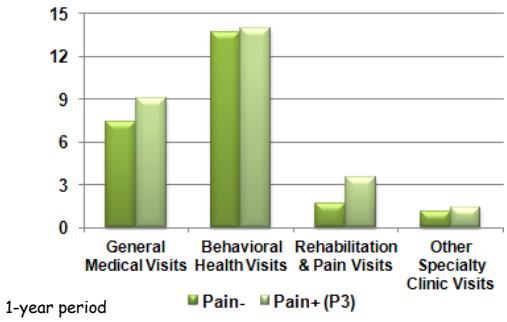
Healthcare Utilization in Veterans with PPCS



2-year period

(King, Wade, & Beehler, unpublished)

HCU in PPCS & PTSD



1-year period

(King, Wade, & Beehler, unpublished)

Opioid Use in Veterans

- Prevalence (Clark, 2002)
- Non-adherence (Barry et al., 2011; Becker et al., 2009; Edlund et al., 2007; Trafton et al., 2011)
- Scheduling & Monitoring (Krebs et al., 2011; Pade et al., 2012; Skinner et al., 2012)
- PTSD & Other MH (Hawkins et al., 2012; Macey et al., 2011; Morasco et al., 2010; Seal et al., 2012)

Opioid Use in pts. with TBI history?

- Some background
  - **Hospitalized TBI patients s/p MVA** (Kleppel et al., 2002)
  - **NFL** (Cottler et al., 2011)
  - **Veterans @ Polytrauma Rehab Centers & Polytrauma Network Sites** (Clark et al., 2007; Clark et al., 2009; French et al., 2008; Patil et al., 2011)

Medication Use in VA Polytrauma Pts.

	Clark et al. (2007)$_{ADM}$	French et al. (2008)$_{DC}$
	n = 50	*n* = 60
Opioids	58%	82%
NSAIDs	50%	43%
Anticonvulsants	20%	68%
Antidepressants		75%
Sedative-hypnotics		42%
Antipsychotics		40%

Medication Use in P3

Analgesics	86%
NSAIDs	62%
Opioid Analgesics	58%
Non-opioid analgesics	34%
Antimigraine Agents	20%
Antidepressants	76%
Anticonvulsants *	60%
Sedative-Hypnotics *	48%
Alpha-Blockers	32%
Antipsychotics *	29%
Beta-Blockers	12%
Psychostimulants	6%
Mood Stabilizers	2%

(King, Wade, & Beehler, unpublished)

A Current Study

- Explores
  - Comprehension of TBI
  - Experiences with symptoms
  - Perceptions of care in PC and recovery period
- Interviews & self-reports
  - Substance Abuse
  - Depression, PTSD
  - Sleep
  - Pain management strategies (incl. use of opioid medications)
  - Health-related QOL

Clinical Implications

Clinical Implications

- Understand demographics and common presenting concerns
  - PTSD and pain often co-occur in Veterans with history of mTBI
- Be aware that perceived cognitive deficits are not necessarily attributable to TBI history
  - Consider other causes and normal variation
- Screen for and assess current symptoms related to TBI, PTSD, and chronic pain, including alcohol/substance use and sleep problems
  - Understand that positive screens ≠ confirmed diagnosis (Brenner et al., 2010; Carlson et al., 2011; Donnelly et al., 2011)

Clinical Implications (cont'd)

- Validate patient concerns, provide education and feedback around recovery expectancy
- Active treatment planning, negotiate referrals and discuss reasons why
- Follow CPGs!
  - Review medications & dosage
  - Optimize medications
  - Consider consultations with polytrauma, MH, and clinical pharmacy specialists
- Appreciate complexity of biopsychosocial factors involved in these comorbid conditions
- Practice interdisciplinary care
  - Maintain dialogue with primary care, specialty care, and affiliated providers

Summary

- TBI is a prevalent, complex, & costly condition in OEF/OIF Veterans
  - Veterans with history of TBI and PPCS are likely to use PC and MH resources as well as other VA services at higher rates than other Veterans
- Veterans who report long-lasting post-concussion symptoms are also frequently diagnosed with PTSD and report chronic pain concerns
  - Relationship between TBI/PPCS and many common co-morbid conditions can be reciprocal in terms of symptom exacerbation and risk
  - Clinical management in this population can be challenging
- Long-term influences of TBI and co-occurring disorders on HCU and other health outcomes have yet to be explored in OEF/OIF Veterans

Summary (cont'd)

- Little specific guidance exists on symptom management in Veterans with P3, though a recent consensus report suggested that current clinical practice guidelines continue to be followed
  - Few interventions specific to TBI cohort have been developed/ tested
- Medical and MH providers in PC are well-positioned to screen and provide initial support for Veterans with TBI, though specialty assessment is necessary to confirm diagnosis and to manage complex patient needs

References

- Available as attachment

THANK YOU!

-AND-

QUESTIONS?

Upcoming Webinars

Transforming Nursing through Evidence: Nurses and Methadone Maintenance Therapy

presented by

Sabrina Merali, RN, MN and Margaret Dykeman, PhD, NP

Registered Nurses' Association of Ontario

Sabrina Merali – Program Manager, RNAO

Margaret Dykeman – Hon. Research Professor, University of New Brunswick

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