



Making Hospitals Heroes™

WarriorCentricHealth®

Health Issues Affecting Female Veterans: Musculoskeletal and Other Clinical Conditions



Objectives

- List the most common musculoskeletal injuries incurred by female veterans
- Discuss the lifespan approach to addressing the reproductive healthcare needs of female veterans
- Distinguish the increased risk of cardiovascular disease in female veterans

Objective One

List the most common
Musculoskeletal injuries incurred
by female veterans

Current Challenges in Female Veterans' Health

- The JOURNAL OF WOMEN'S HEALTH's Report from the Society for Women's Health Research reported the following regarding casualty data:
 - the rate of survival after combat injury is higher in OEF/OIF compared to the Vietnam War and World War II
 - most (54%) of the OEF (Afghanistan)/OIF (Iraq) injuries are orthopedic in nature and cause most of the long-term disability
 - females experience more non- battle injuries than males
 - females with battle injuries have higher mortality than males.
- Combat musculoskeletal injuries to the extremity were caused most often by explosions and were associated with disabilities and degenerative arthritis

JOURNAL OF WOMEN'S HEALTH Volume 21,
Number 9, 2012
a Mary Ann Liebert, Inc.
DOI: 10.1089/jwh.2012.3644

Cross JD, Ficke JR, Hsu JR, Masini BD, Wenke JC. Battlefield orthopaedic injuries cause the majority of long-term disabilities. J Am Acad Orthop Surg 2011;19(Suppl 1):S1-7

Masini BD, Waterman SM, Wenke JC, et al. Resource utilization and disability outcome assessment of combat casualties from Operation Iraqi Freedom and Operation Enduring Freedom. J Orthop Trauma 2009;23:261-266.

FEMALE VETERANS AND MUSCULOSKELETAL CONCERNS

- The World Health Organization (WHO) identified four musculoskeletal conditions as major disabling health conditions:
 - **osteoarthritis**
 - **rheumatoid arthritis**
 - osteoporosis
 - **back pain**
- The most commonly reported MSDs worldwide:
 - **back pain** (29%)
 - **osteoarthritis** and osteoporosis (17%)
 - **rheumatoid arthritis** (8%)
 - **ankle/foot pain** (8%)
 - **knee pain** (6%)
 - **hip pain** (5%)
 - shoulder pain (5%)
 - hand/wrist pain (3%)
 - elbow pain (3%)
- Research indicates that Veterans are more likely to have musculoskeletal disorders such as arthritis, lower-back and hip and knee pain that impair mobility
- Musculoskeletal disorders (MSDs) are the most common cause of chronic pain and long-term physical disability

Contributing or Associated Risk Factors

- There are basic anatomic and physiologic differences between males and females that account for or are associated with increased risk:
 - lower extremity biomechanical differences between males and females may account for gender differences in training injury rates
 - increased pelvic width
 - forefoot pronation
 - heel valgus angulation
 - pes planus
 - external tibial torsion,
 - femoral anteversion.
 - less lean body mass and greater ligamentous laxity (the estrogen effect)

<http://reportingtexas.com/female-soldiers-face-higher-risk-of-training-injuries-study-finds/>

Epidemiological Overview of Musculoskeletal Injuries In Military Females

- Females Veterans are more likely to be disabled than their male counterparts
- Female Veterans are 67% more likely than male Veterans to receive a physical disability discharge for a musculoskeletal disorder
- The discharge rates for musculoskeletal conditions have been as high as 140 per 10,000 female veterans per year, compared with 81 per 10,000 male Veterans per year
- Female Veterans tend to suffer a higher incidence of injuries than male Veterans
- Several studies have identified female gender as a risk factor for injury

Department of the Army. Prevention and Control of Musculoskeletal Injuries Associated with Physical Training. Washington, DC: DA; 2006. Technical Bulletin Medical 592 (TB MED 592).

Epidemiological overview

- Combat musculoskeletal injuries to the extremity were:
 - caused most often by explosions and associated with disabilities and degenerative arthritis
 - ranked as the most common unfitting condition cause of long-term disability for combat-injured service members

Arthritis in the Veteran Population

Demographics

- Age: the rate of OA in military and veteran populations aged 20-24 was 26 percent higher than civilians
 - Service members over 40 were twice as likely to develop the disease after returning to civilian life
 - Rate increases exponentially in the above-40 age group, with OA rates 19 times higher than service members in the below-20 age group
- Sex: According to the CDC 25 percent of male veterans and 31.3 percent of female veterans have arthritis
 - Male veterans have higher rates of arthritis than civilians in all age groups
 - Female veterans have 5 higher rates than civilians in the young (18-44) and middle-aged (44-64) cohorts

Arthritis in the Veteran Population

- Race: Studies have found higher rates of OA among African-American service members compared to other races
 - Cameron et al. found African-American service members with pain were:
 - 15 percent more likely to be diagnosed with OA than Caucasians
 - 26 percent more likely to be diagnosed with OA than other races
 - Increased OA risk among African-Americans may relate to higher bone mineral density and muscle mass, which can be associated with an increased risk of OA in the lower extremities

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- Branch with highest rates of OA:
 - Army
 - Air Force
 - Marine Corps
 - Navy
 - Rank with highest rates of OA:
 - Junior enlisted
 - Senior enlisted
 - Senior officers
 - Junior officers

CDC MMWR Arthritis Among Veterans — United States

- Arthritis is among the most common chronic conditions among veterans and is more prevalent among veterans than nonveterans
- CDC analyzed combined 2011, 2012, and 2013 Behavioral Risk Factor Surveillance System (BRFSS) data among all adults aged ≥ 18 years by veteran status. The study found that:
 - one in three veterans reported that they had arthritis (34.7%)
 - age-standardized prevalence was higher among veterans than nonveterans across most sociodemographic categories, including sex (age-standardized prevalence among male and female veterans was 25.0% and 31.3%, respectively)
 - State-specific, age-standardized arthritis prevalence among veterans ranged from 18.8% in Hawaii to 32.7% in West Virginia

Dominick KL, Golightly YM, Jackson GL. Arthritis prevalence and symptoms among US non-veterans, veterans, and veterans receiving Department of Veterans Affairs Healthcare. *J Rheumatol* 2006;33:348–54.
Hoerster KD, Lehavot K, Simpson T, McFall M, Reiber G, Nelson KM. Health and health behavior differences: U.S. military, veteran, and civilian men. *Am J Prev Med* 2012;43:483–9.

Arthritis Among Veterans — United States, 2011–2013
November 7, 2014 / 63(44):999-1003

Louise B. Murphy, PhD¹, Charles G. Helmick, MD¹, Kelli D. Allen, PhD², Kristina A. Theis, MPH¹, Nancy A. Baker, ScD¹, Glen R. Murray³, Jin Qin, PhD¹, Jennifer M. Hootman, PhD¹, Teresa J. Brady, PhD¹, Kamil E. Barbour, PhD¹

CDC MMWR Arthritis Among Veterans — United States

- A previous U.S. Department of Veterans Affairs (VA) health system services also report also found the prevalence of arthritis among female veterans to be consistently higher than their male counterparts.
 - This estimate is considerably higher than the estimate from the CDC MMR report:
 - overall female veterans with arthritis in the **CDC MMR study was (31.3%)**
 - overall female veterans with arthritis in the **VA Health System study was (77.6%)**
- Arthritis prevalence among female veterans who reported being unable to work (67.9%) was almost as high as that in the VA health system report.
- Patterns across age were also noteworthy
 - highly prevalent among middle aged (45–64 years) veterans (40.3% among females and 36.0% among males)
 - highly prevalent among younger veterans: 17.3% and 11.6% among female and male aged 18–44 years, respectively indicating that arthritis and its effects need to be addressed among male and female veterans of all ages
- Reducing the impact of arthritis among younger adults might help to stem its debilitating effects in later life

Yoon J, Scott JY, Phibbs CS, Frayne SM. Trends in rates and attributable costs of conditions among female VA patients, 2000 and 2008. *Womens Health Issues* 2012;22:e337–44.
Friedman SA, Phibbs CS, Schmitt SK, Hayes PM, Herrera L, Frayne SM. New women veterans in the VHA: a longitudinal profile. *Womens Health Issues* 2011;21(4 Suppl):S103–11

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Back/Neck Problem

Veterans are almost 3 times more likely to report a back/neck problem compared to non-veterans

- Age was found to be a factor in back/neck problem with a negative relationship between age and the odds of reporting back/neck problems
- For every one unit increase in Veterans age, the odds of reporting a back/neck problem go down by 1% compared to same-aged non-veterans
- Married/living with a partner, widowed or divorced/separated all had a significantly higher likelihood of having back/neck problems compared to respondents who were had never been married
- Respondents with less than a high school education, high school graduates, and respondents with some college had a higher odds of having back/neck problems compared to respondents with a graduate or professional degree
- Black respondents had a lower odds of reporting back/neck problem compared to whites

Hinojosa R, Hinojosa MS (2016) Activity-Limiting Musculoskeletal Conditions in US Veterans Compared to Non-Veterans: Results from the 2013 National Health Interview Survey. PLoS ONE 11(12): e0167143.
<https://doi.org/10.1371/journal.pone.0167143>

Graphic Representation of the Interaction Between Veteran Status and Age on Back/Neck Problem

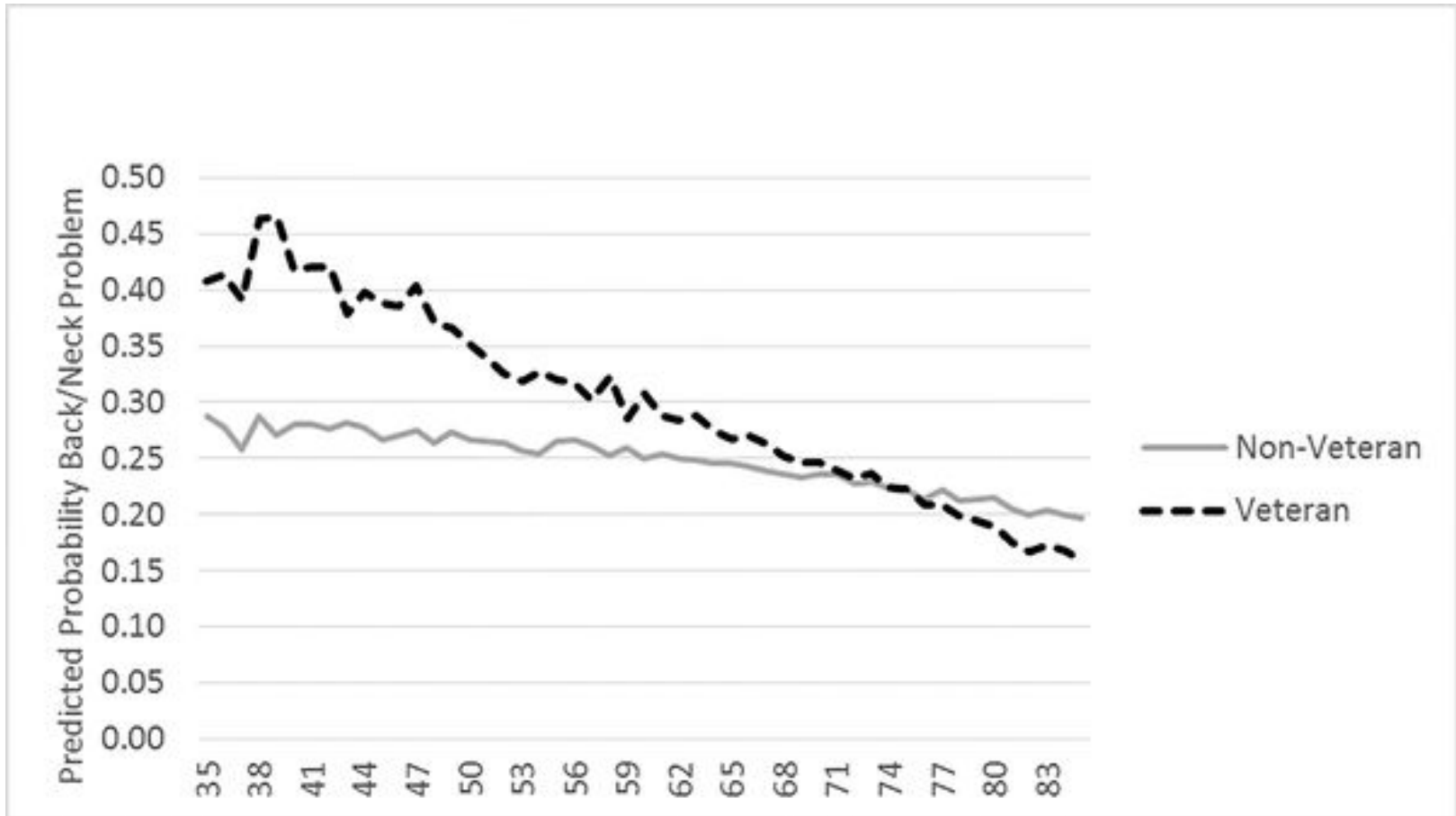


Fig 1. Graphic Representation of the Interaction Between Veteran Status and Age on Back/Neck Problem

Hinojosa R, Hinojosa MS (2016) Activity-Limiting Musculoskeletal Conditions in US Veterans Compared to Non-Veterans: Results from the 2013 National Health Interview Survey. PLOS ONE 11(12): e0167143. <https://doi.org/10.1371/journal.pone.0167143>
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0167143>

Management of Chronic Musculoskeletal Pain

- Among veterans with chronic musculoskeletal pain:
 - more females than males use Complementary and Integrative Health (CIH) (36% vs. 26%)
 - Among females, patients under age 44 who were Hispanic, White, or patients of other race/ethnicities are similarly likely to use CIH
 - Black females, regardless of age, are least likely to use CIH.
 - Men, especially Black males under age 44, are less likely to use CIH than males of Hispanic or other racial/ethnic identities.

Gender Differences in Use of Complementary and Integrative Health by U.S. Military Veterans with Chronic Musculoskeletal Pain. Evans, Elizabeth A. et al. Women's Health Issues , Volume 28 , Issue 5 , 379 - 386

Objective Two

Discuss the lifespan approach
to addressing the
reproductive healthcare needs
of female veterans

Regular Medical Exams

- Develop a personalized exam schedule (patient-provider) that include but not limited to the common screening tests listed below. Screening tests are important for prevention and early identification of problems
 - Clinical Breast Exam
 - GYN Exam
 - Pap Smear
 - Mammography
 - Colonoscopy
 - Blood Pressure Check
 - Cholesterol Screening
 - Colorectal Screening
 - Physical Check-Ups
 - HIV Test
 - **Depression screen**
 - **Sexual experience screen**

Heart Disease Risk Reduction

- More female Veterans die of **heart disease** than any other single cause
 - Report any pain or discomfort in the chest, left arm, shoulder, neck, or back
 - Remember the symptoms can differ significantly in females (i.e., indigestion, etc.)
 - Provider approved aerobic exercise regimen (i.e., walking, dancing, bicycling, swimming, rolling in your wheelchair) for 30 minutes, five or more days a week
 - Maintenance of appropriate weight
 - If you smoke, QUIT
 - Blood pressure control
 - Eat a low-fat diet
 - If diabetic, control blood sugar, LDL/HDL

Osteoporosis Symptoms and Risks

- Symptoms of Osteoporosis
 - Loss of height over the years
 - Certain types of back pain
 - Curved upper back
 - Minimal trauma resulting in hip, wrist, or spine fractures
- Prevent osteoporosis (brittle bones)
 - Know the risk factors and the symptoms
 - Eat a diet rich in calcium
 - Ensure adequate calcium and vitamin D intake
 - Weight-bearing exercises for 30 minutes, five or more days a week (walking, dancing, weight training and most sports, except swimming and bicycling)

Objective Three

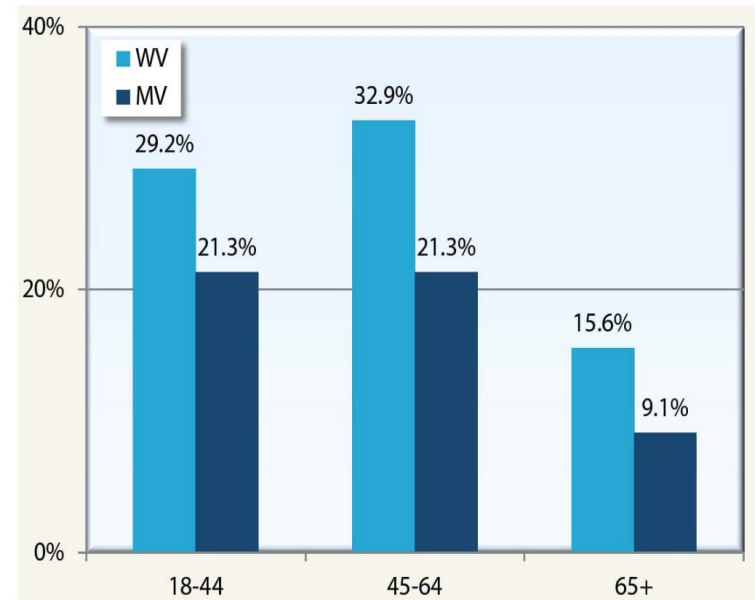
Distinguish the increased risk
of cardiovascular disease
in female veterans

Frequency of Cardiovascular Risk Factors

- In 2010 study:
 - The frequency of diagnosis of CV risk factors was found to be high in both male and female Veterans
 - The frequencies were lower in females than males in all age groups, although the difference narrowed with age
- Despite the lower frequency of CVD in females, approximately 80% of female Veterans 65+ had a diagnosis of a major CV risk factor, including:
 - Over half of female Veterans 65+ had a diagnosis of dyslipidemia
 - 25% had a diagnosis of diabetes
 - 65% a diagnosis of hypertension

Non Traditional Risk Factors: Depression and PTSD

- Depression and PTSD are non-traditional risk factors for CVD
- Females had higher rates of depression diagnosis than males across all age groups
- The highest rates were seen in females in the 18-44 age group (29.2%) and in the 45-64 group (32.9%)



Proportion of Veteran VHA outpatients with at least one instance of depression

Cardiovascular Disease in Female Veterans

- Female Veterans are a unique, rapidly growing, at-risk, and under-represented population with higher rates of cardiovascular disease than their civilian counterparts
- It is estimated that 80 percent will have at least one serious risk factor for heart disease by the time they reach age 65
- Cardiovascular disease focus for female Veterans should include:
 - prevalence of traditional risk factors and less traditional risk factors
 - homelessness
 - military sexual trauma
 - PTSD and other mental health disorders
 - treatment and outcomes of cardiovascular disease
 - the future directions of research

Janet K. Han, Elizabeth M. Yano, Karol E. Watson, Ramin Ebrahimi

Originally published 19 Feb 2019

<https://doi.org/10.1161/CIRCULATIONAHA.118.037748> Circulation. 2019;139:1102–1109

Disparities in Knowledge and Treatment Persist

- Females
 - are less likely to receive evidence-based CV therapies than males
 - may be diagnosed later than males due in part to the more vague nature of CVD symptoms
 - have higher mortality following myocardial infarction
 - higher incidence of subsequent heart failure
- Gender disparities have been identified in risk factors, prevention, treatment and outcomes in non-Veteran and Veteran populations
- More females than males have hypertension after age 65
- Two out of every three U.S. females are now overweight or obese
- Females with diabetes may be less likely to achieve glycosylated hemoglobin control than males

* References at end of presentation

Cholesterol Management

- American Heart Association (AHA) guidelines recommend diet and lifestyle modifications and statin therapy to achieve low-density-lipoprotein cholesterol (LDL-C) < 100 in high risk females
- Numerous studies show:
 - that females are less likely than males to be screened
 - that females are less likely to achieve treatment goals
 - comparable disparities are found in commercial and Medicare managed care plans as well as within the VA health care system

* References at end of presentation



Call to Action:

Cardiovascular care in women veterans

#1

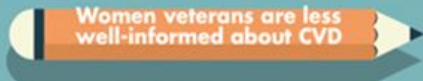
There will be over 2 million women veterans by the year 2025



Women veterans experience more healthcare delays and less aggressive CVD care than male veterans



Women veterans are more ethnically diverse than male veterans & civilian women



#3

Women veterans have a high prevalence of non-traditional CVD risk factors

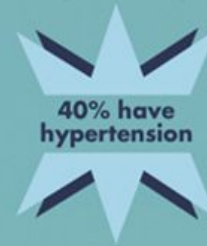


40% have suffered military sexual trauma



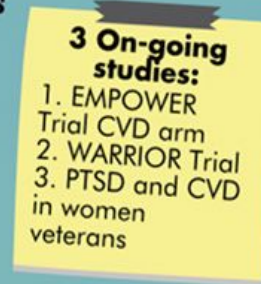
#2

Women veterans have a high prevalence of traditional CVD risk factors



#4

More research is needed regarding CVD in women veterans



Summary

- Shrinking total veterans population but a doubling of female veterans using VHA for their healthcare with even higher numbers seeking care from your organizations
- Increasing recognition of female veterans' unique and complex health needs—gear up for influx of younger female veterans
- Improve Quality performance for females—seek best strategies and implement change
- Increase attention to comprehensive view of female health—beyond reproductive health issues
- Redesign primary care service delivery for females
- Tremendous research opportunities

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