



# Rethinking PTSD in Warriors: An Occupational and Physiological Perspective

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## Report Documentation Page

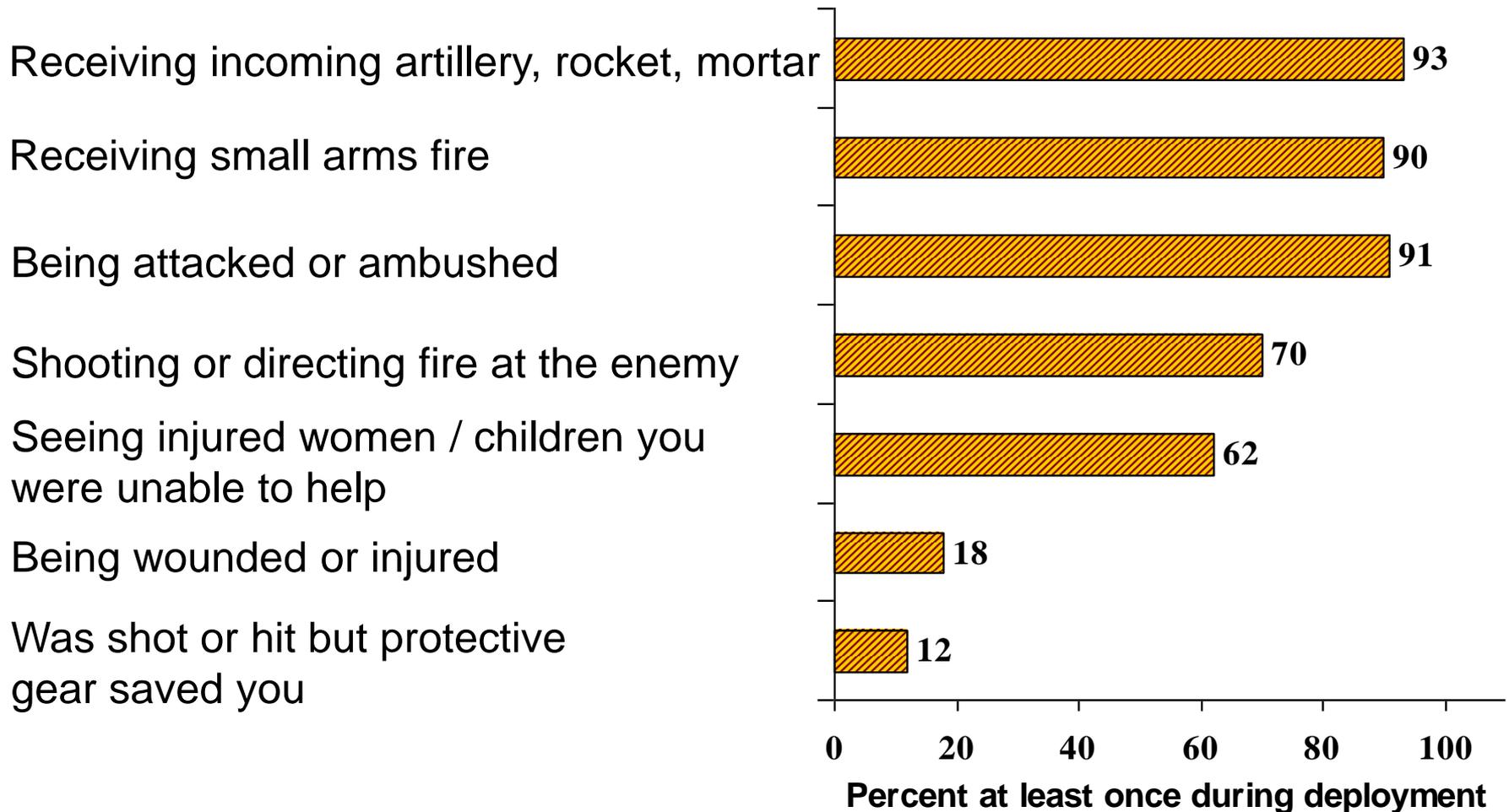
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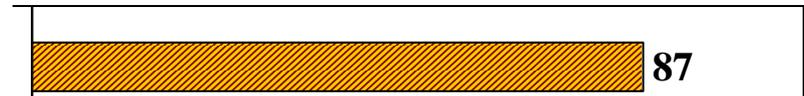
# Common Combat Experiences, U.S. Infantry Land Combat Study – Thomas, et al. 2010





## Combat Experiences (Continued)

Knowing someone seriously injured or killed



Seeing dead or seriously injured Americans



Handling or uncovering human remains



Being responsible for the death of an enemy combatant



Had a buddy shot or hit who was near you



Engaged in hand to hand combat



Being responsible for the death of a non-combatant

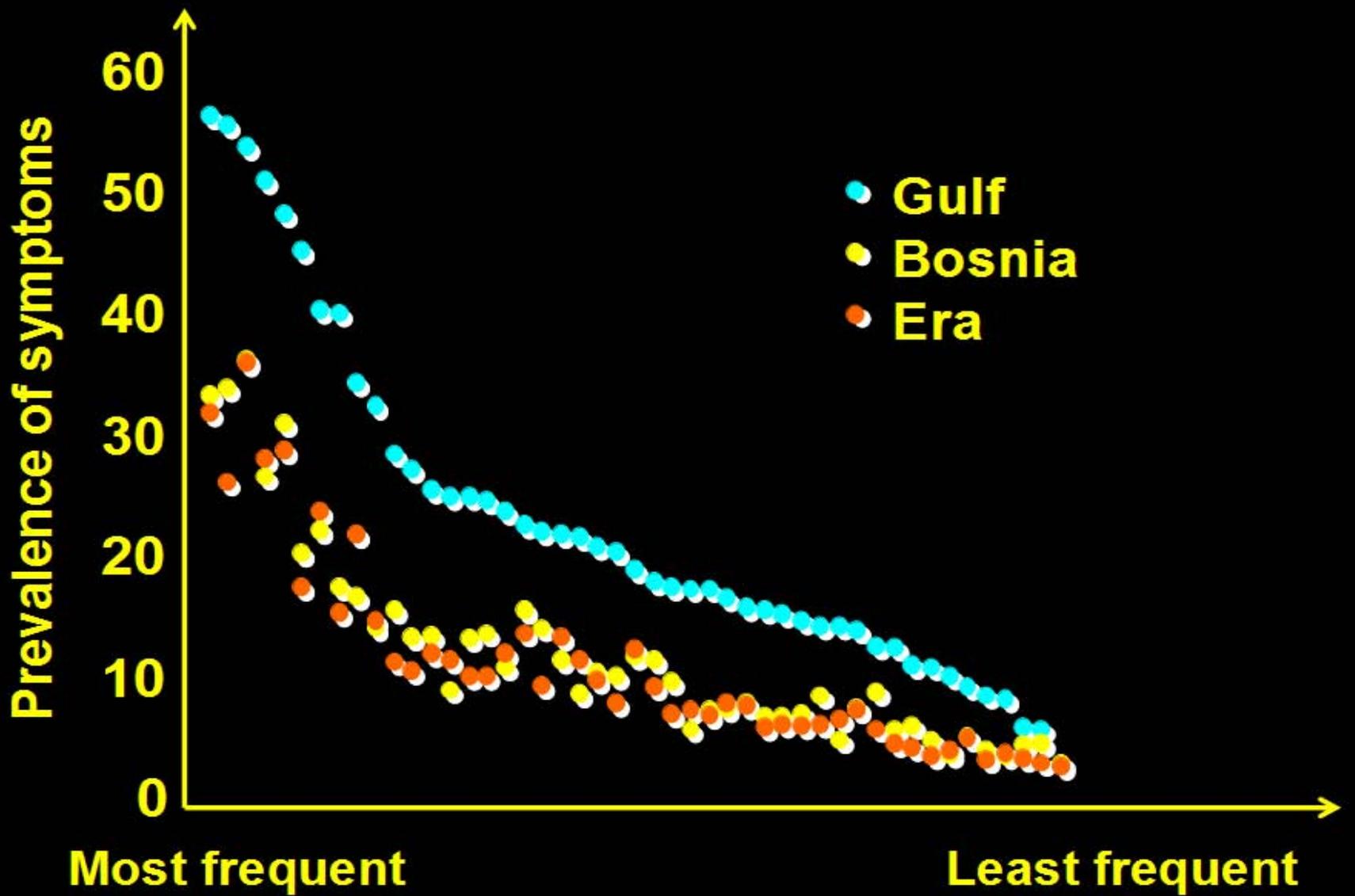


0 20 40 60 80 100  
Percent at least once during deployment



# Impact of War – Basic Epidemiology

- Generalized physical, cognitive, and psychological health problems have been described after every war:
  - Nostalgia,
  - De Costa's Syndrome
  - Irritable Heart
  - Neurasthenia
  - Effort Syndrome
  - Shell Shock
  - Battle Fatigue
  - Gulf War Illness
  - Combat Stress
  - ASD / PTSD
  - mTBI





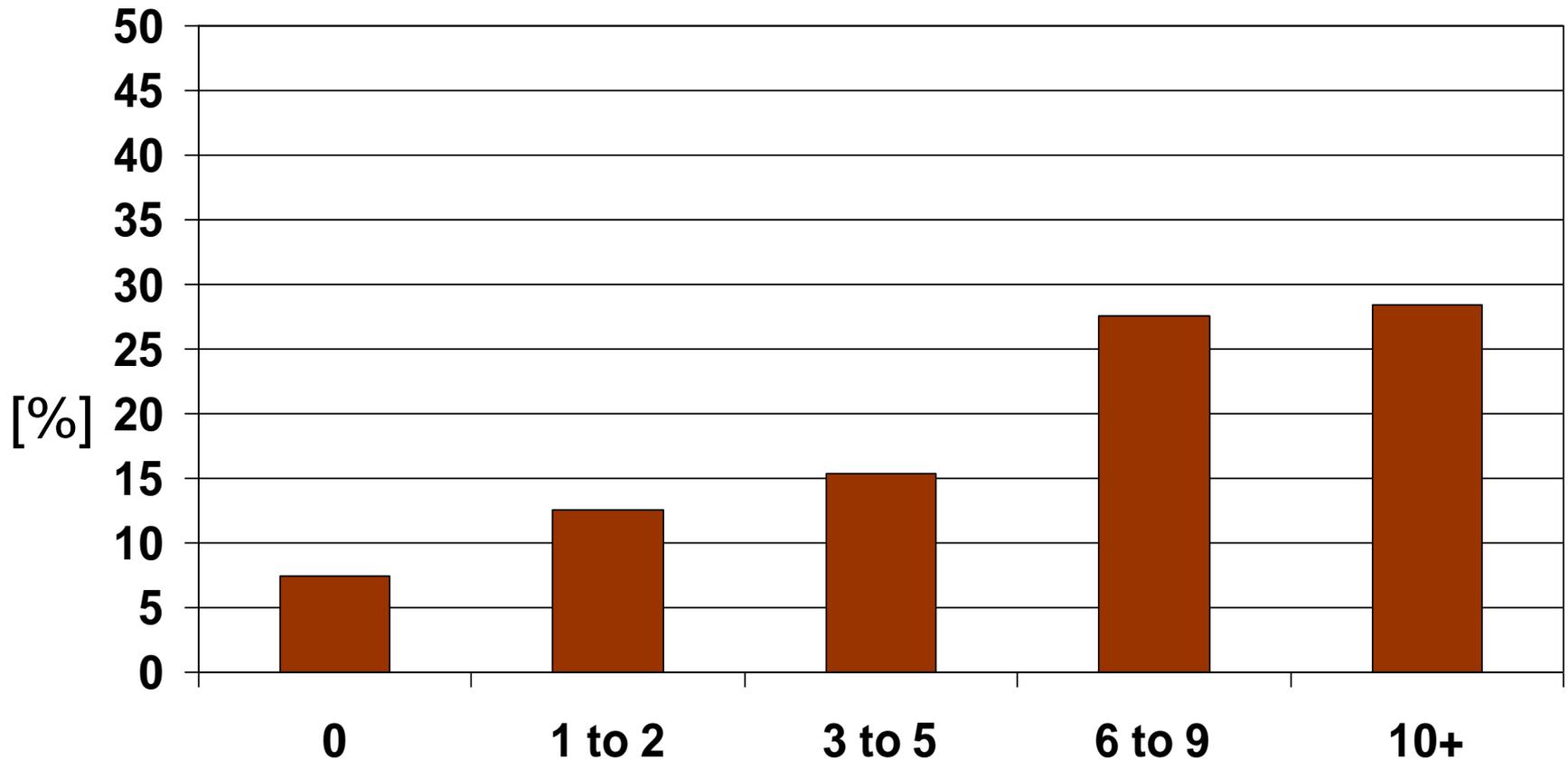
# Impact of OIF/OEF Wars: Basic Epidemiology, Combat Infantry Personnel

- PTSD prevalence, baseline: 3-6%
- PTSD prevalence, post-deployment: ~15% (6%-25%)
- Prevalence varies as function of combat intensity, number and length of deployments, & case-definition
- High co-morbidity (e.g., depression, anxiety, SUDs) and impairment (social, occupational, attrition)
- Less than half of soldiers in need of treatment receive it due to stigma and barriers to care

\* References: 1. Hoge, et. al. NEJM 2004; 2. Hoge, et. al. JAMA 2006, 3. Milliken, et. al., JAMA 2007; 4. Terhakopian, et. al. 2008, 5. Hoge, et. al. NEJM 2008; RAND Report 2008; 7. Smith, et. al. BMJ 2008; 8. Thomas J, et. al., Arch Gen Psych 2010



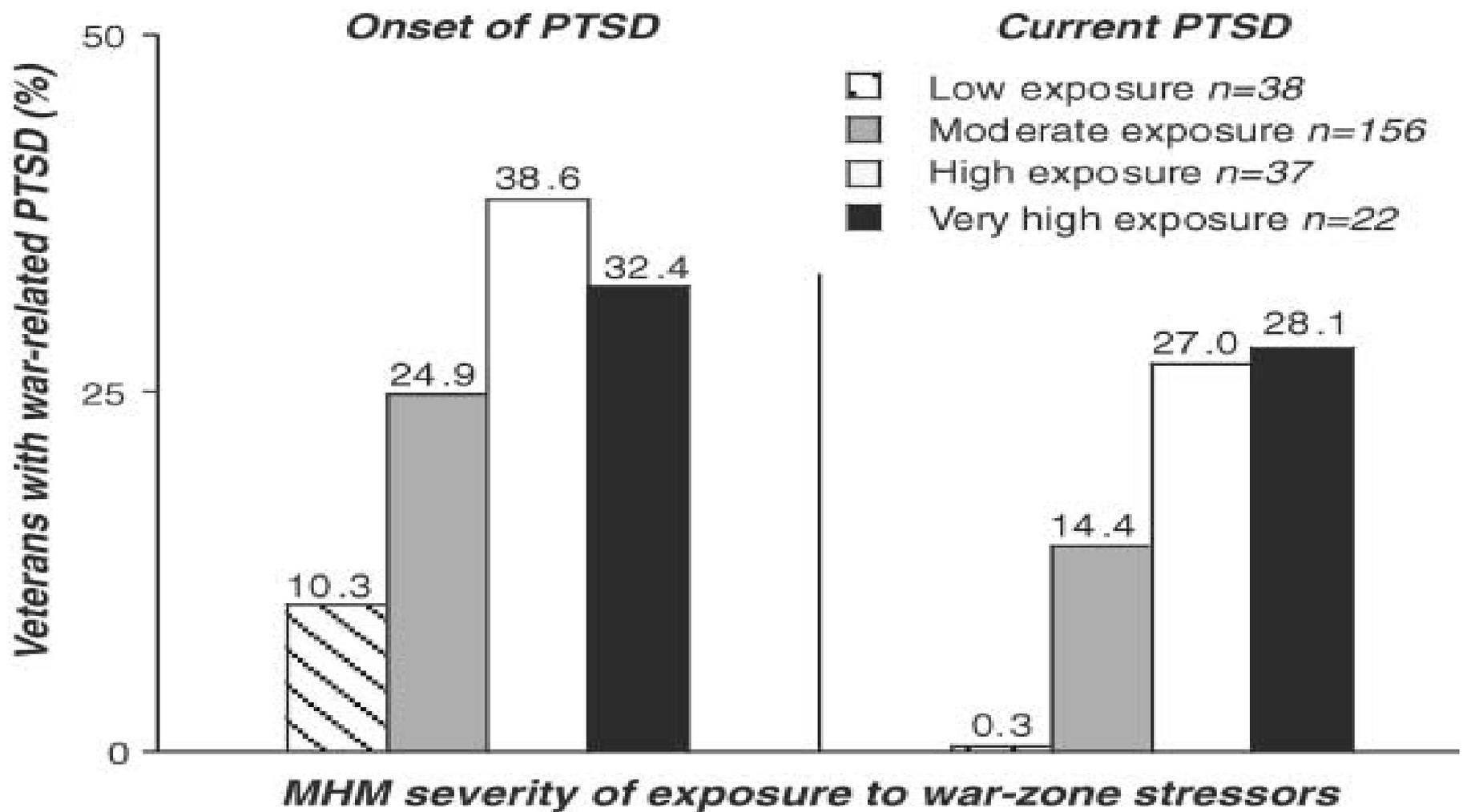
# Prevalence of PTSD by Number of Firefights During Deployment



• WRAIR Land Combat Study



# Data from Vietnam Veterans (NVVRS)



• From Dohrenwend, et. al. (NVVRS Revisited), Science 2006



# Post-Deployment Co-Morbidity, Infantry

Past Month Prevalence	(%)
PTSD Prevalence <sup>1</sup>	6.7%-21.5%
Alcohol Misuse <sup>2</sup>	31.0%
Threatened someone with violence <sup>1</sup>	43.1%
Got into a fight with someone and hit the person <sup>1</sup>	17.7%
Drove after having several drinks <sup>2</sup>	17.8%
Late or missed work because of hangover <sup>2</sup>	4.3%
Used illegal drugs <sup>2</sup>	3.6%
Any alcohol-related behavior <sup>2</sup>	24.3%

- 1) Thomas J, Wilk J, Riviere L, McGurk D, Castro C, Hoge C. Arch Gen Psychiatry 2010  
2) Santiago PN, Wilk JE, Milliken CS, Castro CA, Engel CC, Hoge CW. Psych Srvs 2010



# Key DoD/VA Public Health Strategies

- Post-deployment screening
- Education and training to reduce stigma
- Increased health care resources
- Dissemination of evidence-based treatment guidelines (VA-DoD CPGs)



# Mathematics of Evidence-Based Treatments for PTSD

- Of warriors in need of care, **less than half** receive it.
- Stigma and barriers contribute (Hoge et al 2004; Britt et al 2008).
- **Negative perceptions of mental health care may be more important than stigma in predicting help seeking.**

% agree/strongly agree

- “I don’t trust mental health professionals.” 25%
- “Psychological problems tend to work themselves out.” 15%
- “Getting mental health treatment should be a last resort.” 18%
- For those willing to participate in an RCT, **20-40% do not complete treatment (~50% in routine practice).**
- *If they stay in treatment, **50-70%** recover (40% ITT analysis)*

\* Kim PY, et. al. *Military Psychology* 2011; Hoge, et. al 2004; Britt, et. al 2008

# 3-Factor Structure for Stigma/Barriers to Care Questions

	<i>Stigma</i>	<i>Neg. Att.</i>	<i>Org. Bar.</i>
<b>Stigma; <math>\alpha = .93</math></b>			
It would be too embarrassing	<b>0.65</b>		
It would harm my career	<b>0.75</b>		
Members of my unit might have less confidence in me	<b>0.87</b>		
My unit leadership might treat me differently	<b>0.86</b>		
My leaders would blame me for the problem	<b>0.70</b>		
I would be seen as weak	<b>0.83</b>		
It might affect my security clearance	<b>0.58</b>	0.44	
<b>Negative Beliefs; <math>\alpha = .83</math></b>			
I do not trust mental health professionals		<b>0.52</b>	
My leaders discourage the use of mental health services		<b>0.58</b>	0.44
Psych problems tend to work themselves out without help		<b>0.77</b>	
Getting mental health treatment should be a last resort		<b>0.74</b>	
A fellow Soldiers mental health problems are none of my business		<b>0.62</b>	
I would think less of a team member if I knew he or she was receiving mental health counseling		<b>0.66</b>	
<b>Organizational Barriers; <math>\alpha = .81</math></b>			
Mental health services are not available			<b>0.76</b>
I do not know where to get help			<b>0.76</b>
It is difficult to get an appointment			<b>0.80</b>
There would be difficulty getting time off work for treatment	0.54		<b>0.58</b>



# Predictors of Care Utilization

<i>Predictors</i>	<i>AOR</i>	<i>95% CI</i>	<i>p</i>
<b>Any Type of Care</b>			
Negative Beliefs	0.63	0.45 - 0.87	0.005
Practical Barriers	1.11	0.86 - 1.44	0.430
Stigma	1.09	0.84 - 1.41	0.502
<b>Mental Health Professional - Military</b>			
Negative Beliefs	0.58	0.41 - 0.84	0.004
Practical Barriers	0.97	0.73 - 1.29	0.830
Stigma	1.16	0.87 - 1.54	0.308



## Other Approaches are Needed for Service Members / Veterans

- Broaden our perspective on PTSD.
  - Better understand combat physiology
  - Consider occupational context
- Better match components of evidence-based treatments to patient preferences
- Improve perceptions of mental health care and focus on how to reduce drop-outs
  - Patient factors (barriers, stigma, time commitment, negative perceptions, social / peer-to-peer support)
  - Clinician factors (e.g., rapport, immediacy, honesty, military experience, comfort with difficult topics, willingness to self-disclose, technical expertise)



# A-Level Evidence-Based PTSD Treatments

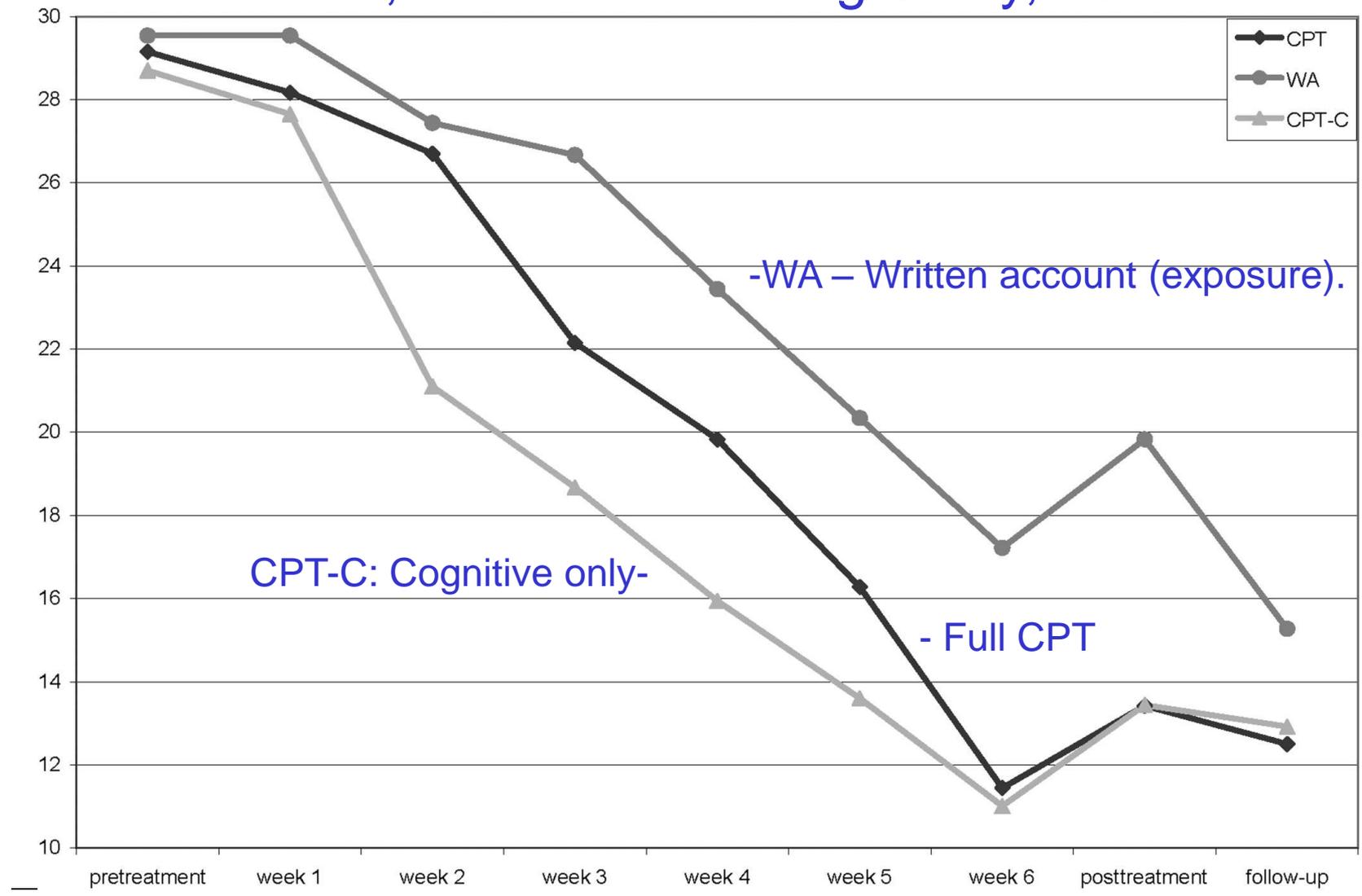
- VA-DoD CPG, 2010

- “Trauma-focused psychotherapy that includes components of exposure and/or cognitive restructuring; or stress inoculation training”:
  - Exposure: imaginal (IE), in-vivo (IVE), EMDR, written, narrative, brief eclectic
  - Cognitive restructuring / reframing (CR)
  - Stress inoculation training (SIT)(Most treatments combine elements of all three)
- **SSRI / SNRI Medications**



# What Actually Works in Therapy?

## Resick, et. al. Dismantling Study, 2008





# The PTSD “Paradox” in Warriors/1<sup>st</sup> Responders Occupational Context vs. DSM-IV Definition

- A1. Multiple exposures as part of professional teams
- A2. Not “victims” of trauma; responses according to training (rather than “fear/helplessness/horror”)\*
- “Symptoms” are all based on adaptive responses:
  - B. Re-experiencing
  - C. Avoidance and numbing
  - D. Increased physiological arousal
- E. Duration: anticipatory “symptoms” prior to trauma
- F. Functioning can be high despite serious symptoms\*

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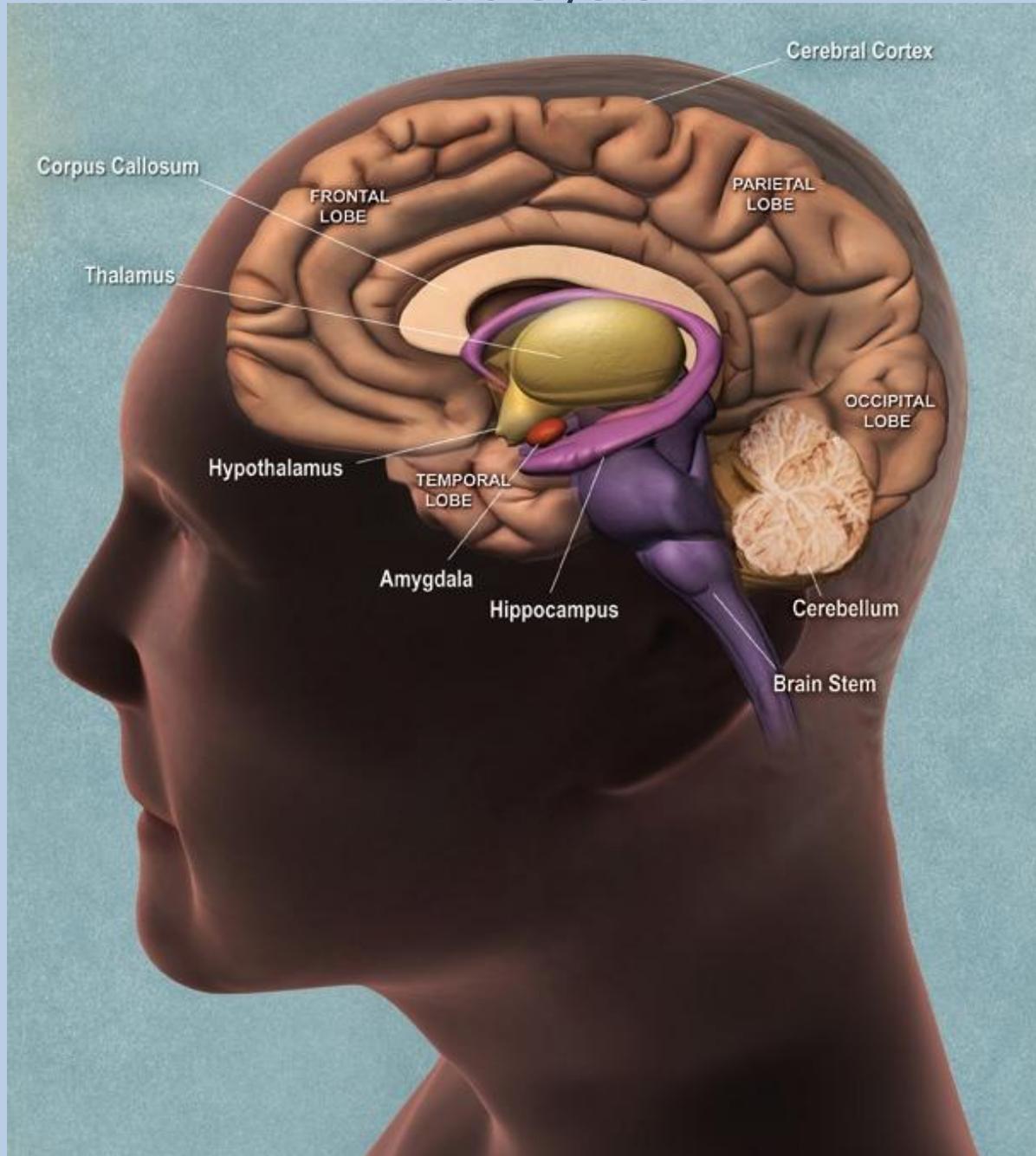
\*Adler, et al J Traumatic Stress 2008; LeBlanc VR, et. al., Am J Psych 2007.

# The Warrior's "Gameface"

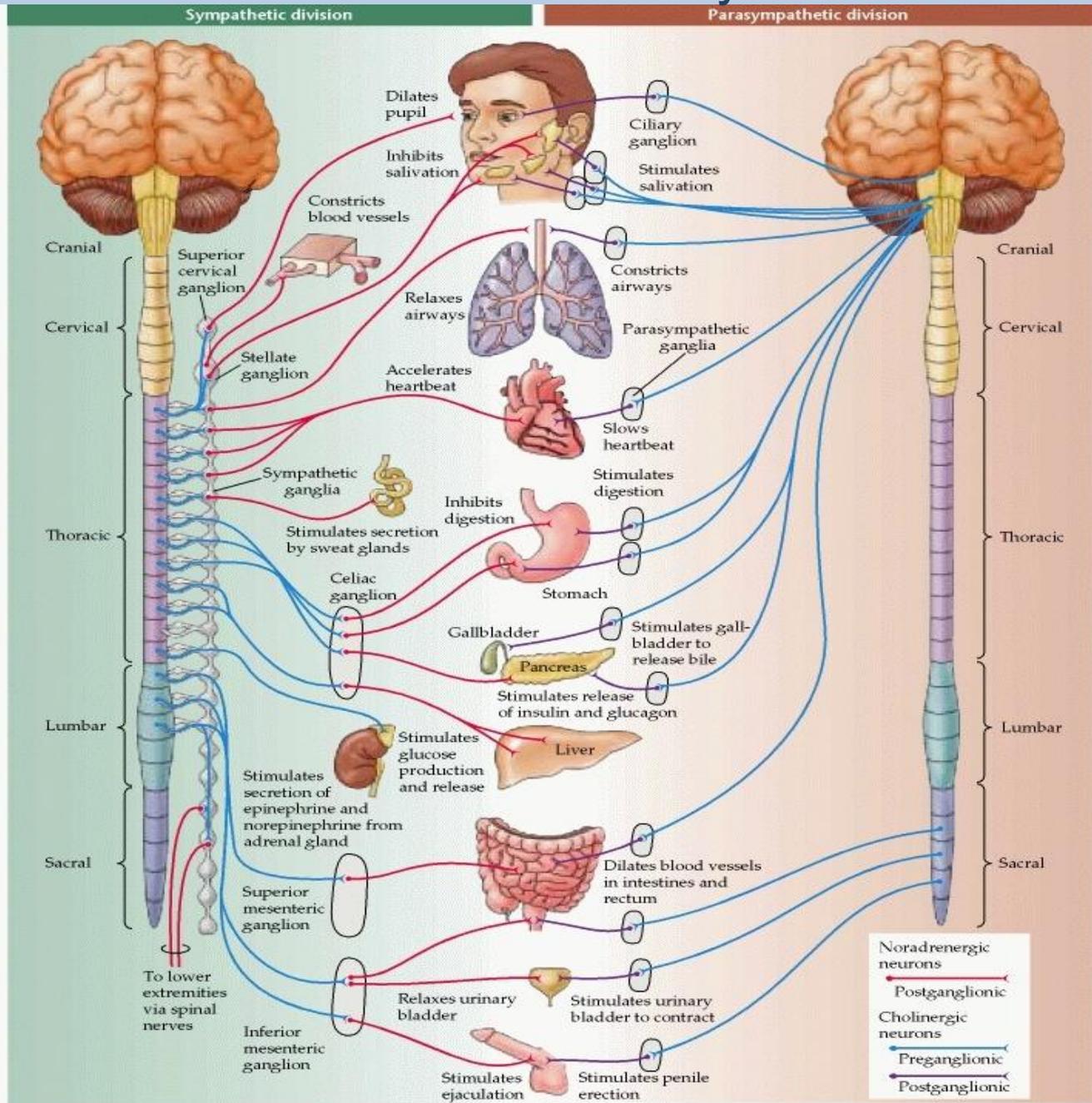


Hyperalert	Sharply tuned threat perception, "6 <sup>th</sup> sense"
Hypervigilant	Attention to details, intolerance of mistakes (second guessing, "shoulds," guilt)
Re-experiencing	Intense mission rehearsal and training
Sleep problems	Ability to function on limited sleep
Anger	Adrenaline, focus, attention
Detachment, numbing	Emotional control ("lock it down") (including grief)
Social withdrawal	The team is family
Pain/muscle tension	Strength, ability to shut down pain, drive on

# Limbic System



# Autonomic Nervous System



# PTSD as Marker for Physiological Dysregulation



<b>PHQ-15 Somatic Symptoms Scale</b>	<b>Soldiers Post-Iraq PTSD (N=468)</b>	<b>Soldiers Post-Iraq No PTSD (N=2347)</b>
<b>PHQ-15 <math>\geq</math> 15 (severe)</b>	<b>34.4</b>	<b>5.2</b>
Stomach pain	16.0	4.7
Back pain	40.2	22.4
Pain in arms, legs, joints	50.2	25.9
Headaches	31.9	9.9
Chest pain	15.1	3.5
Dizziness	14.4	2.0
Heart pounding/racing	23.6	3.7
Shortness of breath	22.9	4.5
Constipation/loose stools	20.8	7.1
Nausea/indigestion	25.1	8.9
Sexual pain/problems	10.5	1.5
Tired, low energy	74.9	28.3
Sleep Disturbance	71.1	26.1

• From Hoge CW, Terhakopian A, Castro C, et. al., Am J Psychiatry 2007

# Post-Deployment “Post-Concussive” Symptoms Stratified for PTSD (Hoge, et. al. NEJM 2008)



Symptoms	LOC (n=124)	AOC (N=260)	Other Injury (n=435)
Headaches	32%*	18%*	12%
Concentration problems	32%*	26%*	18%
Fatigue	53%*	40%	35%
Irritability	57%*	48%*	37%
Sleep disturbance	54%*	45%*	37%



Symptom	<u>PTSD</u>			<u>No PTSD</u>		
	LOC (n=54)	AOC (n=71)	Other Injury (n=70)	LOC (n=69)	AOC (n=189)	Other Injury (n=363)
Headaches	49%*	31%	30%	19%*	13%	9%
Concentration problems	59%	62%	55%	10%	14%	11%
Fatigue	88%	75%	72%	26%	27%	27%
Irritability	80%	86%	82%	34%	34%	28%
Sleep disturbance	80%	75%	74%	33%	34%	30%



## Other Combat-Related Symptoms / Reactions

- **Anger** ( $a = .89$ , “Keeping anger bottled up inside”)
- **Control** ( $a = .86$ , “Being overly controlling towards others”)
- **Dissociation** ( $a = .90$ , “Things around you feel unreal or dreamlike”)
- **Intolerance of mistakes** ( $a = .86$ , “Difficulty tolerating the mistakes of others”)
- **Holding back** ( $a = .91$ , “Having to hold back emotions”)
- **Threat Perception** ( $a = .92$ , “Feeling like something bad is about to happen”)
- **Trust** ( $a = .78$ , “Difficulty trusting people outside of your unit”)
- **Guilt** ( $a = .92$ , “Feeling guilty about things that happened”)
- **Grief** (“Difficulty coping with grief over the death of someone close”)



# PTSD and Other Combat-Related Reactions

## Mean Combat-related Symptom Score & PTSD

	PTSD	
	<u>Yes</u>	<u>No</u>
Anger	10.8	5.8
Need for Control	16.1	9.9
Intolerance of Mistakes	14.3	7.9
Mistrust	6.8	3.6
Holding Back Emotion	10.7	5.9
Panic/Dread	14.8	6.0
Guilt	11.0	5.2
Dissociation	11.7	5.5



# Predicting Functional Impairment

## Regressing Functional Impairment on Symptoms

	<u>b</u>	<u>t</u>	<u>Sig.</u>
Anger	.05	1.27	.21
Control	-.07	-1.93	.06
<b>Dissociation</b>	.13	3.17	.00
<b>Intolerance of mistakes</b>	.22	5.80	.00
Guilt	.06	1.68	.09
Holding back emotion	-.05	-1.59	.11
<b>Treat Perception</b>	.12	2.99	.00
<b>Mistrust</b>	.10	3.18	.00
PTSD	-.01	-.25	.80
<b>Depression</b>	.11	3.03	.00
<b>Anxiety</b>	.12	2.67	.01



# Conclusions

- PTSD is associated with generalized health effects, (autonomic NS and neuroendocrine dysregulation).
  - Important to address combat physiological effects
  - Important to address co-morbidities
- Occupational context is important
- Other reactions are important focus for treatment
- Specialty care evidence-based treatments are only part of the answer.
- Improving treatment retention appears to be most important strategy for enhancing outcomes
- Collaborative care treatment approaches based in primary care very promising to increase reach.
  - e.g. RESPECT-mil



# What Are Key Elements of Collaborative Care?

- Patient-centered
- Attention to patient's primary concerns
- Regularly scheduled visits with brief physical exams
- Focus on functioning rather than diagnoses
- Judicious use of consultation that protects patients from unnecessary evaluations and referrals.
- Care coordination / case management
- Good risk communication, positive expectations
- Treat underlying mental disorders, but guard against attributing physical symptoms to these diagnoses.

[DoD-VA Deployment & mTBI CPGs; Hoge NEJM 2009 \(refs on-line\); Smith, et. al](#)



# Thank You For Your Attention!

The views are those of the author only and do not reflect the official position of the Army or DoD.

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# Backups

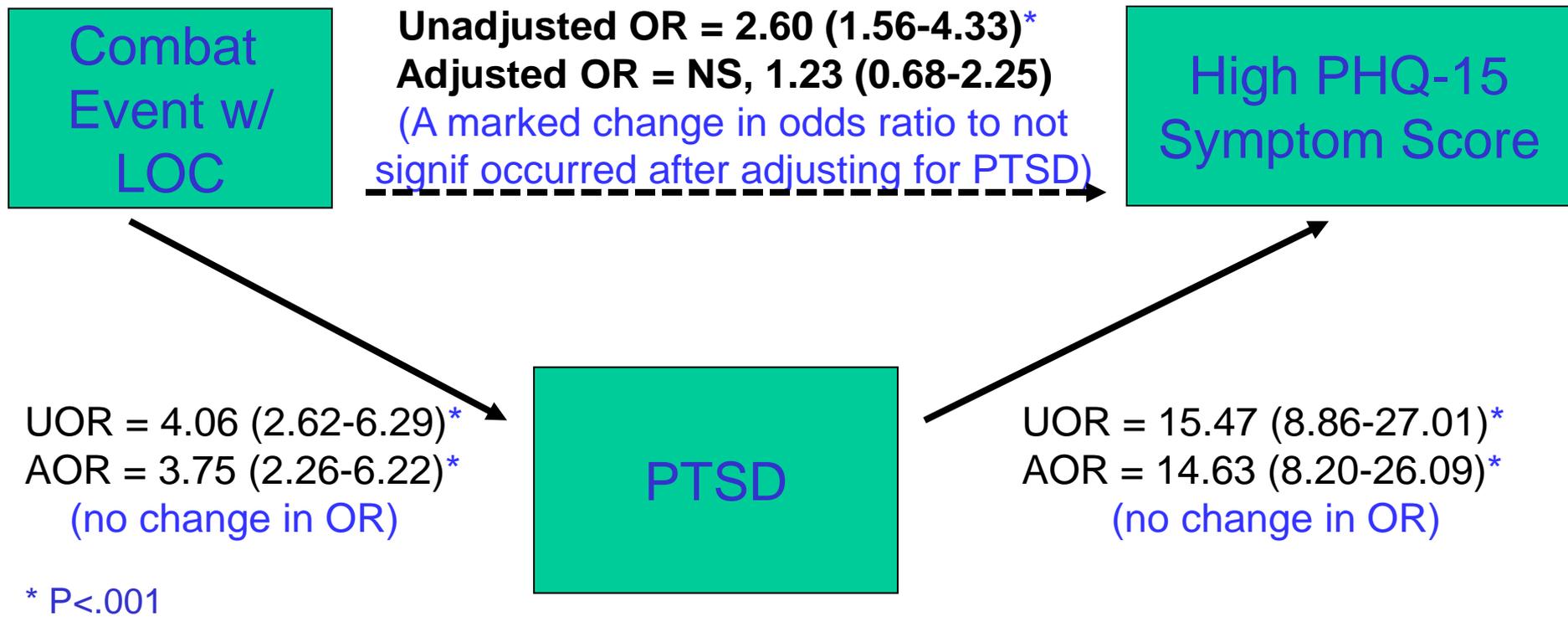


# What Are Key Elements of Collaborative Care?

- Systems approach that backs up the primary care clinician, key components:
  - Prepare the practice
    - Preparing clinicians, education/training, how the system works
    - Screening and assessment of post-war symptoms
    - Step-care approaches
  - Nurse care management
    - Patient preference; patient centered
    - Treatment planning
    - Assessment over time
  - Enhanced interface with specialist
    - Specialists meet with nurse to review case-loads and provide ongoing advice (psychiatry, neurology, etc.)



# PTSD as “Mediator” (psychology) or “Confounder” (epidemiology)\*



\* Reflects identical statistical relationship.