

# **Beyond the frontline and the VA: occupational medicine and primary care issues related to deployment to Iraq and Afghanistan**

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# Objectives:

1. To describe common illnesses and injuries related to military deployment to Iraq and Afghanistan in Connecticut Veterans.
2. To be familiar with self-reported health status and healthcare utilization data in Connecticut Veterans.

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# Objectives:

3. To review the current medical literature regarding Operation Iraqi Freedom and Operation Enduring Freedom Deployment.
4. To understand how to work with the VA Healthcare System to meet the Occupational and other Health Care needs of Veterans.

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# Case Vignette

- Joe, a 35-year old male, was evaluated for a post-offer examination. He has applied for a job as ~~administrative assistant~~.
- He recently came back from a tour of duty in Iraq.

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- Over 1.6 million US military personnel have been deployed to Iraq and Afghanistan
- Many have returned for more tours of duty
- 1.1 M have been discharged from the service, have resumed civilian jobs and or are back in school

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- While recently discharged veterans have up to 5 years to access the VA for medical care free of charge
  - only 46% (>508K) have obtained VA health care since 2002

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- In VACT Healthcare System
  - up to 40% have not registered and accessed the VA
  - another 15% have registered but have not accessed the VA

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- Many of these veterans seek medical care elsewhere, including to PC and non-VA OEM clinics
- Offers an opportunity to screen these veterans for prevalent illnesses and injuries, and if necessary, refer to the VAMC (203-932-5711)

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# Demographics of CT OIF/OEF veterans

- Median age: 32
- Mostly male (90%)
  - Many are women of childbearing age with or without family
- About 12,000 have been deployed and have come back to CT

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# Demographics of CT OIF/OEF veterans

- Majority of CT veterans
  - National Guard and Reservists at the time of deployment
  - deployed in Iraq than Afghanistan
  - belong to the Army
  - back in school or have resumed civilian jobs

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- What is known about the health of the OIF/OEF veterans?
- What are some of the illnesses and injuries related to their deployment?

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# **Are patients at Veterans Affairs medical centers sicker? A comparative analysis of health status and medical resource use**

**Agha Z. et al.**

**Arch Intern Med 2000; 160:3252-7**

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# VA primary care patients are “sicker” than non-VA counterpart

Agha Z. Lofgren RP. Van Ruiswyk JV. Layde PM. Are patients at Veterans Affairs medical centers sicker? A comparative analysis of health status and medical resource use. *Archives of Internal Medicine*. 160(21):3252-7, 2000 Nov 27.

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**Health and functioning among  
four war eras of U.S.  
veterans: examining the  
impact of war cohort  
membership, socioeconomic  
status, mental health, and  
disease prevalence**

**Villa VM, et al.**

**Military Medicine 2002;167:783-9**

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# Vietnam war veterans have poorer health status than WWII, Korean and GVI veterans

Villa VM. Harada ND. Washington D. Damron-Rodriguez J. Health and functioning among four war eras of U.S. veterans: examining the impact of war cohort membership, socioeconomic status, mental health, and disease prevalence. *Military Medicine*. 167(9):783-9, 2002 Sep.

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**Service connected  
Conditions**

**Acute and sub-acute  
Injuries and  
illnesses**

**Presumptive  
conditions**

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# **Gulf war veterans' health: Medical evaluation of a US cohort**

**Eisen SA, et al.**

**Ann Intern Med 2005;142:888- 890**

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**DESIGN:** A cross-sectional prevalence study performed

**PARTICIPANTS:** Deployed (n = 1061) and non-deployed (n = 1128) veterans of the 1991 Gulf War 10 years after the 1991 Gulf War.

**MEASUREMENTS:** 11 outcome measures (fibromyalgia, CFS, dermatologic conditions, dyspepsia, HTN, COPD/asthma, symptomatic arthralgias, hepatitis, diabetes, hypo-/hyperthyroidism, and peripheral neuropathy) and SF-36

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# Results

- **Fibromyalgia** (deployed, 2.0%; non-deployed, 1.2%; odds ratio, 2.32 [95% CI, 1.02 to 5.27])
- **CFS** (deployed, 1.6%; non-deployed 0.1%; odds ratio, 40.6 [CI, 10.2 to 161])
- **Dermatologic conditions** (deployed, 34.6%; non-deployed, 26.8%; odds ratio, 1.38 [CI, 1.06 to 1.80])
- **Dyspepsia** (deployed, 9.1%; non-deployed, 6.0%; odds ratio, 1.87 [CI, 1.16 to 2.99])
- The mean physical component summary score of the SF-36 for deployed and non-deployed veterans was 49.3 and 50.8, respectively.

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Seth A. Eisen, et al.. Ann Intern Med, Jun 2005; 142: 881 - 890.

# Excess incidence of ALS in young Gulf War veterans

Haley R, et al.

Neurology. 2003;61:750-756

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- Expected incidence increased from 0.93 cases/year in 1991 to 1.57 cases/year in 1998, but the observed incidence increased from 1 to 5 cases/year.
- The magnitude of the excess of ALS cases over the expected incidence increased during the 8-year period (Poisson trend test,  $p = 0.05$ ), and the increase was not explained by a change in the interval from onset to diagnosis or by a change in the US population death rate of ALS in those aged <45 years.

Haley, R. Neurology. 2003;61:750-756

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- These 5 conditions are deemed by the government as related to deployment to the Gulf War (i.e., presumptive conditions)
  - If OIF/OEF veteran is diagnosed with any of these, please refer them to the VA for possible compensation

(800-827-1000)

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- What about the more prevalent injuries and illnesses in this cohort?
- How does this relate to Joe?

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# Case vignette

- As part of routine pre-employment evaluation, Joe was asked to fill out a respiratory fit testing. He checked off claustrophobia and past problems with using a respirator.
- On further review, he volunteered that he feels his heart racing and sweaty when he dons a respirator.

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# MEDICAL EVALUATION FOR RESPIRATOR USE

Name		Job Title
Social Security No.		Department
Work Phone No.		Supervisor Name
Sex	Age	Date of Birth

Yes      No      (Please place an X on the line indicating a yes or no answer to the following questions)

- |     |     |  |
|-----|-----|--|
| ___ | ___ | 1. Do you taken any prescription medications especially medications for pulmonary or cardiac conditions? (Please list on back of form the names of your medications) |
| ___ | ___ | 2. Do you have a known heart disease?  |
| ___ | ___ | 3. Do you have chest pain?   |
| ___ | ___ | 4. Do you have heart palpitations, angina, congestive heart failure, or have you had a heart attack?   |
| ___ | ___ | 5. Do you have any known physical deformities or abnormalities, which may interfere with use of the respirator?  |
| ___ | ___ | 6. Do you wear a beard or moustache?   |
| ___ | ___ | 7. Do you have asthma, emphysema, chronic bronchitis, or lung disease?   |
| ___ | ___ | 8. Do you have shortness of breath or wheezing?  |
| ___ | ___ | 9. Do you have a chronic cough?  |
| ___ | ___ | 10. Do you have a history of seizures or fainting?   |
| ___ | ___ | 11. Do you have a fear of tight or enclosed places or a fear of smothering?  |
| ___ | ___ | 12. Do you smoke? If yes, _____ (number of packs/day) for _____ years; or, I stopped smoking _____ years ago.  |
| ___ | ___ | 13. Do you have any past problems associated with respirator use?  |
| ___ | ___ | 14. Do you have any concerns pertaining to your health or any cardiac or respiratory illness not listed above? If so, please elaborate (on back of form)             |

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# *Frequency of Possible Diagnoses among OEF and OIF Veterans\**

Diagnosis (Broad ICD-9 Categories)	Frequency	Percent
Diseases of Musculoskeletal System/Connective System (710-739)	265,450	52.2
Mental Disorders (290-319)	243,685	48.0
Symptoms, Signs and Ill Defined Conditions (780-799)	233,443	45.9
Diseases of Nervous System/ Sense Organs (320-389)	202,298	39.8
Disease of Digestive System (520-579)	172,462	33.9
Diseases of Endocrine/Nutritional/ Metabolic Systems (240-279)	135,250	26.6
Injury/Poisonings (800-999)	130,300	25.6
Disease of Respiratory System (460-519)	116,308	22.9

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\*N = 1,094,502; 2002-12/2009

# Prevalent VACT diagnoses in OIF/OEF Veterans (2005-2/2010)

- Mental disorders-33%
- Unknown-17%
- Diseases of the musculoskeletal system and connective tissue-14%
- Diseases of the nervous system and sense organ-6%

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# Prevalent VACT diagnoses in OIF/OEF Veterans (2005-2/2010)

- Diseases of the digestive system-5%
- Symptoms, signs and ill-defined conditions-5%
- Diseases of the circulatory system-3%
- Diseases of the respiratory system-3%

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# Breakdown of VACT MH diagnoses

Diagnostic code	# OIF/OEF vets	# Clinic visits
ICD-9 code 309 (PTSD, adjustment disorders)	3575	24336 (59%)
ICD-9 code 296 (MDD)	922	4536 (11%)
ICD-9 code 311 (Depressive disorders, not MDD)	1046	3276 (8%)
<b>Total</b>	<b>5347*</b>	<b>41235**</b>

\*May have multiple diagnoses; n = 12,000

\*\*Discrepancy is accounted for by visits for other MH diagnoses

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# National MH Diagnoses among OIF/OEF Veterans since 2002

<b>Disease Category (ICD 290-319 code)</b>	<b>Total Number of OEF/OIF Veterans<sup>2</sup></b>
PTSD (ICD-9CM 309.81) <sup>3</sup>	129,654
Depressive Disorders (311)	90,936
Neurotic Disorders (300)	74,559
Affective Psychoses (296)	52,982
Nondependent Abuse of Drugs (ICD 305) <sup>4</sup>	41,980
Alcohol Dependence Syndrome (303)	24,454
Specific Nonpsychotic Mental Disorder due to Organic Brain Damage (310)	15,040
Special Symptoms, Not Elsewhere Classified (307)	14,531
Sexual Deviations and Disorders (302)	12,382
Persistent Mental Disorders due to Conditions Classified Elsewhere (294)	12,029

n=243,685 with MH diagnoses; total N=1,094,502 OIF/OEF vets

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**Health conditions related to  
recent deployment in the  
Persian Gulf and Afghanistan: a  
descriptive analysis of  
compensation and pension  
claims**

**Carine Sakr MD, MPH**

**Jay Mobo MD, MPH**

**Yale University School of Medicine  
VA Connecticut Healthcare System**

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# METHODS

- Review of the 225 deployment-related health effects claims of 508 recently discharged Connecticut OEF and OIF veterans by January 15, 2005
- The data was abstracted from the veterans' electronic medical records

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# RESULTS

- The mean age of the veterans was 33 years, median was 29 years
- The majority were males (88.9%).
- White represented the largest race group (79.0%)
- Non-Hispanics the largest ethnic group

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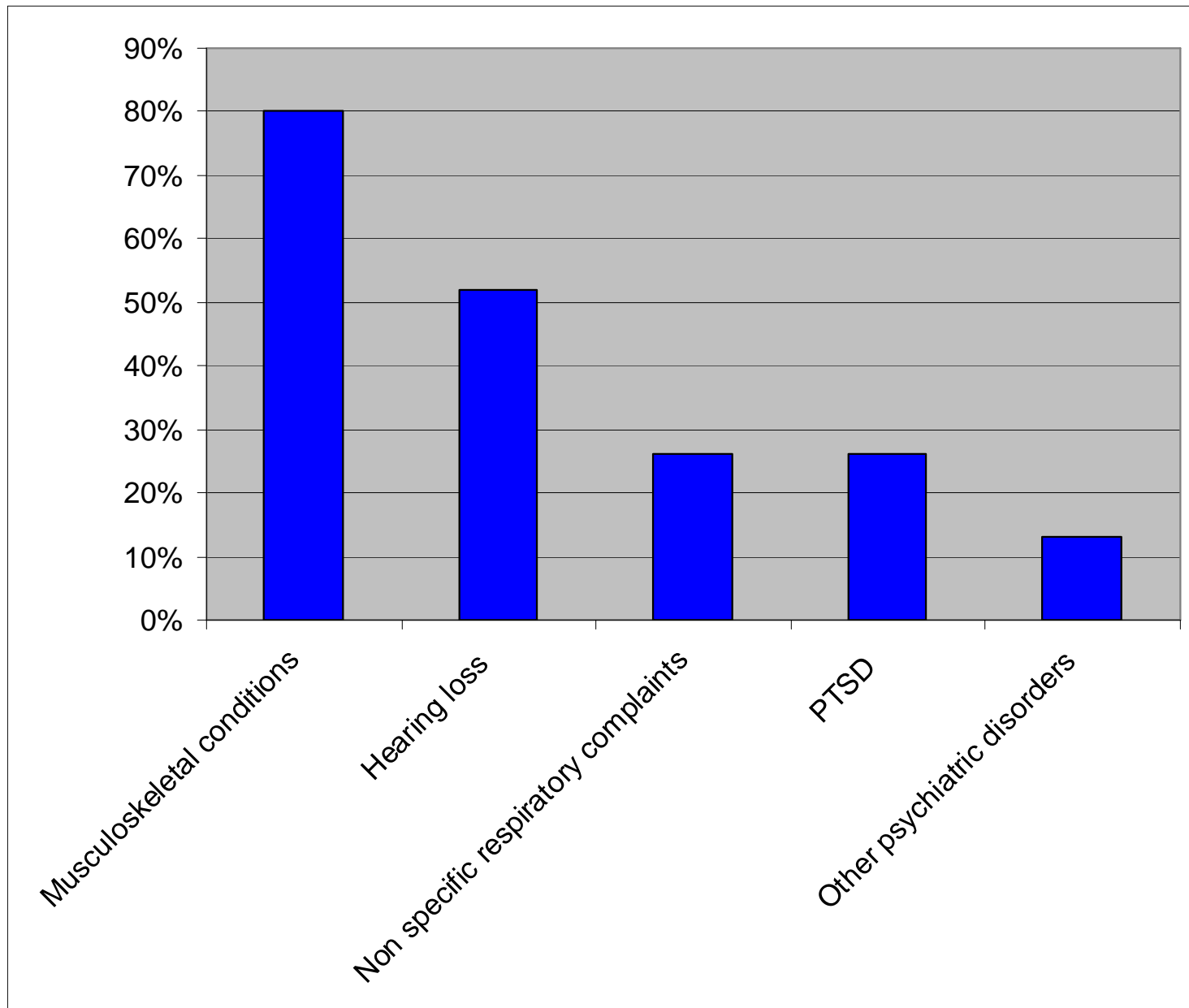


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## Results

- Of those with mental conditions, the average global assessment function score was **59** (40-90).
- In those with hearing loss complaints, the average hearing threshold was **17 dB** and the average speech discrimination score was **97%**.

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## Results

- Of those with respiratory complaints 24 had normal baseline spirometry and/or chest x-ray findings. However, **one** had asthma.
- The overall service-connected impairment rating was **33%** (0-100%).

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# Significance of service-connected ratings

10%-free medical care for service-connected conditions, and no co-pay for any care

20%-qualifies for vocational rehabilitation, including further education (plus cost of supplies and stipend)

50%-all medications are free, no co-pay

70%-free access to healthcare (including outside of VA HCS), free long term care

100%-additional benefits to next of kin

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# **Predictors of self reported health among Connecticut Gulf War II veterans**

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**Jay Mobo, MD, MPH**

**Yale School of Epidemiology and Public  
Health**

**Chronic Diseases Epidemiology**

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# Specific Aims

- Describe overall self-reported health status of OIF and OEF CT veterans
- Identify the predictors of poorer self-reported health status using the Post-deployment Health Assessment form (DD 2796).
  - <http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd2796.pdf>

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# Methods

- Research Plan: a retrospective cohort review of
- Data was abstracted from Post-deployment Form (DD 2796) and VA medical records.
- Veterans were not contacted

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# Methods:

- Dependent variable:
  - Self-reported health status

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# Methods: independent variables

- Demographics
- Combat information
  - service branch, component, duration, length and area of deployment, military job description, and military pay grade and rank
- Self reported symptoms
  - subjective complaints, self reported exposure, self reported health
- Self reported environmental exposures

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# Methods

- Experimental subjects (as of January 2005):  
Almost 500 veterans from OIF OEF registered with the CT VA health care system
- A total of 225 Gulf War II Veterans have filed a Compensation and Pension claim with the VA Regional Office between January 1, 2003 and January 15, 2005 (Including National Guard and Reservists as well as males and females who served in OIF and OEF)
- 108 have filled the post deployment form
- 90 had data on all variables of interest

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# Methods: Recoding Depression Score

- Over the last 2 weeks how often have you been bothered by any of the following problems:
  - Little interest or pleasure in doing things
  - Feeling down, depressed, or hopeless
  - Thoughts that you would be better off dead or hurting yourself in some way
- 3 possible answers None (0) Some (1) A lot (2)
- Depression Score = sum of 3 answers

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# Methods: Recoding PTSD Score

Have you ever had any experience that was so frightening, horrible, or upsetting that, in the PAST MONTH, you...

1. Have had any nightmares about it or thought about it when you did not want to?
2. Tried hard not to think about it or went out of your way to avoid situations that remind you of it?
3. Were constantly on guard, watchful, or easily startled?
4. Felt numb or detached from others, activities, or your surroundings?

2 possible answers No (0) Yes (1)

PTSD Score = sum of 4 answers

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# Methods: Recoding Combat Exposure Score

1. Did you see anyone wounded, killed or dead during this deployment?  
No (0) Yes (coalition, enemy, or civilian) (1)
2. Were you engaged in direct combat where you discharged your weapon?  
No (0) Yes (1)
3. Did you ever feel that you were in great danger of being killed? 2 possible answers?  
No (0) Yes (1)

Combat Score = sum of 3 answers

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# Table 1

<b>Age</b>	32 +/- 10	(25 <sup>th</sup> 50 <sup>th</sup> and 75 <sup>th</sup> percentiles 24, 29, and 38)	
<b>Gender</b>	Male 75 (83)	Female 15 (17)	
<b>Service branch</b>	Air Force 5 (6)	Army 72 (80)	Marine Corps 13 (14)
<b>Component</b>	Active Duty 27 (30)	National Guard 46 (51)	Reserves 17 (19)
<b>Deployment</b>	Kuwait 62 (70)	Iraq 69 (78)	Afghanistan 6 (7)
<b>Name of operation</b>	OIF 81 (90)	OEF 7 (8)	OIF-OEF 2 (2)

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# Table 2

<b>Would you say your health in general is:</b>	<b>Excellent</b> 6 (7)	<b>Very good</b> 28 (31)	<b>Good</b> 35 (39)	<b>Fair</b> 20(22)	<b>Poor</b> 1 (1)
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<b>Did your health change during this deployment? *</b>		<b>Same/ Better</b> 55 (63)	<b>Worse</b> 33 (37)
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<b>Have you sought or do you now intend to seek counseling or care for your mental health?</b>	<b>Yes</b> 12(13)	<b>No</b> 78 (87)
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# Table 3a: Bivariate analysis

		Crude OR	95% CI	p
Age		0.99	0.96-1.04	0.90
Gender	Male	1		
	Female	1.10	0.40-3.04	0.85
Grade	<= E4	1		
	>= E5	0.66	0.31-1.41	0.28
Service-Branch	Navy	1		
	Air Force	0.58	0.09-3.96	0.54
	Army	0.99	0.34-2.90	0.63
Component	Reserve	1		
	Active duty	<b>0.31</b>	<b>0.10-0.96</b>	<b>0.04</b>
	National guard	0.62	0.22-1.73	0.78
<b>Duration of deployment</b>		<b>1.003</b>	<b>1.000-1.007</b>	<b>0.05</b>

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# Table 3b: Bivariate analysis

		Crude OR	95% CI	p
Vaccinations	Two or less	1		
	Three or more	1.00	0.46-2.16	1.0
Environmental exposures: Pesticides		2.50	1.00-6.26	0.05
	Smoke	1.80	0.14-23.56	0.65
	Depleted uranium	1.51	0.33-8.86	0.60
	<b>Solvents &amp; fuels</b>	<b>3.77</b>	<b>1.13-12.59</b>	<b>0.03</b>
	<b>Depression score</b>	<b>1.69</b>	<b>1.15-2.50</b>	<b>&lt;0.01</b>
	<b>PTSD score</b>	<b>1.80</b>	<b>1.13-2.85</b>	<b>0.01</b>
	<b>Combat score</b>	<b>1.72</b>	<b>1.17-2.52</b>	<b>&lt;0.01</b>

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## Table 4: Multivariate analysis

	Adjusted OR	95% CI	p
<b>Combat score</b>	1.69	1.15-2.48	<0.01
<b>Depression score</b>	1.66	1.12-2.47	0.01

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# Conclusion

- Only 38% of veterans report their health as excellent or very good after OIF and OEF deployment.
- 37% report a worsening of their health post deployment.
- 41% are concerned about deployment exposures.

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# Discussion

- Different war: exposures are no longer environmental rather psychological.
- Different demographics: larger proportion of National Guard and Reserve who are not steeped in military culture, may have adverse health consequences.
- Need to carefully treat and diagnose psychiatric conditions in this cohort.
- Try to prevent further psychiatric illnesses.

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# Combat Duty in Iraq and Afghanistan, Mental Health Problems, and Barriers to Care

Hoge CW, et al.

N Engl J Med 2004; 351:13-22

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## Results

- Exposure to combat was greater among those who were deployed to Iraq > to Afghanistan.
  - As of 3/3/2010, there were 4383 fatalities among OIF personnel; and 1656 among OEF personnel

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## Results

- MDD, GAD or PTSD was significantly higher after duty in Iraq (15.6 to 17.1%) than after duty in Afghanistan (11.2%) or before deployment to Iraq (9.3%)
- Largest difference was in the rate of PTSD

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# Results

- Of those whose responses were positive for a mental disorder, only 23 to 40 percent sought mental health care.
- Twice as likely report concern about possible stigmatization and other barriers to seeking mental health care.

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Hoge CW. Combat Duty in Iraq and Afghanistan, Mental Health Problems, and Barriers to Care. NEJM. 2004

# Case Vignette

- On further probing, Joe related his PTSD-like reaction to donning the respirator as it reminds him of the times he had to wear the respirator in panic for possible inhalation exposure.

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**Separating Deployment-Related  
Traumatic Brain Injury and  
Posttraumatic Stress Disorder in  
Veterans: Preliminary Findings  
from the Veterans Affairs Traumatic  
Brain Injury Screening Program**

**Hill JJ, Mobo BH, Cullen MR**

**Am J Phys Med Rehab 2009; 88:605-614**

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## Conclusion:

- Veterans who screen positive for mild traumatic brain injury by the VA traumatic brain injury screening tool have high rates of PTSD
- Results suggest that interdisciplinary rehabilitation teams need to include mental health professionals with expertise in posttraumatic stress disorder.

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# **Morphine Use after Combat Injury in Iraq and Post-Traumatic Stress Disorder**

**Holbrook LT, et al.**

**NEJM 2010; 362:110-117**

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# Study Results

- Among the 696 patients studied, 243 received a diagnosis of PTSD and 453 did not.
- The use of morphine during early resuscitation and trauma care was significantly associated with a lower risk of PTSD after injury.
- Among the patients in whom PTSD developed, 61% received morphine; among those in whom PTSD did not develop, 76% received morphine (odds ratio, 0.47;  $P < 0.001$ ). This association remained significant after adjustment for injury severity, age, mechanism of injury, status with respect to amputation, and selected injury-related clinical factors.

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# Expert Recommendation

- Early morphine use can mitigate the adrenergic effect of trauma that can lead to PTSD
- However caution must be exercised in applying the results to clinic patients as the window of treatment opportunity has likely elapsed by the time they come to the clinic.

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# **Veterans' Affairs Medical Center Healthcare utilization among veterans of military deployment to Iraq and Afghanistan**

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**Yale University School of Medicine**

**VA Connecticut Healthcare System**

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# Introduction

- Although stigma and barriers to seeking mental health care have been identified, a more recent report suggests high utilization of mental health services by this cohort.

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Hoge CW, et al. Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *JAMA* 2006;295:1023-1032.

# Introduction

- Likewise presence of PTSD among OIF/OEF veterans has been correlated with worse somatic symptoms and absenteeism.

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# Methods

- Retrospective review of 1027 recently-discharged OIF/OEF veterans and 57 non-OIF/OEF veterans who registered at the VA Connecticut from January 1, 2003 to October 31, 2005.

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# Table 1. Demographics

<b>Gender (n, %males)</b>		930 (85.79%)
<b>Type of tour (n, %)</b>	OIF/OEF and other tour	482 (44.46%)
	OIF/OEF only	538 (49.63%)
	Non-OIF/OEF only	57 (5.26%)
	Not reported	7 (0.65%)
<b>Mean Age (years, +/- SD)</b>	Overall	30.3 (9.02)
	OIF/OEF and other tour	30.26 (9.06)
	OIF/OEF only	30.48 (9.15)
	Non-OIF/OEF only	29.24 (7.22)
<b>Service branch (n, %)</b>	Army	779 (73.56%)
	Marine Corps	134 (12.65%)
	Air Force	94 (8.88%)
	Navy	48 (4.53%)
	Coast Guard	3 (0.28%)
	Not reported	1 (0.09%)

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# Results

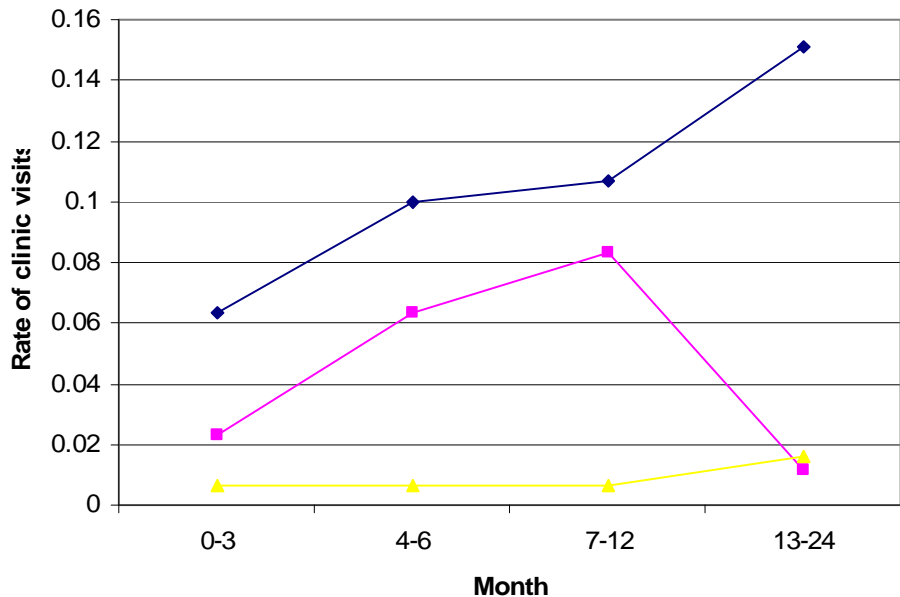
- The visit rates to local primary care and mental health clinics were **lower than average rates**; the musculoskeletal-related clinic visit rate was also low.
- However, **deployment to OIF/OEF, post-deployment self-reported poor health, lower pay grade, early access to dental service, and having C&P claims** were associated with higher rates of clinic visits.

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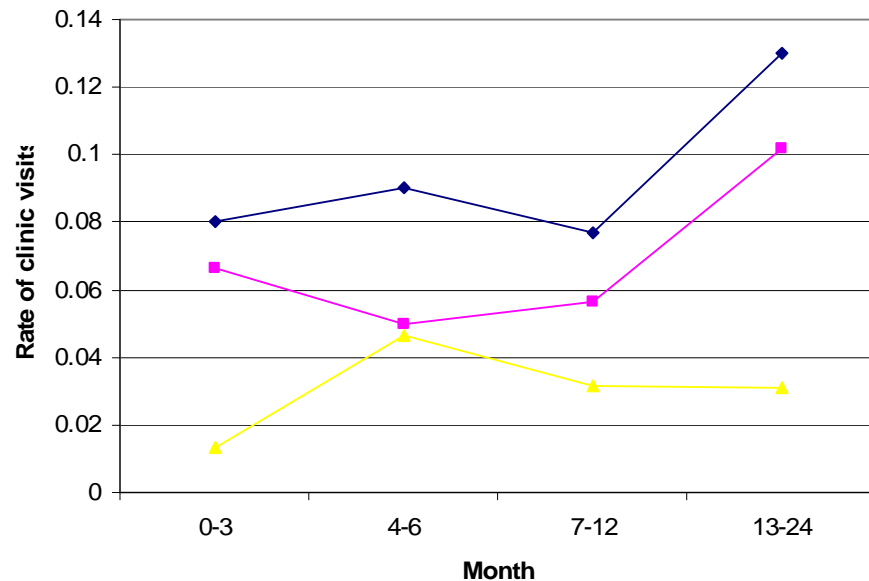


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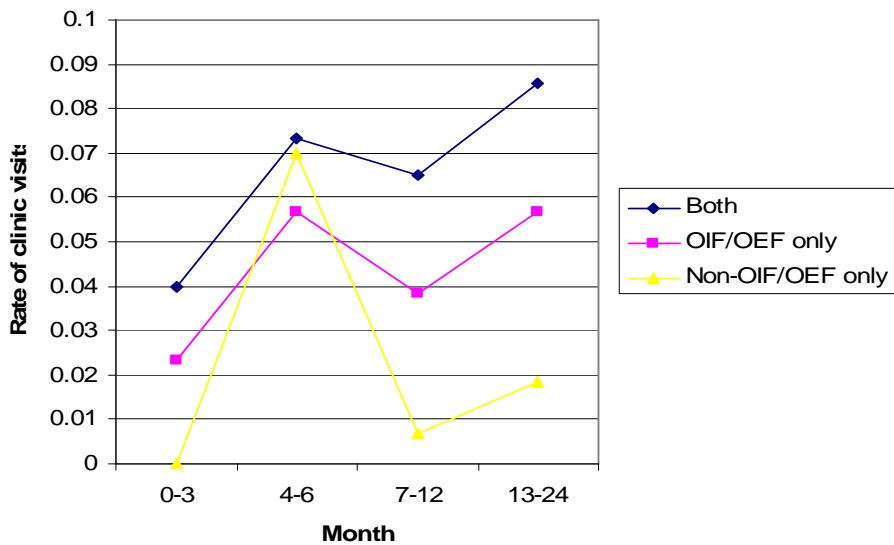
**Mental Health Clinic visits/month per veteran**



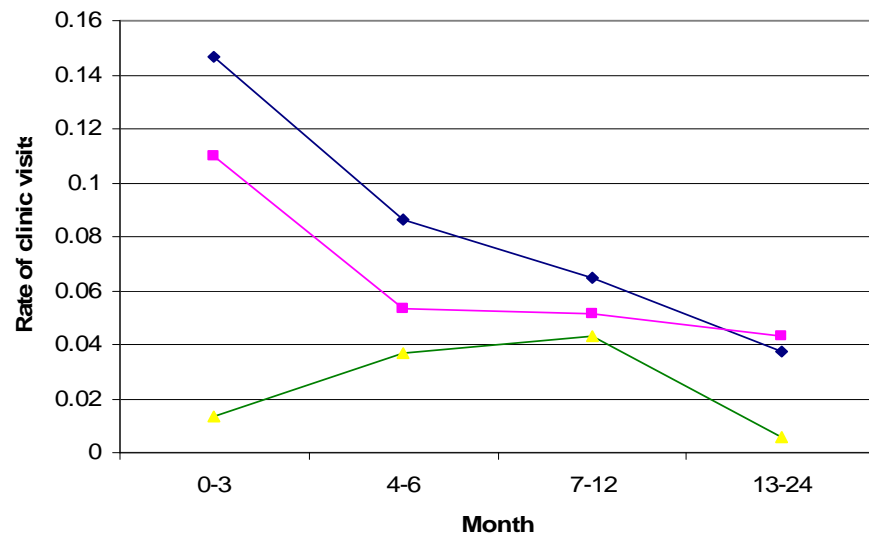
**Primary Care visits/month per veteran**



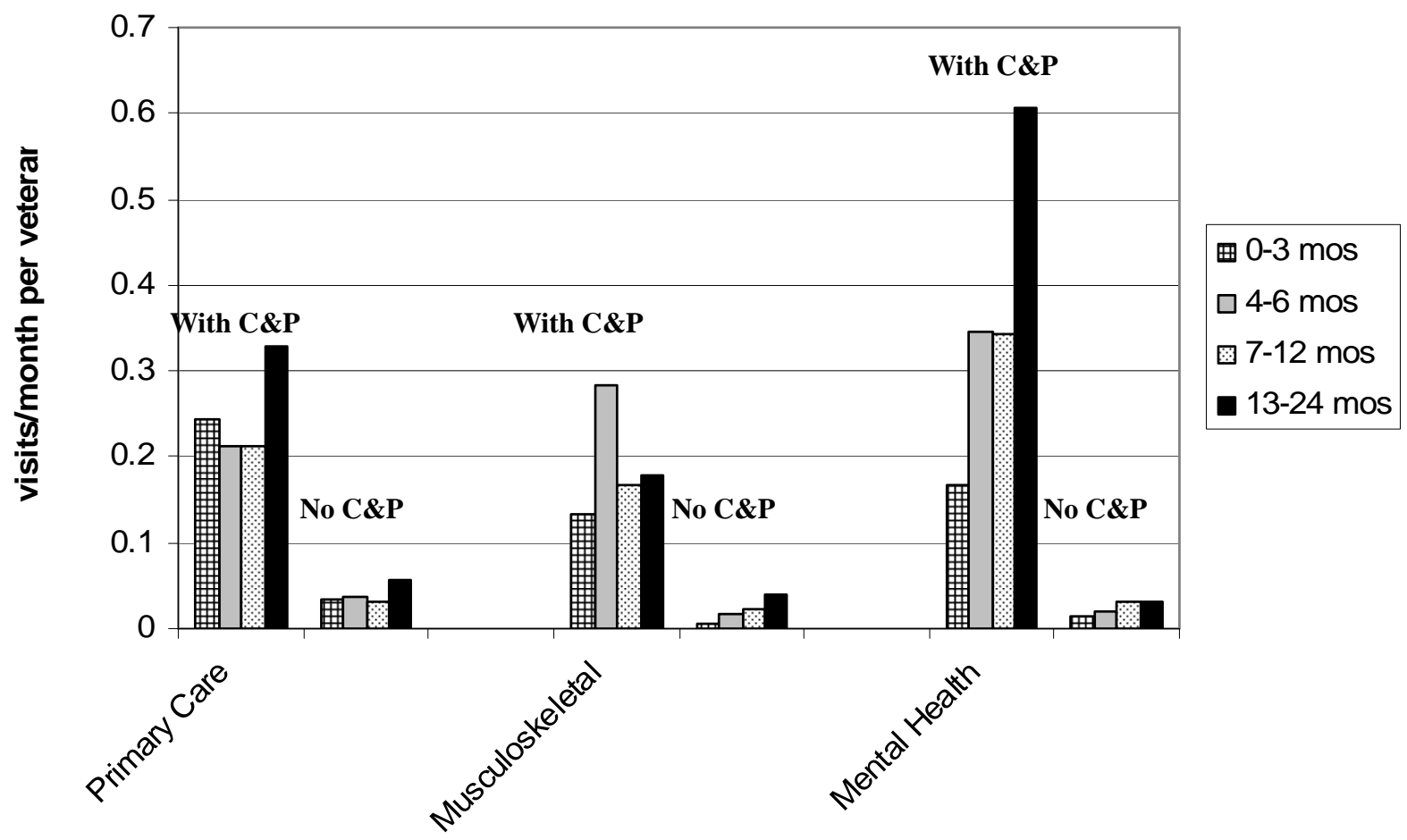
**Musculoskeletal visits/month per veteran**



**C & P visits/month per veteran**



### Interval rates of clinic visits by C&P claim



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# Additional results

- Veterans who reported good health (from Carine's research) have less healthcare utilization than those who reported poor health
- Veterans without commanding responsibilities (<E4) used VA more than those with commanding responsibilities
- Veterans who accessed the Dental Service

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# Case Vignette

- Joe's wife, Jane, had been sent for evaluation. She was observed by a co-worker crying and had recent near-accidents at work.

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# Deployment and the use of mental health services among US Army wives

Mansfield AJ, et al.

NEJM 2010; 362:101-9

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- Prolonged deployment was associated with more mental health diagnoses among US army wives, and these findings may have relevance for prevention and treatment efforts

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Mansfield AJ, et al. NEJM 2010; 362:101-9

Jane may benefit from EAP referral and  
if necessary a follow up care at the  
VA. [\(203-932-5711\)](tel:203-932-5711)

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# Objectives:

1. Described common illnesses and injuries related to military deployment to Iraq and Afghanistan in Connecticut Veterans.
2. Familiarize with self-reported health status and healthcare utilization data in Connecticut Veterans.

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# Objectives:

3. Reviewed the current medical literature regarding Operation Iraqi Freedom and Operation Enduring Freedom Deployment.
4. Help understand how to work with the VA Healthcare System to meet the Occupational and other Health Care needs of Veterans

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## Useful contacts

- VAMC West Haven: 203-932-5711
- VA Regional Office of Compensation and Pension claims: 800-827-1000

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